INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

Global Debt Issuance Facility

No. 100650

USD 100,000,000 Notes linked to BRL/USD FX and the Republica AFAP Dynamic Index (Fourth Series) due 2031

JPMorgan

The date of these Final Terms is 26 February 2019

This document sets out the Final Terms (the "**Final Terms**") of the International Bank for Reconstruction and Development ("**Issuer**" or "**IBRD**") USD 100,000,000 Notes linked to BRL/USD FX and the Republica AFAP Dynamic Index (Fourth Series) due 2031 (the "**Notes**") and the Schedules to the Final Terms. Prospective investors should read the Final Terms and the Schedules to the Final Terms together with the Issuer's Prospectus dated May 28, 2008 (the "**Prospectus**"), in order to obtain a full understanding of the specific terms and conditions of the Notes.

The Final Terms of the Notes are set out on pages 30 to 46. Capitalized terms used herein are defined in the Final Terms, the Prospectus or the Schedules to the Final Terms.

Investing in the Notes involves risks. See "Additional Risk Factors" beginning on page 9 of the Final Terms, and "Risk Factors" beginning on page 14 of the Prospectus.

The return on, and the value of, the Notes is based on the performance of the Index and on the exchange rate of Brazilian Real ("BRL") to United States Dollars ("USD"). The performance of the Index, in turn, will be based primarily on the Index Allocation Agent's periodic selections of the Component Underlyings (as defined in the Index Rules) comprising the Index. Subject to the limitations contained in the Index Rules, the Index Allocation Agent will have complete discretion as to the timing and frequency of Index rebalancings and as to the Component Underlyings chosen and weights allocated to those Component Underlyings. Therefore, the Notes are intended to be purchased and held by the Index Allocation Agent and by discretionary accounts managed by the Index Allocation Agent only. The Index Allocation Agent is Republica AFAP, S.A.

Investors should note that the Final Terms of the Notes are separate from, and do not incorporate by reference, the Index Rules or any descriptions of such Index Rules that are set out in the Schedules to the Final Terms of the Notes. The Index Rules can be modified from time to time without requiring an amendment of the Final Terms of the Notes. In the event of the occurrence of any Mandatory Amendment Event relating to the Index, the fall-back provisions set out in the Final Terms of the Notes, not the Index Rules, will determine the relevant action to be taken with respect to the Notes. The Index Rules and the descriptions of such Index Rules that are set out in the Schedules to the Final Terms of the Notes are attached for informational purposes only and should not be relied upon by the Noteholder or any prospective investor in the Notes. The Issuer has derived all information contained in the Final Terms regarding the Index from the Index Rules, and the Issuer has not participated in the preparation of, or verified, such Index Rules. Neither IBRD nor the Global Agent will have any responsibility for the contents of the Index Rules and the Index Allocation Agreement, and none of IBRD and the Global Agent shall have any responsibility or liability for the choices and allocations made by the Index Allocation Agent thereunder with respect to the Index.

Although the return on the Notes is based on the performance of the Index, a Note will not represent a claim against the Index Allocation Agent, the Index Sponsor or the Index Calculation Agent, and a Noteholder will not have recourse under the terms of the Notes to any asset comprising the Index. The exposure to the Index is notional and an investment in the Notes is not an investment in the Index or any asset comprising the Index from time to time.

In Uruguay the Notes are being placed relying on a private placement exemption ("oferta privada") pursuant to Section 2 of Law N° 18,627. The Notes are not and will not be registered with the Financial Services Superintendency of the Central Bank of Uruguay to be publicly offered in Uruguay.

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EXECUTIVE SUMMARY

The following is an executive summary of the provisions of the Notes only and is qualified in its entirety by reference to the more detailed information contained elsewhere in the Final Terms and the Prospectus. Capitalized terms used in this summary have the meanings set forth elsewhere in the Final Terms or the Schedules to the Final Terms.

Issuer:	International Bank for Reconstruction and Development
Securities:	USD 100,000,000 Notes linked to BRL/USD FX and the Republica AFAP Dynamic Index (Fourth Series) due 2031 (the "**Notes**"). Issued under the Issuer's Global Debt Issuance Facility.
Credit Rating:	The Notes are expected to be rated AAA by Standard and Poor's, a division of the McGraw-Hill Companies, Inc., upon issuance.
Aggregate Nominal Amount:	USD 100,000,000 (equivalent of BRL 373,600,000 at the BRL/USD exchange rate on the Trade Date of BRL 3.7360 per USD 1.00).
Issue Price:	100% (USD 100,000,000)
Denomination:	USD 1,000,000 and integral multiples thereof
Issue Date:	1 March 2019
Trade Date:	14 February 2019
Scheduled Maturity Date:	7 March 2031
Maturity Date:	The Scheduled Maturity Date, subject to postponement if either the Scheduled BRL Valuation Date is postponed pursuant to Term 18 of the Final Terms and/or the Scheduled Final Index Determination Date is postponed pursuant to Term 19 of the Final Terms.
Interest Basis:	Zero Coupon
Business Day:	Means a day (other than a Saturday or a Sunday), which is both (i) a Brazil Business Day and (ii) a day on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in London and New York Where: "Brazil Business Day" means a day (other than a Saturday or a Sunday) on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in any of Brasilia, Rio de Janeiro and Sao Paulo.
Calculation Amount:	USD 1,000,000
Participation Rate:	563%
Final Redemption Amount:	If no Mandatory Amendment Event has occurred prior to the Maturity Date, the Final Redemption Amount, calculated per Calculation Amount, payable on the Maturity Date will be an amount in USD equal to the sum of (i) the BRL Linked Principal Amount and (ii) the Supplemental Payment Amount, if any,

	as set forth under Term 17 of the Final Terms ("Final Redemption Amount of each Note (Condition 6)"). If a Mandatory Amendment Event has occurred prior to the Maturity Date, the Final Redemption Amount, calculated per Calculation Amount, due on the Maturity Date will be an amount in USD equal to the BRL Linked Principal Amount.
BRL Linked Principal Amount:	An amount in USD equal to the BRL Amount divided by the BRL/USD FX Rate.
Supplemental Payment Amount:	An amount in USD, calculated per Calculation Amount, equal to the greater of (i) the product of the Calculation Amount, the Index Return and the Participation Rate, and (ii) zero.
Mandatory Amendment Event:	In the event of the occurrence of the events described in Term 22 of the Final Terms ("Mandatory Amendment Event"), the Calculation Agent or the Issuer, as the case may be, will give notice to the beneficial owners of the occurrence of the Mandatory Amendment Event and the Issuer will be required to make a payment in respect of each Calculation Amount (which may be zero) as soon as practicable after the Mandatory Amendment Date. Such amount shall be referred to as the Early Contingent Payment Amount (as defined in Term 22 of the Final Terms ("Mandatory Amendment Event")) and such Early Contingent Payment Amount shall be calculated as of the Accelerated Final Index Determination Date. For the avoidance of doubt, the occurrence of a Mandatory Amendment Event shall not affect the Issuer's obligation to pay the BRL Linked Principal Amount per Calculation Amount due on the Maturity Date. In the event of the occurrence of a Mandatory Amendment Event, the Issuer shall pay the BRL Linked Principal Amount on the later of the (i) the time the Early Contingent Payment Amount is paid and (ii) the Maturity Date. A Mandatory Amendment Event includes an Index Cancellation, an Index Modification, an Index Allocation Agreement Termination or a termination of the Associated Swap Transaction (including as a result of an Additional Disruption Event), each as described in Term 22 of the Final Terms ("Mandatory Amendment Event").
BRL/USD FX Rate:	The BRL/USD exchange rate, expressed as the amount of BRL per one USD as determined on the BRL Valuation Date.
BRL Amount:	BRL 3,736,000 (equivalent to USD 1,000,000 at the BRL/USD exchange rate on the Trade Date of BRL 3.7360 per USD 1.00)
Index Return:	The performance of the Index from the Initial Index Level to the Final Index Level expressed as a percentage and calculated as follows: (Final Index Level - Initial Index Level) / Initial Index Level
Index:	The Republica AFAP Dynamic Index (Fourth Series) (Bloomberg Ticker Symbol: JPZMBRL1 <Index>).

	The Index will track, with certain adjustments described herein, a basket of reference components chosen and rebalanced periodically by the Index Allocation Agent. As a result, the return on the Index will be dependent in large part on the allocation selections made by the Index Allocation Agent.
Index Allocation Agent:	Republica AFAP, S.A., an entity not affiliated with the Issuer or the Index Sponsor. The Index Allocation Agent is appointed as such pursuant to an Index Allocation Agreement between it and the Index Sponsor.
Index Sponsor:	J.P. Morgan Securities LLC
Index Calculation Agent:	Solactive A.G.
BRL Valuation Date:	21 February 2031 (the "**Scheduled BRL Valuation Date**"), subject to postponement in accordance with the provisions set forth under Term 18 of the Final Terms ("BRL Related Disruption Events").
Initial Index Level:	100 (namely, the Index's published Closing Level on the Initial Index Determination Date).
Initial Index Determination Date:	14 February 2019 (the "**Trade Date**")
Final Index Level:	Index's Closing Level on the Final Index Determination Date, as determined by the Calculation Agent. In the event that the Index's Closing Level on the Final Index Determination Date is corrected by the Calculation Agent within three New York Business Days of the Final Index Determination Date, such corrected value will be the Final Index Level.
Final Index Determination Date:	21 February 2031 (the "**Scheduled Final Index Determination Date**"), subject to postponement pursuant to the provisions set forth under Term 19 of the Final Terms ("Index Disruption Events") and Term 21 of the Final Terms ("Additional Definitions with regard to the Index").
Index Disruption Event:	If on the Final Index Determination Date, the Calculation Agent is prevented from observing the Closing Level for the Index because either the Index is not published by the Index Calculation Agent or the Index Sponsor, or such date is not a Trading Day, an Index Disruption Event will be deemed to have occurred on such date and the Calculation Agent will delay calculating the Index Return as set forth in Term 19 of the Final Term ("Index Disruption Events").
Dealer:	J.P. Morgan Securities plc
Calculation Agent:	JPMorgan Chase Bank, N.A.
Clearing Systems:	Euroclear/Clearstream
Rank:	The Notes constitute direct, unsecured obligations of the Issuer ranking *pari passu*, without any preference among themselves, with all its other obligations that are unsecured and unsubordinated. The Notes are not obligations of any government.
Applicable law:	English law

Notes intended to be held by Index Allocation Agent or accounts managed by Index Allocation Agent; Purchaser Acknowledgement:	The amount of the Supplemental Payment Amount, if any, or the Early Contingent Payment Amount, if any, to be payable in respect of the Notes will be based on the performance of the Index. The performance of the Index, in turn, will be based on the periodic selections of the Index Allocation Agent made under the terms of the Index Allocation Agreement (as defined in the Final Terms). Therefore, the Notes are intended to be purchased and held by the Index Allocation Agent and by discretionary accounts managed by the Index Allocation Agent only. Each initial investor and subsequent beneficial owner in the Notes from time to time, through such investor's acquisition of the Notes, will be deemed to have acknowledged that the Notes are intended to be instruments held only by the Index Allocation Agent and by discretionary accounts managed by the Index Allocation Agent. Neither IBRD nor the Global Agent will have any responsibility for the contents of the rules governing the Index ("**Index Rules**") and the Index Allocation Agreement, and none of IBRD and the Global Agent shall have any responsibility or liability for the choices and allocations made by the Index Allocation Agent thereunder.
Risk factors:	Noteholders should consider carefully the factors set out under "Additional Risk Factors" in this document and under "Risk Factors" in the Prospectus before reaching a decision to buy the Notes.

ADDITIONAL RISK FACTORS

An investment in the Notes is subject to the risks described below, as well as the risks described under "Risk Factors" in the Prospectus. The Notes are a riskier investment than ordinary fixed rate notes or floating rate notes. Prospective investors should carefully consider whether the Notes are suited to their particular circumstances. Accordingly, prospective investors should consult their financial and legal advisers as to the risks entailed by an investment in the Notes and the suitability of the Notes in light of their particular circumstances.

The performance of the Index is based on the periodic selections of the Index Allocation Agent made under the terms of the Index Allocation Agreement. Therefore, the Notes are intended to be purchased and held by the Index Allocation Agent and by discretionary accounts managed by the Index Allocation Agent only. Neither IBRD nor the Global Agent will have any responsibility for the contents of the Index Allocation Agreement, and none of IBRD and the Global Agent shall have any responsibility or liability for the choices and allocations made by the Index Allocation Agent thereunder. The Index Allocation Agent is Republica AFAP, S.A.

Terms used in this section and not otherwise defined shall have the meanings set forth elsewhere in the Final Terms or the Schedules to the Final Terms.

The following list of risk factors does not purport to be a complete enumeration or explanation of all the risks associated with the Notes, the Index and/or the Component Underlyings of the Index.

No tax gross-up on payments

Repayment of all or any part of the Notes and payment at maturity of any additional amount due under the terms of the Notes will be made subject to applicable withholding taxes (if any). Consequently, the Issuer will not be required to pay any further amounts in respect of the Notes in the event that any taxes are levied on such repayment or payment.

Non-U.S. investors - additional tax consideration

For purposes of the Notes, the following discussion supersedes in its entirety the discussion in the Prospectus under "Tax Matters."

The Notes are only being offered to, and only intended to be held by, the Index Allocation Agent and accounts managed by the Index Allocation Agent. The Notes may not be beneficially owned by U.S. persons or persons subject to net income taxation in the United States, and the discussion does not address the consequences of direct or indirect investment by U.S. persons or persons subject to net income taxation in the United States.

Section 871(m) of the Code and final Treasury regulations promulgated thereunder ("**Section 871(m)**") generally impose a 30% withholding tax (unless an income tax treaty applies) on dividend equivalent amounts paid or deemed paid to non-U.S. beneficial owners with respect to certain financial instruments linked to U.S. equities or indices that include U.S. equities. Section 871(m) provides certain exceptions to this withholding regime, in particular for instruments linked to certain broad-based indices that meet requirements set forth in the applicable Treasury regulations (such an index, a "**Qualified Index**").

As of the Issue Date of the Notes, none of the Component Underlyings contained within the synthetic portfolio referenced by the Index are "Underlying Securities" as defined in the Section 871(m) regulations and thus, as of the Issue Date, the Issuer (relying upon certain determinations made by J.P. Morgan Securities plc in its role as Dealer in the Notes) has determined that the Section 871(m) regulations do not apply to the Notes. However, because the Notes are expected to be considered redeemed and re-issued for U.S. tax purposes each time there is a change in the Index allocations (each occurrence, a "deemed reissuance"), the Index Rules further specifically prohibit the Index Allocation Agent from making allocations to any Component Underlying within the synthetic portfolio referenced by the Index in the event that such Component Underlying is treated as an 'Underlying Security' at the time of allocation, as such an allocation would cause the securities to become subject to the regulations.

Therefore, the Issuer (relying upon certain determinations made by J.P. Morgan Securities plc in its role as Dealer in the Notes) believes, without regard to any other transactions entered into by an investor, that the Section 871(m) regulations will not apply to the Notes at any point in time. The Issuer's and Dealer's determinations are not binding on the Internal Revenue Service ("IRS"), and the IRS may disagree with their determinations. If, against the Issuer's and Dealer's determinations, the IRS determines that the Section 871(m) regulations apply to the Notes, a withholding agent may withhold a 30% withholding tax on any dividend equivalent amounts paid or deemed paid to non-U.S. beneficial owners with respect the Notes. However, neither the Issuer nor any other person will be required to pay any additional amounts with respect to any amounts that may be withheld pursuant to the Section 871(m) regulations. Section 871(m) is complex and its application may depend on an investor's particular circumstances, including whether an investor enters into other transactions with respect to an Underlying Security. Investors should consult with their own tax advisers regarding the potential application of Section 871(m) to the Notes.

BRL related disruption events and Index Disruption Events may postpone the Maturity Date and affect the amount payable under the Notes

In the event that the BRL Valuation Date is postponed beyond the Scheduled BRL Valuation Date or the Final Index Determination Date is postponed beyond the Scheduled Final Index Determination Date as set forth in the Final Terms, the Maturity Date of the Notes will be postponed by one Business Day for each Business Day that the BRL Valuation Date is postponed beyond the Scheduled BRL Valuation Date or that the Final Index Determination Date is postponed beyond the Scheduled Final Index Determination Date. Therefore, the Maturity Date may be postponed by one Business Day in respect of BRL-related disruption or up to five Business Days in the event of the occurrence and continuation of an Index Disruption Event. No interest or other payment will be payable because of any such postponement of the Maturity Date.

The occurrence of an Exchange Rate Divergence could cause a postponement of a determination of the BRL/USD FX Rate and could result in a change in the method of calculation to determination of the Calculation Agent in lieu of reference to Central Bank of Brazil screen rate. Generally, an Exchange Rate Divergence would occur if the Emerging Markets Traders Association (EMTA) receives notices from a certain number of major market participants in the BRL-USD foreign exchange market that, in such participants' judgment, the published rate does not reflect the then-prevailing BRL/USD spot rate for standard-size wholesale financial transactions involving the exchange of BRL for USD delivered outside of Brazil. The occurrence of an Exchange Rate Divergence may adversely affect the amount payable under the Notes by effectively causing the disregard of the published exchange rate and the substitution of such published rate by a rate determined by the Calculation Agent, which substituted rate could reflect a reduced value of BRL in USD terms. The occurrence of an Exchange Rate Divergence may be triggered by a non-public communication by EMTA to the Calculation Agent or an affiliate, and the Calculation Agent or an affiliate may be among the EMTA members that notified EMTA of the occurrence of the market conditions triggering the event.

Possible Mandatory Amendment Event

As set out in Term 22 of the Final Terms ("Mandatory Amendment Event"), in the event of the occurrence of the events described in Term 22, the Issuer will be required to make a payment (which may be zero) as soon as practicable after the Mandatory Amendment Date. In respect of each Calculation Amount, such payment will be equal to the Early Contingent Payment Amount as of the Accelerated Final Index Determination Date, and no Supplemental Payment Amount will be payable on the Maturity Date. As a result, the Noteholders will not benefit from any appreciation in the Index after the Accelerated Final Index Determination Date.

A Mandatory Amendment Event includes an Index Cancellation, an Index Modification, an Index Allocation Agreement Termination or a termination of the Associated Swap Transaction by the Swap Counterparty (including as a result of an Additional Disruption Event) or the Issuer. An Index Cancellation, an Index Modification, an Index Allocation Agreement Termination may occur due to a broad range of events beyond the control of the Issuer, including by a decision of the Index Sponsor and/or the Index Allocation Agent.

Additional Disruption Events include events falling under the definition of Change in Law; Hedging Disruption; and Increased Cost of Hedging. A Change in Law could occur in response to the enactment of new laws or regulations, changes in laws or regulations or changes in the interpretation of laws or regulations, (including, without limitation, laws and regulations relating to taxation and financial market and financial institution regulation, including, without limitation, the "Volcker Rule"). A Hedging Disruption could occur if the Swap Counterparty was unable, after using commercially reasonable efforts, to (i) acquire, establish, re-establish, substitute, maintain, unwind or dispose of any transactions or assets that it deems necessary to hedge the price risk of entering into and performing its obligations with respect to the Associated Swap Transaction or (ii) realise, recover or remit the proceeds of any such transactions or assets. An Increased Cost of Hedging could occur if the Swap Counterparty would incur a materially increased amount of taxes or costs in dealing in any transactions it deems necessary to hedge the price risk of performing its obligations under the Associated Swap Transaction. These could occur due to changes in legal or tax regimes.

Payment subject to Brazilian real exchange risk

The amount of any payment of principal in USD under the Notes will be affected by the exchange rate of BRL to USD, since the amounts payable in USD in respect of the principal of the Notes will be linked to or dependent on, the change of the BRL/USD exchange rate between the Trade Date and the BRL Valuation Date. The exchange rate between BRL and USD will fluctuate during the term of the Notes. In recent years, the rate of exchange between BRL and USD has been volatile and such volatility may occur in the future and could significantly affect the returns of Noteholders. In addition, for investors whose investment currency is USD, the movement of the currency exchange rate could result in any amount due under the Notes being less than the initial USD amount paid for the Notes. As a result, a Noteholder could lose a substantial portion of its investment in the Notes, in USD terms.

The Notes are not principal protected in USD

The BRL Amount used to determine the BRL Linked Principal Amount is fixed on the Trade Date. However, the purchase price of the Notes is payable in USD and amounts received upon maturity will be payable in USD, and therefore amounts payable in USD on the Notes may be less than the amount initially invested if the value of BRL were to decline in USD terms between the Trade Date and the BRL Valuation Date.

Payment at maturity depends on interplay of the BRL/USD exchange rate and the performance of the Index

The payment that the Noteholder will receive at maturity will depend on both the change in the rate of exchange between BRL and USD and the Index Return. The interplay of these two factors means that the Notes are a more complex investment than an instrument linked to a single underlying factor. It is not possible to predict how the two factors to which the Note's performance payout is tied may perform. A relatively positive Index Return may be offset by a decline in the value of BRL in USD terms. BRL may appreciate relative to USD without any appreciation in the Index. There can be no assurance that either factor's performance will correlate with the other's performance.

The Notes are subject to market risks

The price at which Noteholders will be able to sell their Notes prior to maturity may be at a substantial discount from the nominal amount of the Notes, even in cases where the level of the Index has increased since the Trade Date. Embedded costs, including expected profit and costs of hedging, in the original Issue Price will likely be reflected in any repurchase price of the Notes being lower than their original Issue Price. Assuming no change in market conditions or any other relevant factors, that price will likely be lower than the original Issue Price, because the original Issue Price included the estimated cost of hedging the Swap Counterparty's obligations, which includes an estimated profit component. IBRD's Swap Counterparty is JPMorgan Chase Bank, N.A., an affiliate of the Dealer. Noteholders should not expect the price at which the Issuer or the Dealer is willing to repurchase the Notes to vary predictably in any particular proportion to changes in the level of the Index. Noteholders will not have any claim to any amounts that the Swap Counterparty may pay to IBRD due to changes in the level of the Index.

Prior to maturity, the value of the Notes will be affected by a number of economic and market factors that may either offset or magnify each other. It is expected that, generally, the level of the Index on any day will affect the value of the Notes more than any other single factor. Other relevant factors include: the expected volatility of the Index; the time to maturity of the Notes; the dividend or distribution rates on the exchange-traded funds ("ETFs") and open end mutual funds registered under the European Collective Investment of Transferable Securities ("UCITS") framework held in the synthetic portfolio tracked by the Index from time to time; the interest and yield rates in the market; the economic, financial, political, regulatory or judicial events that may affect the various components represented by the Index from time to time or that may affect stock, commodity, bond and futures markets generally and in any case that may affect the Closing Level for the Index on the Final Index Determination Date; and the creditworthiness of the Issuer. The BRL/USD exchange rate as well as the illiquidity of the instruments used to hedge the Issuer into USD will also have an effect on secondary market valuations.

The Notes are intended to be a hold-to-maturity instrument. Noteholders will receive at least 100% of the nominal amount of the Notes (when expressed in BRL only) if they hold their Notes to maturity (though, as discussed under "*The Notes are not principal protected in USD*", if the value of BRL were to decline in USD terms between the Trade Date and the BRL Valuation Date, the amounts payable in USD on the Notes may be less than the amount initially invested, and, therefore, a Noteholder may lose a substantial amount of its USD investment). If Noteholders sell their Notes prior to maturity, however, they will not receive principal protection (expressed in BRL) or any minimum total return on the portion of their Notes sold. Noteholders should be willing to hold their Notes until maturity.

The future performance of the Index cannot be predicted based on the historical performance of the Index. Past performance is not an indication of future results.

The Notes are not liquid instruments

The Notes will not be actively traded in any financial market and there may exist at times only a very limited, if any, market for the Notes, resulting in low or non-existent volumes of trading in the Notes. Therefore, an investment in the Notes will be characterized by a lack of liquidity and price volatility. Although the Issuer or the Dealer, at its respective sole discretion, may provide a repurchase bid price for the Notes if requested, neither the Issuer nor the Dealer is under any obligation to do so and, in any event, as a result of market conditions may be unwilling or unable to provide a repurchase bid price if requested. Because liquidity in the Notes may be effectively limited to Issuer repurchase, an investment in the Notes is intended for Noteholders that intend to hold the Notes to maturity.

The Index Sponsor and Index Calculation Agent will make determinations under the Index Rules and may make adjustments to the Index and its Component Underlyings in ways that affect its level, and the Index Sponsor and Index Calculation Agent have no obligation to consider the interests of the beneficial owners of the Notes when doing so

The Index Sponsor and the Index Calculation Agent will be responsible for making determinations regarding the Index's constitution and calculation during the term of the Notes. As of the date of the Final Terms, the Index Sponsor has appointed Solactive A.G. as the Index Calculation Agent.

The Index Calculation Agent is responsible for (i) calculating the Closing Level of the Index in accordance with the Index Rules, (ii) determining (among other things and subject to the prior agreement of the Index Sponsor or at the direction of the Index Sponsor) if a Market Disruption Event (as described more fully in Schedule 1 to the Final Terms) or certain dilutive events has occurred, whether any input necessary to perform any calculations under the Index Rules is not published or otherwise made available by the relevant exchange or input sponsor to the Index Calculation Agent, and any related consequences or adjustments in accordance with the Index Rules and (iii) determining, subject to the prior agreement of the Index Sponsor, whether certain corrections to the level of the Index should be made.

The Index Sponsor is responsible for, among other matters, (i) determining the sufficiency of requests made by the Index Allocation Agent to rebalance the Index, or to add or substitute Component Underlyings of the Index, (ii) determining if a Market Disruption Event or Extraordinary Event (as described more fully in Schedule 1 to the Final Terms) has occurred, whether any input necessary to perform any calculations under the Index Rules is not published or otherwise made available by the relevant exchange or input sponsor to the Index Calculation Agent, and any related consequences or adjustments in accordance with the Index Rules and (iii) whether certain corrections to the level of the Index should be made.

Changes in the published Closing Level of the Index will affect the Final Index Level for purposes of the Notes, and, in turn, the Supplemental Payment Amount, if any, (or the Early Contingent Payment Amount, if any) payable on the Notes. Policies and judgments for which the Index Sponsor and Index Calculation Agent are responsible could have an impact, positive or negative, on the Closing Level of the Index and thus the Final Index Level and thus, the return (if any) on, and value of, the Notes. The Index Sponsor may also amend the Index Rules in its discretion. Although judgments, policies and determinations concerning the Index are made by the Index Sponsor and the Index Calculation Agent, these entities have no obligation to consider the interests of the Noteholders in taking any actions that might affect the return on, and value of, the Notes.

Furthermore, the inclusion of the Component Underlyings (as defined in the Index Rules and described more fully in Schedule 1 to the Final Terms) in the Index is not an investment recommendation by any person of any of: those Component Underlyings; any index, commodity or security referenced, or tracked by a Component Underlying; any securities owned by or contained in a Component Underlying; or, any futures contract underlying a Component Underlying, or any futures contract tracking any index, commodity or security referenced, or tracked by a Component Underlying.

The selections of the Index Allocation Agent will be the most important factor influencing the return on the Index

The initial selection among the Component Underlyings to be included in the Index, and their relative weightings, will be made by the Index Allocation Agent (as defined in the Final Terms) on a discretionary basis, and the Index Allocation Agent will be responsible for revising these selections and weights on a discretionary basis on rebalancing dates chosen on a discretionary basis by the Index Allocation Agent. The Index Allocation Agent will have total discretion over its selections and weightings, and the timing thereof, subject to the limitations set forth in the Index Rules. Selections that run counter to market trends will result in the Index level declining or not increasing in line with the market or market benchmarks. The Index allows the Index Allocation Agent to select components for the synthetic portfolio tracked by the Index from an extensive and diverse set of Component Underlyings. The Index allows the Index Allocation Agent to select the timing of the selections and weightings, within certain constraints. The Index Allocation Agent may select a bullish position on a few market sectors and concentrate synthetic investments in those sectors. Such concentrations may run counter to market trends and result in losses.

The Index Rules permit extensive periodic rebalancings, but do not require any minimum number of rebalancings. A strategy that involves multiple rebalancings could incur synthetic trading costs against the performance of the synthetic portfolio that act as a drag on performance, without accruing gains related to tracking market trends. A strategy that involves few rebalancings could fail to react to or capitalize on market trends and lead to underperformance.

As a result, the success of the Index will depend largely upon the abilities of the Index Allocation Agent and certain key individuals employed by the Index Allocation Agent. There can be no assurance that the Index Allocation Agent will be successful in the rebalancing of the Index and the loss of one or more such key individuals may have a material adverse impact on the performance of the Index. The Notes are therefore intended to be held only by the Index Allocation Agent and by discretionary accounts managed by the Index Allocation Agent.

The Index Allocation Agent will have no duties under the Notes to any third parties

The Index Allocation Agent does not have any obligations or duties to the beneficial owners of the Notes under the terms of the Notes. The Notes are therefore intended to be held only by the Index Allocation Agent and by discretionary accounts managed by the Index Allocation Agent, to whom the Index Allocation Agent may have duties under law or contract. It is also not expected that any instrument, other than the Notes, will reference the performance of the Index. The Index is intended to be personal to the selections and expertise of the Index Allocation Agent.

The termination of the Index Allocation Agent could adversely affect the Notes

Upon the termination of the Index Allocation Agent in accordance with the provisions of the Index Allocation Agreement, no successor Index Allocation Agent will be appointed and the Index shall cease to exist. This may have an adverse effect on anyone who has taken economic exposure to the Index by investing in any product that references it. In addition, in the event the Index ceases to exist, a Mandatory Amendment Event shall be deemed to exist, with the risks set forth above under "*Possible Mandatory Early Amendment*".

The Index Allocation Agent would cease to serve as such in the event of the termination of the Index Allocation Agreement. A termination could occur for a variety of reasons, including by discretionary choice of the Index Allocation Agent or the Index Sponsor, as well as due to events that could bear negatively on the reputation of either party, due to non-performance by either party or due to a change in business on the part of the Index Allocation Agent. See "Schedule 1 – Index Summary Description - Republica AFAP Dynamic Index (Fourth Series)" attached to the Final Terms.

The Index may not achieve its target volatility, which could adversely affect the performance of the Index

Although the Index is calculated based on a formula that potentially reduces exposure to the selected synthetic portfolio of Component Underlyings in order to conform to a retrospectively-based 10% target volatility observation constraint, there can be no assurance that the Index's actual volatility will not exceed the target level. The Index's volatility constraint mechanism is based on an analysis of backward-looking data over a finite period, and such data may understate or overstate current or future volatility and will likely be unable to avoid exposure to severe volatility in the event of brief, pronounced market swings. Higher than expected volatility exposes the Index to potentially large losses and lower than expected volatility could limit gains by limiting the Index's exposure to the synthetic portfolio during periods of market upswings.

The Index is subject to two key volatility control mechanisms, either or both of which could reduce the Index's exposure to the selected synthetic portfolio of Component Underlyings

The Index's calculation formula employs an exposure limitation formula containing two key volatility control mechanisms: one that reviews the simulated historical volatility of the synthetic portfolio tracked by the Index, and one that reviews the actual observed volatility of the Index itself. These mechanisms could have the effect of substantially limiting, or even eliminating the Index's exposure to the synthetic portfolio, including for an extended period of time, possibly for the remaining duration of the Notes.

The Index's calculation formula employs a two stage volatility constraint mechanism in the form of an "exposure" variable, which is calculated as the product of two factors, corresponding to the two stages in the mechanism.

The first factor – corresponding to the first stage in the volatility control mechanism - modulates daily the Index's exposure to the synthetic portfolio of Component Underlyings selected by the Index Allocation Agent based on simulated historical volatility of the synthetic portfolio tracked by the Index. This first stage factor could range from 0% to 150% based on the Index formula's review of simulated volatility experienced by the weighted components of the synthetic portfolio, relative to the 10% volatility target.

The Index calculation formula also contains a second factor – corresponding to the second stage volatility control mechanism - which daily monitors the realized volatility of the Index itself (i.e., without regard to the simulated observed volatility of the particular synthetic portfolio then tracked by the Index) over the period since the Index Base Date (*i.e.*, the date of the initial launch of the Index on or about the original issuance date of the Notes) to such day. This mechanism works by comparing the rate at which the Index is realizing volatility to the rate at which it would be expected to realize volatility were it delivering the exact target volatility of 10%. This second stage adjustment term is called the 'volatility adjustment factor' and is capped at 100%.

This second stage volatility control function could limit the Index's exposure to the synthetic portfolio slightly or substantially. For example, if the Index experienced severe and consistent volatility above the target rate early in its life, the second stage limitation would reduce the exposure of the Index to the synthetic portfolio for an extended time, potentially even for the remaining term of the Notes. Note that this second mechanism (unlike the first) will not serve to increase volatility if the realized volatility of the Index is lower than the target volatility, it can serve only to reduce the Index's exposure to the synthetic portfolio. However, whether or not this second factor does in fact modulate the volatility of the Index will depend on the realized volatility of the Index over the entire period since the Index Base Date, there may be periods in which the realized volatility of the Index substantially exceeds its target without the second stage factor triggering an exposure reduction. For example, if the Index experienced volatility consistently below the target rate early in its life, the second stage limitation would not serve to reduce the exposure of the Index to the synthetic portfolio later in the term of the Notes, even if the Index was then realizing an interval of volatility above its target, so long as the longitudinal experienced volatility of the Index did not exceed the 10% target over its full term.

Due to the exposure constraints describe above, the selections of the Index Allocation Agent may not be fully reflected by the Index's performance. Substantial or complete allocation to the USD Cash Component Underlying could occur for an extended period and/or for multiple intervals. Volatility implies substantial market movements. Such movements can be positive or negative. The volatility control mechanisms described above could prevent gains as well as losses in the level of the Index. If and to the extent that the Index's exposure to the synthetic portfolio is reduced or eliminated, the Noteholders will effectively receive less or none of the potential benefit of the Index Allocation Agent's investment strategy and the return on the Notes will be limited, potentially to the return of principal in USD terms at maturity without the potential for a market-based premium.

Even if the market value of the Component Underlyings changes, the market value of the Index or the Notes may not change in the same manner

Owning the Notes is not the same as owning each of the Component Underlyings composing the Index. Accordingly, changes in the market value of the Component Underlyings may not result in a comparable change in the market value of the Index or the Notes.

The Index Allocation Agent may take short positions against the Component Underlyings

The Index Rules permit the Index Allocation Agent to allocate negative (*i.e.*, "short") weights to each Component Underlying Proposed Synthetic Allocations for Component Underlyings may allocate (i) a negative weight down to -50% with respect to a Component Underlying in the Component Type, "EM Equity", "FX EM Tracker" or "Commodity", and down to -100% with respect to a Component Underlying in the Component Type, "DM Equity", "DM Bond", "EM Bond", "FX G10 Tracker" and "Government Bond Tracker". A negative weight with respect to a Component Underlying is a traditional economically "short" position against that Component Underlying. Therefore, synthetic allocations may achieve long or short exposures with respect to these Component Underlyings. Short positions are intended to perform inversely to asset values, meaning that an increase in the value of a reference asset will lead to a loss in a short position, and vice versa. Because there is no theoretical limit to the value of a given asset, potential losses on a short position are theoretically infinite. Losses in short positions can occur rapidly, and any such losses could reduce the level of the Index and thus the return on and value of the Notes.

The Index comprises notional assets and liabilities

The exposures to the Component Underlyings are purely notional and will exist solely in the records of the Index maintained by the Index Calculation Agent. There is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. Consequently, a Noteholder will not have any claim against any of the reference assets which comprise the Index.

The Index is new and will perform based on the selections of the Index Allocation Agent, and thus its performance cannot be anticipated

The Index has no performance history, and thus there is no historical record available to evaluate its past performance. Moreover, the Index will be weighted and rebalanced based on the Index Allocation Agent's discretionary choices over time. No assurance can be given that the selection methodologies employed by the Index Allocation Agent in relation to allocating weights to the Component Underlyings will result in the Index matching or outperforming any market benchmark, and the Index could lag such benchmarks, including by experiencing long-term declines.

The Index level will be reduced due to subtractions in respect of embedded cost factors and partial recognition of distributions received from ETFs

The formula for the calculation of the daily Index level includes subtractions that will reduce the calculated level of the Index. These subtractions include the effect of the Index's "excess return" nature, and also represent charges and deemed synthetic costs associated with the carrying and rebalancing a notional portfolio of the Component Underlyings, which include synthetic carry costs and synthetic transaction costs. The Index calculation formula also includes a deduction from distributions deemed received on exchange traded fund Component Underlyings corresponding to an assumed withholding tax rate.

The Index employs an "excess return" mechanism within its calculation formula for each Component Underlying that represents a hypothetical "funded investment". For each such "funded" Component Underlying -- generally exchange traded funds -- this mechanism acts to subtract an assumed cash return from the Component Underlying's return to derive a cash-excess figure. To the extent that a Component Underlying is not a foreign currency or bond futures tracker, it is associated with an assumed cash component, the performance of which will be used as the basis for the subtraction.

The Index Level will be reduced each day by application of an "Adjustment Cost" subtraction included in the calculation formula. This Adjustment Cost will be based on (i) the change in exposure to the Component Underlyings included in the synthetic portfolio tracked by the Index on the relevant Index Calculation Day; (ii) the Weight assigned to each such Component Underlying within the synthetic portfolio; (iii) the Carry Cost and Transaction Cost associated with that Component Underlying; and (iv) the Index Level. The Adjustment Cost will be calculated and deducted on a daily basis from the Index Level.

The Index Rules impose a specified Carry Cost on each Component Underlying held in the synthetic basket. The Carry Costs are for:

- US Exchange-Traded Components, 0.70 -1.25%;
- Government Bond Trackers, 0.70%;
- FX G10 Trackers, 0.35%;
- FX EM Trackers, 0.45% - 1.25%;
- Commodity Futures Trackers, 0.35% - 0.70%;
- Equity Futures Trackers, 0.30% - 0.35%;
- Equity Indices, 0.70%;
- UCITS Funds, -0.55% - 0.46%; and
- The USD Cash Component Underlying, 0.25%.

Where a range is specified, the Carry Cost varies within the Component Underlyings within the Component Category. (Certain of the UCITS Funds are associated with negative Carry Cost. Where the synthetic basket contains such UCITS Funds, the notional performance of the UCITS Fund will be increased by the negative Carry Cost.)

The magnitude of the carry cost will be a function of the change in exposure to the Component Underlyings included in the synthetic portfolio tracked by the Index on the relevant Index Calculation Day (as defined in the Index Rules). In a very low interest rate environment, the carry cost could overwhelm the return of the USD Cash Component Underlying and lead to a negative return on that portion of the synthetic portfolio that is deemed un-invested or invested in cash, thus reducing the level of the Index to the extent of that negative return. The strategy of the Index Allocation Agent and/or the effect of the volatility control mechanisms described below could result in the Index being deemed invested substantially or largely in cash for extended periods.

The Index Rules also deduct a Transaction Cost applied to any change in the exposure of the Index to a Component Underlying (other than the USD Cash Component Underlying). Changes in exposure incurring the Transaction Cost will occur due to (i) the removal or inclusion of each Component Underlying as part of a Rebalancing or (ii) due to the adjustment of the Index's day-to-day exposure to the synthetic portfolio via the "Exposure Modulation" process described above. The Transaction Cost is 0.02% with respect to each Component Underlying, other than the Component Underlyings contained in the Component Category FX EM Trackers to which a Transaction Cost of 0.10% - 0.30% is applied, depending on the individual Component Underlying. The Index Return will be further reduced because the Index calculation formula takes into account for synthetic reinvestment 70%, rather than 100%, of the value of distributions made by US Exchange-Traded Components held in the synthetic portfolio tracked by the Index.

Because exposure variations will be automatic based on the algorithmic volatility control features of the Index, such synthetic transaction costs may be incurred even if the Index Allocation Agent pursues a strategy of infrequent rebalancings. The magnitude of the transaction costs will be a function of (i) the change in exposure to the Component Underlyings included in the synthetic portfolio tracked by the Index on the relevant Index Calculation Day (as defined in the Index Rules) and (ii) the Specified Weight (as defined in the Index Rules) assigned to each such Component Underlying within the selected synthetic portfolio of Component Underlyings tracked by the Index.

The Index Return will be further reduced because the Index calculation formula takes into account for a deduction of 30% of the value of distributions, if any, made by ETFs held in the synthetic portfolio tracked by the Index, which simulates the application of an assumed withholding tax.

These subtractions described above will reduce the performance of the Index, relative to that which would have been realized if they had not been made. The subtractions that correspond to assumed costs are set by the Index calculation formula and will not be reduced if actual observed costs are less than the assumed costs incorporate in to the Index calculation formula. The aggregate amount of the reductions cannot be predicted in advance but will depend on the selections made by the Index Allocation Agent because, among other factors, carry and transaction costs vary by Component Underlying category. Greater cumulative transaction costs will be incurred if rebalancings occur frequently. Allocations to Component Underlyings that are exchange traded funds that make distributions will be subject to larger potential reductions through the Index calculation formula's deduction of simulated withholding taxes at the assumed rate.

The Notes linked to the Index incur risks associated with leveraged investments

The Index level calculation formula includes an "exposure" factor that modulates exposure to the synthetic portfolio tracked by the Index. The exposure cap is 150%, implying a maximum leveraged exposure to the synthetic portfolio of 1.50. If and when the exposure factor is set at a level greater than 100%, the Index can be considered as having leveraged exposure to the synthetic portfolio. Leveraged exposure will magnify the effect of gains and losses on the synthetic portfolio on the Index level, particularly during periods of sharply increased losses incurred during periods of sharply increased volatility.

The exposure factor will be adjusted daily based on observed volatility relative to the 10% volatility target. At any given time, exposure to the synthetic portfolio could be substantially less than 100%.

The Notes themselves provide leveraged exposure to the Index through the Participation Rate of 563%

(or 5.63-to-1.00). Such leveraged exposure through the Participation Rate will magnify the effect of the Index's performance on the Notes' return. Such leveraged exposure will also generally imply a lower initial secondary market value for the Notes relative to a similar instrument without such leveraged exposure.

The Index Allocation Agent may add and substitute the Component Underlyings comprising the Index, and Component Underlyings may be removed or replaced in the event of the occurrence of certain extraordinary events

The Index Allocation Agent, subject to the restrictions contained in the Index Rules may add or substitute the Component Underlyings of the Index. The Index Allocation Agent will have complete discretion regarding the timing and nature of any such additions and substitutions, subject to constraints set forth in the Index Rules. It is likely to be the case that the Index Allocation Agent would make an addition or substitution with a view to allocating a portion of the synthetic portfolio tracked by the Index to the new Component Underlying. Therefore, the performance of the Index will likely be affected materially by any such additions and substitutions.

Following the occurrence of certain extraordinary events with respect to a Component Underlying as provided in the Rules, the affected Component Underlying may be either replaced by a substitute or removed from the Index. A replacement Component Underlying would be chosen by the Index Sponsor, exercising discretion. If no replacement is deemed available, the Index may continue without the removed Component Underlying or any replacement.

The addition or removal of a Component Underlying may affect the performance of the Index, and therefore, the return on the Notes, as the replacement Component Underlying may perform significantly better or worse than the affected Component Underlying. Circumstances in which such a replacement may occur include the replacement by a Component Underlying by a successor, a failure by the relevant sponsor of the Component Underlying to calculate its value for an extended period, the cancellation of a Component Underlying, a material change in the composition or calculation of a Component Underlying or a change in law. See "Schedule 1 – Index Summary Description - Republica AFAP Dynamic Index (Fourth Series)" attached to the Final Terms. No assurance can be provided that such an event will not occur to one or more of the initial Component Underlyings.

Constraints on the hedging activities of the Index Sponsor's affiliates may have the effect of limiting the ability of the Index Allocation Agent to allocate the synthetic portfolio tracked by the Index in the manner in which it would prefer

The Index Rules provide that proposed synthetic allocations chosen by the Index Allocation Agent in connection with a synthetic portfolio rebalancing will be disallowed to if any of such allocation would cause the occurrence of a Synthetic Exposure Event. A Synthetic Exposure Event will occur if a proposed allocation may, as determined by the Index Sponsor, cause a hypothetical hedging entity undertaking hedging transactions in respect of the Index (and in light of its other unrelated hedging and investment activities) exceed holdings limits under applicable laws (or under related compliance policies established to comply with laws imposing holdings limits). The hypothetical hedging entity may be subject to holdings limits (measured as a percentage of public market capitalization) under bank regulatory, securities and similar laws that could, in light of its overall hedging and investment activities, constrain hedging activities in respect of the Index and lead to the potential occurrence of Synthetic Exposure Events. This allocation restriction disallowing allocations that would cause a Synthetic

Exposure Event could cause the Index Allocation to be limited in its allocations, particularly in its ability to concentrate its allocations among few Component Underlyings or to allocate exposure to Component Underlyings having relatively small market capitalizations.

Component Underlyings that are exchange traded funds tracking U.S. equity indices may be removed if the tracked indices cease to qualify for an exemption from U.S. regulations regarding withholding taxes on dividend equivalent payments

As of the Issue Date of the Notes, none of the Component Underlyings selected by the Index Allocation Agent for inclusion within the synthetic portfolio referenced by the Index are "Underlying Securities" as defined in the regulations of the United States Treasury promulgated under Section 871(m) of the United States Internal Revenue Code of 1986, as amended. However, certain of the Component Underlyings are exchange traded funds that are intended to track broad-based U.S. stock indices. Such indices are currently deemed to be qualified indices under such regulations, which has the effect of exempting the related exchange traded funds from the scope of such U.S. Treasury regulations. In the future, these indices could lose such status. In that event, the Index Sponsor may remove the related exchange traded fund from the Component Underlyings. The Index Sponsor may select a substitute for such Component Underlying, if a substitute is available or the Index Sponsor may remove the affected exchange traded fund without replacement. In such event, the Index Allocation Agent would be unable to include in the Index exposures to the broad based U.S. stock indices tracked by such exchange traded funds, potentially limiting or eliminating U.S. equity representation within the Index.

Limitations on rebalancings may prevent the Index Allocation Agent from fully implementing its strategy

The Index Rules place limits on the ability of the Index Allocation Agent to rebalance the synthetic portfolio tracked by the Index. Rebalancings are limited to 36 in each 12-month period commencing on the Index Base Date and each anniversary thereof. Rebalancings also may not occur on consecutive Index Calculation Days. These limits could prevent the Index Allocation Agent from rebalancing the synthetic portfolio tracked by the Index in response to changes in market conditions or to changes in its investment outlook. The limitations on rebalancings may also incentivize the Index Allocation Agent to alter its selections relative to those it would make if rebalancings were not subject to limits and it could make selections in view of a shorter time horizon between rebalancings. These limitations could adversely affect the performance of the Index, and thus the return on the Notes.

The Index formula's "rebalance lag" may prevent the selections of the Index Allocation Agent from becoming effective immediately or concurrently, and could introduce exposure risk

Rebalancing selections made by the Index Allocation Agent to rebalance the synthetic portfolio among the Component Underlyings will become effective (i.e., implemented as part of the synthetic portfolio through deemed purchase or sale) on a timing basis set under the Index Rules. For certain of the Component Underlyings which are traded in jurisdictions other than the U.S., the relevant market for such Component Underlying may be closed during the regular trading day in the U.S and thus such Component Underlying cannot be rebalanced in the Index on the current date in the United States on which the Index Allocation Agent submits its rebalance selections. Consequently, the closing prices at which the various Component Underlyings are rebalanced may be derived from different market times and on different calendar days.

For example, if the Index Allocation Agent were to submit a timely and valid rebalance request on a day eligible for a rebalancing under the Index Rules, the Component Underlyings that are listed on United States exchanges would be deemed to be purchased or sold (as applicable) at the Closing Prices for such Component Underlyings on that day. However, any Component Underlyings deemed purchased or sold, as applicable, that trade primarily outside the United States would be deemed rebalanced at the close of the relevant primary trading market on the next good trading day, which could be the next following New York trading day, and could be significantly later (due to the occurrence of weekends, market holidays or disrupted days in the relevant non-U.S. market). The Index formula contains a 'Rebalance Lag Adjustment' to account for market moves between the calendar day on which a rebalancing commences and that on which it is completed. The market price of Component Underlyings trading outside the United States could drop substantially during a "lag" period, and the risk of market drops would be exacerbated if a lag period is of extended duration or coincides with a period of market volatility. Note that the "lag" period could be a period during which the synthetic portfolio effectively has weightings above (and perhaps substantially above) the various weight maximums, pending synthetic sales of Component Underlyings subject to lag.

The timing lag and related adjustments could adversely affect the performance of the Index, and thus the return on the Notes, through delays in the implementation of the Index Allocation Agent's strategy and exposure to market risks during lag periods.

The Index's exposure to exchange traded funds will be subject to liquidity, market capitalization and volatility constraints which may reduce the ability of the Index Allocation Agent to fully-implement its strategy

The Index Allocation Agent's ability to allocate the synthetic portfolio tracked by the Index to exchange traded funds may be limited by liquidity criteria that could limit or eliminate the potential to notionally allocate the synthetic portfolio, in connection with rebalancings, to exchange traded funds that have low average daily trading values. All exchange traded funds proposed to be included in the synthetic portfolio upon a rebalancing will be tested against liquidity-based criteria (using average daily trading value as a liquidity proxy). Exchange traded fund weightings will be limited, potentially to zero, if sufficient liquidity is not observed. The liquidity-based criteria will be applied to all exchange traded funds proposed to be included in the synthetic portfolio upon a rebalancing, without exception for those exchange traded funds already included in the synthetic portfolio, which could effectively require that any rebalancing involve an allocation away from relatively illiquid exchange traded funds incumbent to the synthetic portfolio.

In addition, an exchange traded fund may be removed from the synthetic portfolio tracked by the Index and eliminated as a potential Component Underlying for future selection, if they experience reductions in certain liquidity, market capitalization or volatility measures. Such circumstances could reduce the ability of the Index Allocation Agent to gain exposure to particular equity or bond markets through the Index, with this risk potentially highest in smaller markets and emerging markets. To the extent such markets experience appreciation, the inability to gain the full level of desired exposure to them could harm the performance of the Index and thus reduce the return on the Notes.

Correlation of performances among the Component Underlyings may reduce the performance of the Notes

Performances amongst the Component Underlyings may become highly correlated from time to time during the term of the Notes, including, but not limited to, a period in which there is a substantial decline in a particular sector or asset type represented by the selected synthetic portfolio of Component Underlyings tracked by the Index and which has a higher weighting in the Index relative to any of the other sectors or asset types, as determined by the Index Allocation Agent's selection. High correlation during periods of negative returns among Component Underlyings representing any one sector or asset type which have a substantial percentage weighting in the Index could limit any return on the Notes.

The Index is an excess return index that tracks the return of the synthetic portfolio of Component Underlyings over the return from a short-term cash investment

The Index is an "excess return" index that tracks the return of the synthetic portfolio of Component Underlyings on an excess return basis. This means that, with respect to Component Underlyings in the synthetic portfolio that are deemed 'funded' (generally, exchange traded funds, equity indices, UCITS funds and commodities), the performance of an investment in a Cash Component (the JPMorgan Cash Index USD 3 Month for U.S. dollar denominated Component Underlyings and the J.P. Morgan Cash Index Euro Currency 3 Month for euro denominated Component Underlyings) is subtracted from the performance of such Component Underlyings. This subtraction will reduce the return of the Index relative to an analogous "total return" index not subject to such a subtraction.

In addition, the effect of the excess return subtraction results in any portion of the synthetic portfolio allocated to the J.P. Morgan Three-Month USD Cash Index effectively not being invested for purposes of performance calculations. Accordingly, the Index will underperform another index that tracks the return of the same synthetic portfolio but does not deduct the return of a short-term cash investment from any component returns.

The excess return subtraction described above will not apply to Component Underlyings that are deemed "unfunded", generally consisting of foreign exchange futures trackers, bond futures trackers and equity index futures trackers.

The Notes will be subject to currency exchange risk

Most of the equity and bond exchange traded funds that are initial Component Underlyings are intended to track equity or debt securities that trade or are denominated in non-U.S. currencies. The exchange traded funds that track these securities, however, trade in USD, and changes in the relative value of currencies will likely affect the USD trading price of the relevant exchange traded funds.

The initial Component Underlyings contain a large number of foreign exchange or foreign exchange futures trackers that are intended to track the relative value of currencies. These Component Underlyings are directly exposed to currency exchange rate risk.

An investor's net exposure to non-U.S. currencies will depend on the relative weight of the component securities in the relevant Component Underlyings that are denominated in or exposed to each such currency or to changes in the relative value of each such currency. If, taking into account such weighting, the USD strengthens against such currencies, the value of the relevant Component Underlyings will be adversely affected and the Supplemental Payment Amount, if any, due under the Notes may be reduced. Conversely, the Index Allocation Agent may select Component Underlyings as part of a strategy to capitalize on positive movements in the USD against non-U.S. currencies, which would expose the Index to losses should the USD decline in value against selected non-U.S. currencies.

Higher future prices of the futures contracts that are a direct or indirect reference asset of a Component Underlying (the "Futures Based Component Underlyings") relative to their current prices may decrease the amount payable at maturity

The Futures Based Component Underlyings directly or indirectly reference futures contracts on various underlyings such as government bonds, currencies and equities. Unlike a direct investment in equities, which typically represents an entitlement to a continuing stake in a corporation, futures contracts normally specify a certain date for delivery of the referenced underlying asset. As the exchange traded futures contracts that compose the Futures Based Component Underlyings approach expiration, they are replaced pursuant to the methodology of the Futures Based Component Underlying by futures contracts that have a later expiration. Thus, for example, a futures contract purchased and held in August may specify a September expiration. As time passes, the contract expiring in September is replaced by a contract with a December expiration. This process is referred to as "rolling." If the market for these contracts is (putting aside other considerations) in "backwardation," that is where the prices are lower in the distant delivery months than in the nearer delivery months, the sale of the September contract would take place at a price that is higher than the price of the December contract, thereby creating a "roll yield." While some futures contracts have historically exhibited consistent periods of backwardation, backwardation will most likely not exist at all times. Moreover, certain futures, including bond futures, have historically traded in "contango" markets. Contango markets are those in which the prices of contracts are higher in the distant delivery months than in the nearer delivery months. The presence of contango could result in negative "roll yields," which could adversely affect the level of the bond futures Component Underlyings and, therefore, the level of the Index and the return on, and value of, the Notes.

The Futures Based Component Underlyings may underperform a cash purchase of the reference underlyings, potentially by a significant amount.

Because the Futures Based Component Underlyings are made up of futures contracts, there will be a cost to "rolling" the contracts forward as the index sells the current contracts and then adds the next quarter's contracts. As some futures contracts tend to have positively sloping forward curves, commonly known as "contango," the Futures Based Component Underlyings' returns experience a negative drag when they sell cheaper contracts and purchases more expensive contracts. As a result, it is likely that the Futures Based Component Underlyings will underperform a direct investment in a similarly weighted basket of reference underlyings over the life of the Notes.

The sponsors of the indices tracked by exchange traded funds may adjust sponsored indices in ways that adversely affects their levels, and such index sponsors have no obligation to consider the interests of the beneficial owners of the Notes in taking such actions

Index sponsors are responsible for calculating and maintaining their sponsored indices. Index sponsors can add, remove or substitute the securities underlying their sponsored indices or make other methodological changes that could change the level or performance of their sponsored indices. The Component Underlyings that are exchange traded funds and equity futures trackers generally track reference indices. Noteholders should realize that changes made to these indices may affect the performance of the related Component Underlyings. An index sponsor could also alter, discontinue or suspend calculation or dissemination of its sponsored index. Any of these actions could adversely affect the return on, and value of, the Notes. Index sponsors have no obligation to consider the interests of Noteholders in calculating or revising their sponsored indices.

The Notes are subject to significant risks associated with fixed-income securities, including interest rate-related risks and credit risks

Fifteen of the initial Component Underlyings are underlyings that attempt to track the performance of indices composed of fixed income securities or are indices that track the performance of futures on fixed income securities. Investing in the Notes linked indirectly to these Component Underlyings (identified under the "DM Bond" and "Government Bond Tracker" Weight Categories) differs significantly from investing directly in bonds to be held to maturity as the values of such Component Underlyings change, at times significantly, during each trading day based upon the current market prices of the relevant bonds. The market prices of these bonds are volatile and significantly influenced by a number of factors, particularly the yields on these bonds as compared to current market interest rates and the actual or perceived credit quality of the issuer of these bonds.

The prices of fixed-income linked Component Underlyings may be significantly influenced by the creditworthiness of the issuers of the bonds included or referenced in such indices. The bonds underlying the fixed-income linked Component Underlyings may have their credit ratings downgraded, including a downgrade from investment grade to non-investment grade status, or have their credit spreads widen significantly. Following a ratings downgrade or the widening of credit spreads, some or all of the underlying bonds may suffer significant and rapid price declines. These events may affect only a few or a large number of the underlying bonds. Fixed-income linked Component Underlyings linked to high yield bonds (commonly known as “junk bonds”) may be more volatile than higher-rated securities of similar maturity. High yield securities may also be subject to greater levels of credit or default risk than higher-rated securities.

Fixed-income linked Component Underlyings linked to government bonds will be subject to risks inherent in investments in such bonds, including sovereign defaults or restructurings and the deterioration of sovereign credit. Government bonds may also be subject to currency risks and risks related to inflation in local currency terms.

An investment in the Notes is subject to risks associated with sovereign bonds

Several of the Component Underlyings reference the value of sovereign bonds. Investments in such securities involve risks associated with the securities markets in government bonds, including risks of volatility, credit downgrades, negative interest rates, inflation, restructuring and default. The prices of such securities markets may be affected by political, economic, financial and social factors in such markets, including changes in a country’s government, economic and fiscal policies, currency exchange laws or other laws or restrictions.

Some or all of these factors may influence the value of the relevant Component Underlyings, and therefore, the Index. The impact of any of the factors set forth above may enhance or offset some or all of any change resulting from another factor or factors. The future performance of such Component Underlyings cannot be predicted based on their historical performance. The value of any such Component Underlying may decrease, resulting in a decrease in the level of the Index, which may adversely affect the value of the Notes.

An investment in the Notes is subject to risks associated with non-U.S. securities markets, including emerging markets

Several of the Component Underlyings track non-U.S. stock indices, including emerging markets stocks. Investments in securities linked to the value of non-U.S. securities involve risks associated with the securities markets in those countries, including risks of volatility in those markets, governmental intervention in those markets and cross shareholdings in companies in certain countries. There is generally less publicly available information about companies in some of these jurisdictions than about U.S. companies that are subject to the reporting requirements of the Securities and Exchange Commission (the "**SEC**"), and generally non-U.S. companies are subject to accounting, auditing and financial reporting standards and requirements and securities trading rules different from those applicable to U.S. reporting companies.

Many of the Component Underlyings focus on a single developed or emerging market, which subjects the applicable Component Underlying to single country risk. Several of the Component Underlyings focus on single countries that have experienced pronounced economic and political instability. The equity markets of such countries can be subject to substantial volatility and losses in value.

The prices of equity securities in non-U.S. markets may be affected by political, economic, financial and social factors in such markets, including changes in a country's government, economic and fiscal policies, currency exchange laws or other laws or restrictions. Moreover, the economies of these countries may differ favorably or unfavorably from the economy of the United States in such respects as growth of gross national product, rate of inflation, capital reinvestment, resources and self - sufficiency. These countries may be subjected to different and, in some cases, more adverse economic environments.

The economies of emerging market countries in particular face several concerns, including relatively unstable governments that may present the risks of nationalization of businesses, restrictions on foreign ownership and prohibitions on the repatriation of assets, and which may have less protection of property rights than more developed countries. These economies may also be based on only a few industries, be highly vulnerable to changes in local and global trade conditions and may suffer from extreme and volatile debt burdens or inflation rates. In addition, local securities markets may trade a small number of securities and may be unable to respond effectively to increases in trading volume, potentially making prompt liquidation of holdings difficult or impossible at times.

Certain of the "developed market" equity markets represented by the Component Underlyings also carry risks relating to political, economic and monetary instability within the European Union, which could adversely affect the values of the represented equities.

Risks relating to Component Underlyings that are Exchange-Traded Components (ETFs)

Many of the Component Underlyings are ETFs. The policies of the investment advisor of each ETF concerning the calculation of the applicable ETF's net asset value, additions, deletions or substitutions of securities in the applicable ETF and manner in which changes affecting the applicable index tracked by the applicable ETF are reflected in such ETF could affect the trading price of the ETF's shares, and therefore, the level of the Index. The share prices of for an ETF could also be affected if the ETF's investment advisor were to change its policies, for example, by changing the manner in which it calculates net asset value, or by discontinuing or suspending calculation or publication of net asset value

The investment objective of an ETF may be to provide investment results that, before expenses, correspond generally to the price and yield performance of a target index. However, an ETF will not generally achieve perfect correlation to index returns because, for example, an ETF may hold assets other than the securities comprising the applicable index and because the share price of an ETF reflects the reduction of fund assets resulting from the accrual of fees and expenses and the payment of distributions, if any. Furthermore, there is the risk that the investment strategy of any of an ETF's investment advisor, the implementation of which is subject to a number of constraints, may not produce the intended results.

The Notes are subject to risks associated with investments in equity indices

The Component Underlyings of the Index include equity indices. The equity indices include indices that seek to implement particular investment strategies or theses. There can be no assurance that any such index will accomplish its strategy objectives or that any such strategy will achieve returns that are superior to any alternative investment. With respect to each Component Underlying that is an equity index, the policies of the applicable index sponsor the calculation of such index, additions, deletions or substitutions of the assets that comprise the index and the manner in which changes affecting such assets are reflected in the index and could affect the level of the index and, therefore, the Index level and the market value of, and amounts payable under, the Notes.

Certain of the equity indices that are Component Underlyings are proprietary indices for which the index sponsor is the Index Sponsor or an affiliate. The index sponsors of such proprietary equity indices may make determinations regarding such indices that are adverse to the holders of the Notes and such entities will be under no obligation to consider the interests of the holders of the Notes in making such determinations. Such proprietary indices may seek to implement an investment strategy or thesis, and there can be no assurance that the proprietary index will be able to fulfill its strategy or that such strategy will be successful on a relative or absolute basis.

The Notes are subject to significant risks associated with investments in currency exchange markets, including markets in emerging market currencies

The Index's Component Underlyings include foreign currency exchange trackers categorized as FX G10 Trackers and FX EM Trackers, as so identified under the "Weight Category" column in the table listing the initial Component Underlyings included in Schedule 1 attached to the Final Terms. The levels of these Component Underlyings will fluctuate based on market movements in currency foreign exchange markets. Such markets can experience pronounced volatility which could lead to losses in the associated Component Underlyings resulting in a decline in the level of the Index.

The Component Underlyings include foreign currency exchange trackers that track the value of various emerging market currencies in U.S. dollar terms, identified as FX EM Trackers under the "Weight Category" column in the table listing the initial Component Underlyings included in Schedule 1 attached to the Final Terms. Emerging market currencies may be subject to high volatility and to political and economic risks related to the relevant emerging markets. The imposition of exchange controls or the occurrence of devaluations could suddenly and adversely affect the value of such Component Underlyings.

The Notes are subject to risks associated with mutual fund investments

The Component Underlyings of the Index include shares of European UCITS mutual funds. Investments in UCITS funds are associated with risks including:

- Management fees and other costs reduce fund performance:
- Inaccurate asset valuations by the fund or another entity on its behalf;
- The Fund's strategy may not be successful in achieving its investment objective;
- The Fund may be subject to illiquidity;
- Lack of control and reliance on the third party management company of the Fund;
- Reliance on key personnel;
- A change in the composition or discontinuance of the Fund could adversely affect the market value of the Securities;
- Non-investment grade credit risk and emerging markets credit risk;
- Investment concentration risk;
- Risks related to a fund's use of leverage; and
- Risk of the occurrence of Lock-In Events.

None of the UCITS Funds that are Component Underlyings are not involved in the offering of the Notes in any way, and will have no obligation to consider an investor's interests as an investor in the Notes Securities in taking any actions that might adversely affect the Index.

The Index Sponsor or its affiliates may enter into trading arrangements, fee rebate arrangements or other commercial arrangements with respect to hedging activities in respect of the Index's allocation to a European UCITS fund. The holders of the Notes will not be the beneficiaries of any such arrangements, and the termination or modification of such arrangements could lead to the termination of a UCITS fund as a Component Underlying.

The Index is associated with risks related to commodity investments

The Component Underlyings comprising the Index include commodities and instruments that track the value of commodities. Commodity investments are subject to high volatility and may experience precipitous drops or spikes in prices due to economic, political and other relevant factors.

Potential conflicts of interest

There is a potential for conflicts of interest in the structure and operation of the Index and by virtue of the normal business activities of the Index Sponsor, Index Calculation Agent, the Index Allocation Agent and any of their affiliates or any of its or its affiliates' respective directors, officers, employees or agents.

The Index Allocation Agent, the Index Calculation Agent, Index Sponsor and their respective affiliates are acting or may act in a number of capacities in connection with the Index. The Index Allocation Agent, the Index Calculation Agent and the Index Sponsor (and, as applicable, their respective affiliates) acting in such capacities each shall have only the duties and responsibilities expressly set out in the Index Rules in respect of the relevant capacity and shall not, by virtue of its or any of its respective affiliates acting in any other capacity, be deemed to have other duties or responsibilities or be deemed to hold a standard of care other than as expressly provided with respect to each such capacity.

Various potential and actual conflicts of interest may arise from the overall investment activity of the Index Allocation Agent, the Index Calculation Agent, the Index Sponsor and their respective affiliates. The Index Allocation Agent, the Index Calculation Agent, the Index Sponsor and their respective affiliates and/or their directors, officers and employees may each have, or may each have had, interests or positions, or may buy, sell or otherwise trade positions, in or relating to the Index and/or Component Underlyings, or may have invested, or may engage in transactions relating to any Component Underlyings, either for its own account or the account of others, may publish research reports or otherwise express views with respect to such transactions or regarding expected movements in price or volatility of the Component Underlyings (which may or may not be consistent with any decision by the Index Allocation Agent to include a particular Component Underlying in the Index). The Index Allocation Agent, the Index Calculation Agent, Index Sponsor and their respective affiliates may act with respect to such transactions in the same manner as if the Index did not exist and without regard to whether any such action might have an adverse effect on the Index. Such transactions may or may not be different from the transactions referenced by the Index and may involve events or circumstances which result in a need for the Index Calculation Agent or Index Sponsor to exercise its discretion under the Index Rules, for example, in relation to Extraordinary Events. Such activity may, or may not, affect the value of the Component Underlyings, but those considering taking any economic exposure by reference to the Index should be aware that a conflict may arise.

The Index has been developed with the possibility of any entity affiliated with the Index Sponsor issuing, entering into, promoting, offering or selling transactions or investments (structured or otherwise) linked, in whole or in part, to the Index and hedging such transactions or investments in any manner that they see fit. Accordingly, it should be assumed that the Index Rules will be analyzed from this point of view.

Additionally, the Index Allocation Agent, the Index Calculation Agent, Index Sponsor and their respective affiliates may serve as agent or underwriter for other issuances of potential Component Underlyings and are or may be engaged in trading, brokerage and financing activities, as well as providing investment banking and financial advisory services.

Affiliates of the Index Sponsor and the Dealer serve as the sponsor and calculate the level of the initial cash components of the Index and several of the futures trackers and equity indices that are Component Underlyings. Such affiliates will have no obligation to take into account the interests of the beneficial owners of the Notes in making decisions that affect the value of such Component Underlyings (and thus, potentially, the level of the Index), and their interests may be adverse to those of the beneficial owners of the Notes because an affiliate of the Index Sponsor and Dealer will enter into a swap transaction with the Issuer which will generally require such affiliate to pay to the Issuer an amount calculated by reference to the performance of the Index to hedge the Issuer's payment obligations under the Notes.

Final Terms dated 26 February 2019

International Bank for Reconstruction and Development
Issue of USD 100,000,000 Notes linked to BRL/USD FX and the Republica AFAP Dynamic Index (Fourth Series) due 2031
under the Global Debt Issuance Facility

Terms used herein shall be deemed to be defined as such for the purposes of the terms and conditions (the "**Conditions**") set forth in the Prospectus dated May 28, 2008. This document constitutes the Final Terms of the Notes described herein and must be read in conjunction with such Prospectus. Certain additional investment considerations are set forth under "Additional Risk Factors" above.

SUMMARY OF THE NOTES

1.	Issuer:	International Bank for Reconstruction and Development ("**IBRD**")
2.	(i) Series Number:	100650
	(ii) Tranche Number:	1
3.	Specified Currency or Currencies (Condition 1(d)):	United States Dollars ("**USD**")
4.	Aggregate Nominal Amount:	
	(i) Series:	USD 100,000,000
	(ii) Tranche:	USD 100,000,000
5.	Issue Price:	100 per cent. (%) of the Aggregate Nominal Amount (USD 100,000,000)
6.	(i) Specified Denominations (Condition 1(b)):	USD 1,000,000 and integral multiples thereof
	(ii) Calculation Amount (Condition 5(j)):	USD 1,000,000
7.	Issue Date:	1 March 2019
8.	Maturity Date (Condition 6(a)):	7 March 2031 (the "**Scheduled Maturity Date**"), unless either the BRL Valuation Date is postponed beyond the Scheduled BRL Valuation Date pursuant to Term 18 and/or the Final Index Determination Date is postponed beyond the Scheduled Final Index Determination Date pursuant to Term 19, in which case the Maturity Date shall be postponed as described therein. For the avoidance of doubt, no additional amounts shall be payable by IBRD in the event that the Maturity Date is postponed beyond the Scheduled Maturity Date due to the postponement of the BRL Valuation Date beyond the Scheduled BRL Valuation Date due to the operation of Term 18 or the postponement of the Final Index Determination Date beyond the Scheduled Final Index Determination Date due to the operation of Term 19.

9.	Interest Basis (Condition 5):	Zero Coupon (further particulars specified below)
10.	Redemption/Payment Basis (Condition 6):	Currency-linked Redemption and Index-linked Redemption as set out in Term 17
11.	Change of Interest or Redemption/Payment Basis:	As set out in Term 22 upon the occurrence of a Mandatory Amendment Event
12.	Call/Put Options (Condition 6):	Not Applicable
13.	Status of the Notes (Condition 3):	Unsecured and unsubordinated
14.	Listing:	Luxembourg Stock Exchange
15.	Method of distribution:	Non-syndicated

PROVISIONS RELATING TO INTEREST (IF ANY) PAYABLE

16.	Zero Coupon Note Provisions (Condition 5(c)):	Applicable for the purposes of Condition 5(c) only, provided that the Early Redemption Amount of the Notes shall be calculated as set out in Term 23
	(i) Amortization Yield (Condition 6(c)(ii)):	Solely for the purposes of calculating the Rate of Interest for any overdue principal under Condition 5(c), the Amortization Yield shall equal 2.85% per annum
	(ii) Day Count Fraction (Condition 5(l)):	Solely for the purposes of calculating the Rate of Interest for any overdue principal under Condition 5(c), the Day Count Fraction shall be 30/360
	(iii) Any other formula/basis of determining amount payable:	Not Applicable

PROVISIONS RELATING TO REDEMPTION

17.	Final Redemption Amount of each Note (Condition 6):	If no Mandatory Amendment Event has occurred, the Final Redemption Amount, calculated per Calculation Amount, payable on the Maturity

Date shall be an amount in USD calculated by the Calculation Agent in accordance with the following:

BRL Linked Principal Amount + Supplemental Payment Amount

If a Mandatory Amendment Event has occurred, the Final Redemption Amount per Calculation Amount payable on the Maturity Date will be an amount in USD equal to the BRL Linked Principal Amount.

Whereby,

"**BRL**" means Brazilian Real, being the lawful currency of the Federative Republic of Brazil ("**Brazil**");

"**BRL Linked Principal Amount**" means an amount in USD, calculated per Calculation Amount, equal to the BRL Amount divided by the BRL/USD FX Rate;

"**Index**" means the Republica AFAP Dynamic Index (Fourth Series) (Bloomberg Ticker Symbol: JPZMBRL1 <Index>);

"**Index Return**" means the performance of the Underlying Index from the Initial Index Level to the Final Index Level expressed as a percentage and calculated as follows:

(Final Index Level – Initial Index Level) / Initial Index Level;

"**Mandatory Amendment Event**" has the meaning given to it in Term 22;

"**Participation Rate**" means 563%; and

"**Supplemental Payment Amount**" means an amount in USD equal to the greater of (i) the product of the Calculation Amount, the Index Return and the Participation Rate, and, (ii) zero;

(See Terms 20 and 21 for additional definitions)

18. BRL Related Disruption Events:

If a Disruption Event has occurred or exists on the Scheduled BRL Valuation Date, the BRL Valuation Date will be the next following Business Day, and provided further that, if the Disruption Event continues to exist on such next following Business Day, the BRL Valuation Date shall be such Business Day.

If an Unscheduled Holiday occurs on a day that would have been a Scheduled BRL Valuation Date but for the occurrence of such Unscheduled Holiday, the BRL Valuation Date will be the next following Business Day, provided, however, if an Unscheduled Holiday occurs on any day that would have been a BRL Valuation Date but for the occurrence of such Unscheduled Holiday, other than the Scheduled BRL Valuation Date, such Unscheduled Holiday shall be the BRL Valuation Date.

If an Unscheduled Holiday occurs between a BRL Valuation Date and the Maturity Date or the date upon which the Notes become due and payable as provided in Condition 9, as applicable, such BRL Valuation Date shall not be subject to any postponement or adjustment.

The Calculation Agent shall notify the Issuer as soon as reasonably practicable if the USD/BRL FX Rate for such BRL Valuation Date is to be determined as specified in this Term 18.

In the event the BRL Valuation Date is postponed beyond the Scheduled BRL Valuation Date as set forth above, then the Maturity Date shall be postponed beyond the Scheduled Maturity Date by one Business Day for each day that the Scheduled BRL Valuation Date is postponed as set forth above, provided that (i) any such postponement will be concurrent with any postponement of the Maturity Date caused by operation of Term 19, and (ii) the Maturity Date shall be the later of such dates as postponed by operation of Terms 18 and 19.

For the avoidance of doubt, no additional amounts shall be payable by IBRD in the event that the Maturity Date is postponed beyond the Scheduled Maturity Date due to postponement of the BRL Valuation Date beyond the Scheduled BRL Valuation Date due to the operation of this Term 18.

19. Index Disruption Events:

If the Final Index Determination Date occurs on a day on which the Calculation Agent has determined that an Index Disruption Event (as defined below in Term 21) has occurred or is continuing, then the Final Index Determination Date will be postponed beyond the Scheduled Final Index Determination Date until the next succeeding Trading Day on which the Calculation Agent determines that an Index Disruption Event has neither occurred nor is continuing; provided that if the Final Index Determination Date has not occurred on or before the fifth Business Day following the Scheduled Final Index Determination Date, (the "**Valuation Cut-off Date**"), the Final Index Level will be determined by the Calculation Agent in its sole and absolute discretion on the next Trading Day after the Valuation Cut-off Date (such Trading Day being the "**Postponed Final Index Determination Date**").

In the event the Final Index Determination Date is postponed beyond the Scheduled Final Index Determination Date as set forth above, then the Maturity Date shall be postponed beyond the Scheduled Maturity Date by one Business Day for each day that the Final Index Determination Date is postponed as set forth above, provided that (i) any such postponement will be concurrent with any postponement of the Maturity Date caused by operation of Term 18, and (ii) the Maturity Date shall be the later of such dates as postponed by operation of Terms 18 and 19.

For the avoidance of doubt, no additional amounts shall be payable by IBRD in the event that the Maturity Date is postponed beyond the

Scheduled Maturity Date due to postponement of the Final Index Determination Date beyond the Scheduled Final Index Determination Date by operation of this Term 19.

20. Additional Definitions - General:

"**Brazil Business Day**" means a day (other than a Saturday or a Sunday) on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in any of Brasilia, Rio de Janeiro and Sao Paulo.

"**BRL Amount**" means BRL 3,736,000 (equivalent to USD 1,000,000 at the BRL/USD exchange rate on the Trade Date of BRL 3.7360 per USD 1.00).

"**BRL Linked Principal Amount**" has the meaning set forth in Term 17.

"**BRL/USD FX Rate**" (or "**BRL09**") means, in respect of the BRL Valuation Date, the closing BRL/USD offered foreign exchange rate for USD, expressed as the amount of BRL per one USD, for settlement in two Business Days, reported by the Banco Central do Brasil on its website (www.bcb.gov.br; see "Cotações e boletins"), or any succeeding rate source, by approximately 1:15 p.m. São Paulo time on such BRL Valuation Date, as it appears on Thomson Reuters Screen Page "BRBZ", provided that in the event of any inconsistency between such rate on Banco Central do Brasil's website and such rate on Thomson Reuters Screen Page "BRLUSDPTAX= CBBR", the closing BRL/USD offered foreign exchange rate on Banco Central do Brasil's website shall prevail.

If the BRL/USD FX Rate cannot be obtained in the manner referenced in the prior paragraph on such BRL Valuation Date because of a Disruption Event, then the BRL/USD FX Rate on such BRL Valuation Date shall be determined by the Calculation Agent by requesting five leading reference banks (selected by the Calculation Agent at its sole discretion) in the U.S. interbank market for their mid-market quotations of the USD/BRL spot exchange rate at approximately 4:00 p.m. New York time on such date.

The highest and the lowest of such quotations will be disregarded and the arithmetic mean (rounded to the nearest four decimal places with 0.00005 being rounded upwards) of the remaining three quotations will be the USD/BRL FX Rate, provided that, if two or more such quotations are the highest quotations, then only one of such highest quotations shall be disregarded, and if two or more such quotations are the lowest quotations then only one of such lowest quotations shall be disregarded.

If only four quotations are so provided, then the USD/BRL FX Rate shall be the arithmetic mean (rounded to the nearest four decimal places with 0.00005 being rounded upwards) of such quotations without regard to the highest and lowest values quoted, and provided further that, if two or more such quotations are the highest quotations, then only one of such highest quotations shall be disregarded, and if two or more such quotations are the lowest quotations then only one of such lowest quotations shall be disregarded.

If fewer than four quotations but at least two quotations can be obtained then the USD/BRL FX Rate shall be the arithmetic mean (rounded to the nearest four decimal places with 0.00005 being rounded upwards) of the quotations actually obtained by the Calculation Agent.

If only one quotation is available, the Calculation Agent may determine that such quotation shall be the USD/BRL FX Rate, and if no such quotation is available or if the Calculation Agent determines in its sole discretion that no suitable reference bank who is prepared to quote is available, the USD/BRL FX Rate shall be determined by the Calculation Agent acting in good faith and in a commercially reasonable manner, having taken into account relevant market practice.

"**BRL Valuation Date**" means 21 February 2031 (the "**Scheduled BRL Valuation Date**"), provided however, that, in the event of an Unscheduled Holiday or there has occurred or is subsisting on such date a Disruption Event, the BRL Valuation Date shall be determined by the Calculation Agent in accordance with the provision set forth under Term 18 "BRL Related Disruption Events".

"**Business Day**" means a day (other than a Saturday or a Sunday), which is both (i) a Brazil Business Day and (ii) a day on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in London and New York.

"**Calculation Agent**" means JPMorgan Chase Bank, N.A. ("**JPMorgan**"). For the avoidance of doubt, the Calculation Agent shall make determinations in respect of the Notes in good faith.

"**Disruption Event**" means, in the sole and absolute determination of the Calculation Agent, any action, event or circumstance whatsoever which from a legal or practical perspective makes it impossible for the Calculation Agent to obtain the BRL/USD FX Rate on a BRL Valuation

Date or the occurrence of an Exchange Rate Divergence on such BRL Valuation Date.

"**EMTA**" means EMTA, Inc., the trade association for the Emerging Markets, or any successor.

"**EMTA Members**" are EMTA members in good standing at the time of the submission of the notice.

"**Exchange Rate Divergence**" means, upon notice to the EMTA membership, that, in the reasonable and independent judgment, as notified to EMTA in accordance with the EMTA BRL Exchange Rate Divergence Procedures, of not fewer than seven Unaffiliated EMTA Members that are recognized market makers active in the BRL/USD foreign exchange market (no fewer than four of which shall be active participants in the onshore BRL/USD spot market), the BRL/USD FX Rate (BRL 09) (following a split of the exchange rates in Brazil or otherwise) no longer reflects the then-prevailing BRL/USD spot rate for standard-size wholesale financial transactions involving the exchange of BRL for USD delivered outside of Brazil. For the avoidance of doubt, an affiliate of the Calculation Agent may be among the EMTA Members that have provided notification to EMTA.

"**Supplemental Payment Amount**" has the meaning set forth in Term 17.

"**Thomson Reuters Screen Page**" means, when used in connection with any designated page, the display page so designated on Thomson Reuters service, or (i) any successor display page, other published source, information vendor or provider that has been officially designated by the sponsor of the original page or source; or (ii) if the sponsor has not officially designated a successor display page, another published source, service or provider (as the case may be), the successor display page, other published source, service or provider, if any, designated by the relevant information vendor or provider (if different from the sponsor).

"**Unaffiliated EMTA Members**" means EMTA members that are not within the same business group, under common control, or are not related corporate entities.

"**Unscheduled Holiday**" means a day that is not a Brazil Business Day and the market was not aware of such fact (by means of a public announcement or by reference to other publicly available information) until a time later than 9:00 a.m. Sao Paulo time two Brazil Business Days prior to the Scheduled BRL Valuation Date.

21. Additional Definitions with regard to the Index:

"**Closing Level**" on any Trading Day will equal the official closing level of the Index published by the Index Sponsor at the regular weekday close of trading on that Trading Day.

"**Final Index Level**" means the Index's Closing Level observed for the Final Index Determination Date, as determined by the Calculation Agent. In the event that the Index's Closing Level for the Final Index Determination Date is corrected by the Index Calculation Agent within three New York Business Days of the Final Index Determination Date, such corrected value will be the Final Index Level.

"**Final Index Determination Date**" means, in respect of the Maturity Date, 21 February 2031 (the "**Scheduled Final Index Determination Date**"), subject to postponement pursuant to the provisions set forth under Term 19 "Index Disruption Events".

"**Index Calculation Agent**" means Solactive A.G., or any successor thereto designated as such pursuant to the Index Rules.

"**Index Disruption Event**" as determined by the Calculation Agent in its sole and absolute discretion, means with respect to the Final Index Determination Date, either that the Closing Level for the Index for such day was not published by the Index Calculation Agent or the Index Sponsor or such date is not a Trading Day.

"**Index Rules**" means the Republica AFAP Dynamic Index (Fourth Series) Index Rules, as in effect from time to time. A copy of the Index Rules as currently constituted is attached hereto as Schedule 2.

"**Index Sponsor**" means J.P. Morgan Securities LLC. or any successor corporation or other entity that (a) is responsible, as Index Sponsor under the Index, for setting and reviewing the rules and procedures and the methods of calculation and adjustments, if any, related to the Index and (b) announces (directly or through an agent, including the Index Calculation Agent) the level of the Index on a regular basis for each Trading Day.

"**Initial Index Level**" means 100 (namely, the Index's Closing Level on the Initial Index Determination Date).

"**Initial Index Determination Date**" means 14 February 2019.

"**New York Business Day**" means a day (other than a Saturday or a Sunday) on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in New York.

"**Trading Day**" means each day on which each of the following exchanges are scheduled to open for trading in their regular trading session: (i) the Nasdaq, and (ii) the New York Stock Exchange.

"**Trade Date**" 14 February 2019.

22. Mandatory Amendment Event:

In the event of the occurrence of a Mandatory Amendment Event, the Issuer shall be required to pay an amount (which may be zero) as soon as practicable after the Mandatory Amendment Date, calculated per Calculation Amount, equal to the Early Contingent Payment Amount calculated as of the Accelerated Final Index Determination Date. For the avoidance of doubt, the occurrence of a Mandatory Amendment Event shall not alter the Issuer's obligation to pay the BRL Linked Principal Amount per Calculation Amount on the Maturity Date.

The term "**Mandatory Amendment Event**" means the occurrence of any of the following events on or before the Final Index Determination Date:

(i) an Index Cancellation;

(ii) an Index Modification;

(iii) an Index Allocation Agreement Termination;

(iv) the Associated Swap Transaction is terminated under the terms of the ISDA Master Agreement pursuant to which such Associated Swap Transaction was entered into as the result of the occurrence of an "Event of Default" or "Credit Event Upon Merger" or "Additional Termination Event" thereunder with respect to which the Swap Counterparty is the sole "Defaulting Party" or "Affected Party", as applicable;

(v) the Associated Swap Transaction is terminated by the Swap Counterparty as a result of an Additional Disruption Event; or

(vi) the Associated Swap Transaction is terminated under the terms of the ISDA Master Agreement pursuant to which such Associated Swap Transaction was entered into, other than under the circumstances set forth in paragraph (iv) or (v) above.

Upon the occurrence of a Mandatory Amendment Event:

(i) in the event that the relevant Mandatory Amendment Event is an event described in paragraph (i), (ii), (iii), (v) or (vi) thereof, the Calculation Agent; or

(ii) in the event that the Mandatory Amendment Event is an event described in paragraph (iv) thereof, the Issuer,

shall forthwith give a notice (the "**Mandatory Amendment Notice**") to the Issuer (where applicable), the Global Agent and the Noteholders of the occurrence of a Mandatory Amendment Event and the Early Contingent Payment Amount shall be determined as set out below.

The "**Early Contingent Payment Amount**" per Calculation Amount shall be an amount in USD, equal to the greater of (i) the value of the equity option embedded in each Note (the "**Equity Component**") per Calculated Amount of the Notes expressed in USD, as determined by the Valuation Agent, and (ii) zero. For the calculation of the value of the Equity Component, the Valuation Agent: (i) will take into account (a) the observed Index Level as of the Accelerated Final Index Determination Date or the most recent Trading Day preceding such date, (b) the Initial Index Level, and (c) an implied volatility equal to the Volatility Component, an implied dividend yield of 0.25% and interest rates of 0% and (ii) may take into account prevailing market prices and/or proprietary pricing models (including the cost to the Issuer of unwinding any hedging arrangements related to such embedded equity option, as determined by the Valuation Agent in its sole and absolute discretion) as of the Accelerated Final Index Determination Date, or where these pricing models may not yield a commercially reasonable result, such estimates as at which it may arrive in a commercially reasonable manner and the Associated Costs as of the Accelerated Final Index Determination Date

The Valuation Agent will make the determinations set forth in the previous paragraphs in good faith and in a commercially reasonable manner.

Where "**Volatility Component**" means the product of (x) 10% and (y) the Volatility Adjustment Factor (as defined in the Index Rules) as of the Accelerated Final Index Determination Date or, if such date is not a Trading Day, the most recent Trading Day.

In addition, the following terms shall have the following meanings:

"**Accelerated Final Index Determination Date**" means in the event that the relevant Mandatory Amendment Event consists of an event set forth in:

(A) paragraphs (i), (ii) and (iii) of the definition of Mandatory Amendment Event, the date on which such Mandatory Amendment Event occurred, as determined by the Valuation Agent;

(B) paragraphs (v) and (vi) of the definition of Mandatory Amendment Event, the date on which such Mandatory Amendment Event is effective; and

(C) paragraph (iv) of the definition of Mandatory Amendment Event, the last Business Day of the month that precedes the month in which such Mandatory Amendment Event occurs.

"**Additional Disruption Event**" means each of a Change in Law, a Hedging Disruption or an Increased Cost of Hedging.

“**Associated Cost**” means an amount determined by the Calculation Agent in its reasonable discretion equal to the sum of (without duplication) all costs (including, without limitation, cost of funding), losses, expenses, tax and duties incurred by the Issuer in connection with the termination and liquidation of any hedging arrangements related to the Equity Component.

“**Associated Swap Transaction**” means the swap transaction entered into in connection with the issue of the Notes between the Issuer and the Swap Counterparty and documented under the ISDA Master Agreement dated as of March 10, 2010 (as amended from time to time) between the Swap Counterparty and the Issuer (the “**ISDA Master Agreement**”).

“**Change in Law**” means that, the Calculation Agent determines in good faith that on or after the Trade Date (A) due to the adoption of or any change in any applicable law, regulation or rule (including, without limitation, any tax law), or (B) due to the promulgation of or any change in the interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, regulation, rule or order (including, without limitation, as implemented by the U.S. Commodity Futures Trading Commission or exchange or any exchange or trading facility or any action taken by a taxing authority), it is (or will be prior to the Maturity Date) contrary to such law, rule, regulation or order for the Swap Counterparty or any affiliate thereof (individually or collectively, and including their respective successors) to hold, acquire or dispose of any relevant asset it deems necessary to hedge the price risk associated with the Associated Swap Transaction (in whole or in part).

“**Hedging Disruption**” means that the Calculation Agent determines that the Swap Counterparty or any affiliate thereof is unable, after using commercially reasonable efforts, to (A) acquire, establish, re-establish, substitute, maintain, unwind or dispose of any transaction(s) or asset(s) that it deems necessary to hedge the price risk of entering into and performing its obligations with respect to the Associated Swap Transaction, or (B) realize, recover or remit the proceeds of any such transaction(s) or asset(s).

“**Increased Cost of Hedging**” means that the Calculation Agent determines that the Swap Counterparty or any affiliate thereof would incur a materially increased (as compared with circumstances existing on the Trade Date) amount of tax, duty, expense or fee (other than brokerage commissions) to (A) acquire, establish, re-establish, substitute, maintain, unwind or dispose of any transaction(s) or asset(s) it deems necessary to hedge the price risk of entering into and performing its obligations with respect to the Associated Swap Transaction, or (B) realize, recover or remit the proceeds of any such transaction(s) or asset(s), provided that any such materially increased amount that is incurred solely due to the deterioration of the creditworthiness of the Swap Counterparty or such affiliate shall not be deemed an Increased Cost of Hedging.

"**Index Allocation Agent**" means Republica AFAP, S.A. The Index Allocation Agent is party to the Index Allocation Agreement, and is not affiliated with the Issuer or the Index Sponsor.

"**Index Allocation Agreement**" means the agreement between the Index Allocation Agent and J.P. Morgan Securities LLC, dated as of the Trade Date, under the terms of which the Index Allocation Agent independently provides certain selections in accordance with the terms of the Index Rules in connection with the Index Allocation Agent's investment management activities and strategy for itself or for certain accounts managed by it.

"**Index Allocation Agreement Termination**" means the Index Allocation Agreement is terminated for any reason.

"**Index Cancellation**" means the Index Sponsor discontinues publication of the Index because the Index is terminated, including, without limitation, due to the termination of the Index Allocation Agreement between the Index Allocation Agent and the Index Sponsor.

"**Index Modification**" means (i) a material change is made to the formula for, or the method of, calculating the Index or any other material modification is made to the Index, other than a modification prescribed in the Index Rules for the purpose of maintaining the Index in the event of changes in constituent Component Underlyings (as defined in the Index Rules) and other routine events; and (ii) the Associated Swap Transaction is terminated due to such material change or modification.

"**Mandatory Amendment Date**" means either:

(i) if the Mandatory Amendment Event consists of a termination of the Associated Swap Transaction set forth in paragraph (iv) of the definition of Mandatory Amendment Event, the 5th Business Day after the date upon which the Mandatory Amendment Event is effective; or

(ii) if the Mandatory Amendment Event consists of any other Mandatory Amendment Event, the 10th Business Day after the date on which the Mandatory Amendment Notice (as defined above) is received or deemed received by the Issuer and Global Agent (whatever date is later).

"**Swap Counterparty**" means JPMorgan Chase Bank, National Association.

"**Valuation Agent**" means (x) in respect of a Mandatory Amendment Event that consists of a termination of the Associated Swap Transaction set forth in paragraph (iv) of the definition of Mandatory Amendment Event, the Issuer, and (y) in respect of any other Mandatory Amendment Event, the Calculation Agent.

23. Early Redemption Amount (Condition 6(c)):	The Early Redemption Amount payable in respect of each Note, upon it becoming due and payable as provided in Condition 9, shall be determined by the Calculation Agent taking into account the value of the zero coupon portion thereof and the value of the Equity Component thereof (except where the Notes become due and payable, as provided in Condition 9 after the occurrence of a Mandatory Amendment Event). The value of the zero-coupon component of the Notes shall be BRL Linked Principal Amount, taking into account the prevailing BRL/USD exchange rate and discounted at a rate per annum equal to the Amortization Yield specified under Term 16(i). The value of the Equity Component of the Notes will be determined based on the methodology specified under the definition of "Early Contingent Payment Amount" in Term 22, except that the residual value of the Equity Component shall be based on relevant prevailing rates as of the last Business Day of the month that precedes the month in which the relevant default occurs.

GENERAL PROVISIONS APPLICABLE TO THE NOTES

24. Form of Notes (Condition 1(a)):	Registered Notes: Global Registered Certificate available on Issue Date
25. New Global Note:	No
26. Financial Centre(s) or other special provisions relating to payment dates (Condition 7(h)):	London, New York and Brazil
27. Governing law (Condition 14):	English
28. Other final terms: Disclaimer of Liabilities and Representations by Prospective Investors of the Notes:	(i) A description of the Index is attached to these Final Terms as Schedule 1. A full copy of the Index Rules is attached to these Final Terms as Schedule 2. A description of the Component Underlyings of the Index is set forth in Schedule 3. All information contained in these Final Terms as well as all information set forth in Schedules 1, 2 and 3 regarding the Index, its make-up, method of calculation and changes in its components, is derived from, and based solely upon, information provided by the Index Sponsor and is for informational purposes only and should not be relied upon by the Noteholder or any prospective investor. As such, neither the Issuer nor the Global Agent assumes any responsibility for the accuracy or completeness of such information, or for such information being up to date. In addition, neither Issuer nor the Global Agent accepts responsibility for the calculation or other maintenance of, or any adjustments to, the Index. Neither IBRD nor the Global Agent will have any responsibility for errors or omissions in calculating or disseminating information regarding the Index or as to modifications, adjustments or calculations by the Index Sponsor, Index Calculation Agent or Index Allocation Agent in order to arrive at the value of the Index. The most recent version of the Index Rules will be available upon request from the Index Sponsor.

(ii) Neither IBRD nor the Global Agent will have any responsibility for the contents of the Index Allocation Agreement or for the choices and allocations made by the Index Allocation Agent thereunder.

(iii) The Index is the exclusive property of J.P. Morgan Securities LLC. IBRD has a non-exclusive right to use the Index as an underlying for the Notes and the Associated Swap Transaction.

(iv) By investing in the Notes each investor of the Notes represents that:

(a) it has made its own independent decision to invest in the Notes based upon its own judgment and upon advice from such advisers as it has deemed necessary. It is not relying on any communication (written or oral) of the Issuer, the Index Sponsor, the Calculation Agent, or the Dealer as investment advice or as a recommendation to invest in the Notes, it being understood that information and explanations related to the terms and conditions of the Notes shall not be considered to be investment advice or a recommendation to invest in the Notes. No communication (written or oral) received from the Issuer, the Calculation Agent, the Index Sponsor or the Dealer shall be deemed to be an assurance or guarantee as to the expected results of the investment in the Notes;

(b) it is capable of assessing the merits of and understanding (on its own behalf or through independent professional advice), and understands and accepts the terms and conditions and the risks of the investment in the Notes, including but not limited to the risks set out in "Additional Risk Factors" above (which are not, and do not intend to be, exhaustive). It is also capable of assuming, and assumes, the risks of the investment in the Notes;

(c) it has fully considered the market risk associated with an investment linked to the Index. Each Noteholder understands that none of the Issuer, the Calculation Agent, the Dealer, the Index Sponsor or the Index Calculation Agent purports to be a source of information on market risks with respect to the Index. Each Noteholder confirms that it has read and understood the information relating to the Index contained in the Schedules to these Final Terms, which have been provided for information purposes only and are not to be used or reproduced for any other purpose or used or considered as any advice or recommendation with respect to such Index;

(d) it understands and acknowledges that the performance of the Index is based on the periodic selections of the Index Allocation Agent and hence the Notes are intended to be purchased and held by the Index Allocation Agent and by discretionary accounts managed by the Index Allocation Agent only; and

(e) it understands that the information relating to the Index contained in the Schedules to these Final Terms are only up to date as of the date of these Final Terms, and that such

	information in the Index Rules may be amended from time to time.
DISTRIBUTION	
29. (i) If syndicated, names of Managers and underwriting commitments:	Not Applicable
(ii) Stabilizing Manager(s) (if any):	Not Applicable
30. If non-syndicated, name of Dealer:	J.P. Morgan Securities plc
OPERATIONAL INFORMATION	
31. ISIN Code:	XS1954567043
32. Common Code:	195456704
33. Any clearing system(s) other than Euroclear Bank S.A./N.V., Clearstream Banking, *société anonyme* and The Depository Trust Company and the relevant identification number(s):	Not Applicable
34. Delivery:	Delivery against payment
35. Registrar and Transfer Agent (if any):	Citibank, N.A., London Branch
36. Additional Paying Agent(s) (if any):	Not Applicable
37. Intended to be held in a manner which would allow Eurosystem eligibility:	No

GENERAL INFORMATION

IBRD’s most recent Information Statement was issued on September 17, 2018.

USE OF PROCEEDS

Supporting sustainable development in IBRD's member countries

The net proceeds from the sale of the Notes will be used by IBRD to finance sustainable development projects and programs in IBRD's member countries (without being committed or earmarked for lending to, or financing of, any particular projects or programs). IBRD's financing is made available solely to middle-income and creditworthy lower-income member countries who are working in partnership with

IBRD to eliminate extreme poverty and boost shared prosperity, so that they can achieve equitable and sustainable economic growth in their national economies and find sustainable solutions to pressing regional and global economic and environmental problems. Projects and programs supported by IBRD are designed to achieve a positive social impact and undergo a rigorous review and internal approval process aimed at safeguarding equitable and sustainable economic growth.

IBRD integrates five cross cutting themes into its lending activities helping its borrowing members create sustainable development solutions: climate change; gender; jobs; public-private partnerships; and fragility, conflict and violence.

IBRD's administrative and operating expenses are covered entirely by IBRD's various sources of revenue (net income) consisting primarily of interest margin, equity contribution and investment income (as more fully described in the Information Statement).

CONFLICT OF INTEREST

J.P. Morgan Securities LLC will serve as the Index Sponsor of the Index. As a result, the determinations made by J.P. Morgan Securities LLC in its discretion as Index Sponsor may affect the level of the Index and, in turn, amounts payable under the Notes. J.P. Morgan Securities LLC and certain of its affiliates are also the sponsors or calculation agents under certain indices included as potential components of the basket referenced by the Index. In all such cases, neither J.P. Morgan LLC nor any of its affiliates has any obligation to consider the Noteholders' interests in taking any action or making any determination that might adversely affect the level of the Index or the Notes.

JPMorgan, the parent company of J.P. Morgan Securities LLC, will be Calculation Agent under the Notes and will also be IBRD's counterparty in a related swap transaction entered into by IBRD in order to hedge its obligations under the Notes. The existence of such multiple roles and responsibilities for JPMorgan creates possible conflicts of interest. For example, the amounts payable by JPMorgan to IBRD under the related swap transaction are expected, as of the Issue Date, to be calculated on the same basis as the amounts payable by IBRD under the Notes. As a result, the determinations made by JPMorgan in its discretion as Calculation Agent for the Notes may affect the amounts payable by JPMorgan under the related swap transaction, and, in making such determinations, JPMorgan may have economic interests adverse to those of the Noteholders. The Noteholder understands that although IBRD will enter into the related swap transaction with JPMorgan as swap counterparty in order to hedge its obligations under the Notes, IBRD's rights and obligations under the related swap transaction will be independent of its rights and obligations under the Notes, and Noteholders will have no interest in the related swap transaction or any payment to which IBRD may be entitled thereunder.

LISTING APPLICATION

These Final Terms comprise the final terms required for the admission to the Official List of the Luxembourg Stock Exchange and to trading on the Luxembourg Stock Exchange's regulated market of the Notes described herein issued pursuant to the Global Debt Issuance Facility of International Bank for Reconstruction and Development.

RESPONSIBILITY

IBRD accepts responsibility for the information contained in these Final Terms.

Signed on behalf of IBRD:

By:

....

Name: Mahendra Singh
Title:

Duly authorized

SCHEDULE 1

INDEX SUMMARY DESCRIPTION -

REPUBLICA AFAP DYNAMIC INDEX (FOURTH SERIES)

Set out below is a summary description of Republica AFAP Dynamic Index (Fourth Series) (the "Index"). This summary description is by its nature limited and an overview for informational purposes only and should not be relied upon by the Noteholder or any prospective investor in the Notes. This summary description is qualified in all respects by reference to the full text of The Republica AFAP Dynamic Index (Fourth Series) Index Rules, which are published by the Index Sponsor and available from the Index Sponsor upon request (the "Index Rules"). The Index Rules, as published by the Index Sponsor from time to time, and not this summary description, will govern the operation and calculation of the Index. Potential purchasers of the Notes are urged to read carefully the Index Rules in their entirety. All disclosure contained in this document or referred to in this document regarding the Index, including, without limitation, the Index Rules, its make-up, method of calculation and changes in its components, is derived from, and based solely upon, information provided by the Index Sponsor. As such, the Issuer does not assume any responsibility for the accuracy or completeness of such information or any duty to update such information. In addition, the Issuer accepts no responsibility for the calculation or other maintenance of, or any adjustments to, the Index.

Capitalised terms used and not defined in this Schedule 1 or in the Final Terms have the meanings given to them in the Index Rules.

The Index; Constitution and Governance

The Republica AFAP Dynamic Index (Fourth Series) (the "**Index**") was developed by J.P. Morgan Securities LLC, which acts as Index Sponsor for the Index (in such capacity the "**Index Sponsor**"). The Index is rules-based, meaning that the operation and calculation of the Index is governed by the terms of the Index Rules. Under the Index Rules, various responsibilities are accorded to the Index Sponsor, the Index Calculation Agent and the Index Allocation Agent.

The Index is the intellectual property of J.P. Morgan Securities LLC (the "**Index Sponsor**"), and J.P. Morgan Securities LLC reserves all rights with respect to its ownership of the Index. The Issuer has been granted a license for the use of the Index for the purposes of the Notes.

The Index Sponsor has certain key responsibilities and rights with respect to the Index. These responsibilities and rights include:

- documentation of the Index Rules,
- certain rights to make determinations regarding the occurrence and continuation of Market Disruption Events and Extraordinary Events (as defined below) with respect to Component Underlyings eligible for inclusion in the synthetic portfolio tracked by the Index;
- determination of whether rebalancing requests, including Proposed Synthetic Allocations, are timely submitted and comply with the Allocation Restrictions, and may thus be implemented in connection with requested Index component rebalancings;

- determination of whether corrections to the level of the Index may be made;
- determination of whether proposed additional Component Underlyings and proposed Component Underlying substitutions comply with the Index Rules as they relate to Component Underlying additions and substitutions, respectively;
- the right to terminate and replace the Index Calculation Agent;
- the right to amend the Index Rules in accordance with the amendment provisions of the Index Rules; and
- the right to remove (and the ability to replace) Component Underlyings in the event of the occurrence of a Component Continuing Disruption Event, material change or change in law affecting a Component Underlying.

The Index Sponsor is obliged to act in good faith and in a commercially reasonable manner in making determinations under the Index Rules.

Solactive A.G. will be the initial calculation agent for the Index (the "**Index Calculation Agent**"). The Rules require the Index Calculation Agent to calculate the Index Level in respect of each Index Calculation Day. The Index Calculation Agent is also responsible for determining (i) subject to the prior agreement of the Index Sponsor or at the direction of the Index Sponsor, if a Market Disruption Event or certain dilutive events have occurred, (ii) whether any input necessary to perform any calculations under the Index Rules is not published or otherwise made available by the relevant exchange or input sponsor to the Index Calculation Agent, and any related consequences or adjustments in accordance with the Index Rules, and (iii) subject to the prior agreement of the Index Sponsor, whether certain corrections to the Index Level should be made. The Index Sponsor may terminate and replace the Index Calculation Agent.

The Index Sponsor and Index Calculation Agent shall act in good faith and in a commercially reasonable manner in making determinations, interpretations and calculations pursuant to the Index Rules.

The Index Allocation Agent is appointed pursuant to the Index Rules (in such capacity, the "**Index Allocation Agent**"). The Index Allocation Agent will act under an Index Allocation Agreement with the Index Sponsor pursuant to which the Index Allocation Agent has the right and obligation to make choices with respect to the composition of the Index. The initial Index Allocation Agent is Republica AFAP, S.A., an entity not affiliated with the Issuer or the Index Sponsor.

The Index is Notional; Excess Return-Based; and Exposure Modulated

Notional Concept. The Index is a notional, dynamic basket that tracks the performance, on an "excess return" basis, of a synthetic portfolio consisting, initially, of components within the following Component Types:

- U.S.-listed exchange traded funds ("**US Exchange Traded Components**");
- Futures trackers each tracking a particular asset within an asset category, including:
    - o government bonds ("**Government Bond Trackers**"),
    - o developed market currencies against the U.S. dollar ("**FX G10 Trackers**"),

- emerging market currencies against the U.S. dollar ("**FX EM Trackers**"),
- commodities ("**Commodities Futures Trackers**"), and
- developed market equity indices and emerging market equity indices ("**Equity Futures Trackers**");

- Equity indices, including indices constructed to seek to implement an investment thesis or strategy ("**Equity Indices**");
- Mutual funds registered under the European Undertakings for the Collective Investment of Transferable Securities (UCITS) framework ("**UCITS Funds**"); and
- A U.S. dollar cash tracker index and a European Union euro cash tracker index (each a, "**Cash Component**").

Each potential component of the Index is referred to as a "**Component Underlying**".

The initial 158 Component Underlyings span a diverse range of asset classes and geographic region exposures delivered through a variety of investment vehicles. A table listing each of the initial Component Underlyings is provided below, and a description of the Component Underlyings is provided in Schedule 3. The Component Types also include the type "Commodity Index", which is not used as of the Index Base Date, and may not be added by request of the Index Allocation Agent. However, a commodity index could be added to replace a Component Underlying in the event of the occurrence of certain events affecting a Component Underlying linked to a commodity.

The universe of Component Underlyings is subject to additions, substitutions and removals as described below.

The Index is described as "notional" and as tracking a "synthetic" portfolio because no actual shares, positions or other assets are held for the benefit of the Noteholder in respect of the Index. Rather, calculations are made based on a hypothetical investment in the relevant Component Underlyings.

Excess Return-Based. The Index employs an "excess return" mechanism within its calculation formula for each Component Underlying that represents a hypothetical "funded investment". For each such "funded" Component Underlying -- generally exchange traded funds, equity indices and UCITS funds -- this mechanism acts to subtract an assumed cash return from the Component Underlying's return to derive a cash-excess figure. Each funded Component Underlying is associated with a Cash Component. The Cash Components are the JPMorgan Cash Index USD 3 Month (the "**USD Cash Component Underlying**") and the J.P. Morgan Cash Index Euro Currency 3 Month (the "**EUR Cash Index**"). The USD Cash Component Underlying will be used as the basis for the subtraction of U.S. dollar-denominated Component Underlyings and the EUR Cash Index will be used as the basis for the subtraction of euro-denominated Component Underlyings. Component Underlyings that are not funded Component Underlyings (generally, futures trackers) are not subject to a Cash Component subtraction to arrive at an excess return figure.

Exposure Modulation. The Index is subject to a "volatility review" feature. This feature has the effect of increasing or reducing the Index's day-to-day exposure to the synthetic portfolio. On each Index Calculation Day, the Index Calculation Agent will determine the Index's "Exposure" to the synthetic portfolio. The Exposure will range from 0% to 150%, modulated to align the formula-recognized volatility of the selected synthetic portfolio with the target volatility for the Index of

10%. This volatility review mechanism is implemented by means of a formula based on the assumption that the recent realized volatility is a good indicator of current and future volatility, however, future volatility could diverge from observed historical volatility, and thus the Index's volatility could exceed 10%, even when the Exposure function has the effect of reducing the extent to which the Index tracks the synthetic portfolio.

The Index's calculation formula employs an exposure limitation formula containing two key volatility control mechanisms: one that reviews the simulated historical volatility of the synthetic portfolio tracked by the Index, and one that reviews the actual observed volatility of the Index itself.

The first factor – corresponding to the first stage in the volatility control mechanism - modulates daily the Index's exposure to the synthetic portfolio of Component Underlyings selected by the Index Allocation Agent based on simulated historical volatility of the synthetic portfolio tracked by the Index. This first stage factor could range from 0% to 150% based on the Index formula's review of simulated volatility experienced by the weighted components of the synthetic portfolio, relative to the 10% volatility target.

The Index calculation formula also contains a second factor – corresponding to the second stage volatility control mechanism - which daily monitors the realized volatility of the Index itself (i.e., without regard to the simulated observed volatility of the particular synthetic portfolio then tracked by the Index) over the period since the Index Base Date to such day. This mechanism works by comparing the rate at which the Index is realizing volatility to the rate at which it would be expected to realize volatility were it delivering the exact target volatility of 10%. This second stage adjustment term is called the 'volatility adjustment factor' and is capped at 100%.

This second stage volatility control function could limit the Index's exposure to the synthetic portfolio slightly or substantially. For example, if the Index experienced severe and consistent volatility above the target rate early in its life, the second stage limitation would reduce the exposure of the Index to the synthetic portfolio for an extended time, potentially even for the remaining term of the Notes. Note that this second mechanism (unlike the first) will not serve to increase volatility if the realized volatility of the Index is lower than the target volatility, it can serve only to reduce the Index's exposure to the synthetic portfolio. However whether or not this second factor does in fact modulate the volatility of the Index will depend on the realized volatility of the Index over the entire period since the Index Base Date, there may be periods in which the realized volatility of the Index substantially exceeds its target without the second stage factor triggering an exposure reduction. For example, if the Index experienced volatility consistently below the target rate early in its life, the second stage limitation would not serve to reduce the exposure of the Index to the synthetic portfolio later in the term of the Notes, even if the Index was then realizing an interval of volatility above its target, so long as the longitudinal experienced volatility of the Index did not exceed the 10% target over its full term.

Due to the exposure constraints describe above, the selections of the Index Allocation Agent may not be fully reflected by the Index's performance. Substantial or complete allocation to the USD Cash Component could occur for an extended period and/or for multiple intervals.

The level of the Index (the "**Index Level**") will be calculated by the Index Calculation Agent on each Index Calculation Day, based on the weighted excess returns of the Component Underlyings contained in the synthetic portfolio, multiplied by the Exposure fraction, and reduced by the Adjustment Costs (as described below).

Deductions to the Index Level through Adjustment Costs and Subtractions from Exchange-Traded Fund Distributions

The Index Level will be reduced each day by application of an "Adjustment Cost" subtraction included in the calculation formula. This Adjustment Cost will be based on (i) the change in exposure to the Component Underlyings included in the synthetic portfolio tracked by the Index on the relevant Index Calculation Day; (ii) the Weight assigned to each such Component Underlying within the synthetic portfolio; (iii) the Carry Cost and Transaction Cost associated with that Component Underlying; and (iv) the Index Level. The Adjustment Cost will be calculated and deducted on a daily basis from the Index Level.

The Index Rules impose a specified Carry Cost on each Component Underlying held in the synthetic basket. The Carry Costs are for:

- US Exchange-Traded Components, 0.70 -1.25%;
- Government Bond Trackers, 0.70%;
- FX G10 Trackers, 0.35%;
- FX EM Trackers, 0.45% - 1.25%;
- Commodity Futures Trackers, 0.35% - 0.70%;
- Equity Futures Trackers, 0.30% - 0.35%;
- Equity Indices, 0.70%;
- UCITS Funds, -0.55% - 0.46%; and
- The USD Cash Component Underlying, 0.25%.

Where a range is specified, the Carry Cost varies among the Component Underlyings within the Component Category. Certain of the UCITS Funds are associated with negative Carry Cost. Where the synthetic basket contains such UCITS Funds, the notional performance of the UCITS Fund will be increased by the negative Carry Cost.

The Index Rules also deduct a Transaction Cost applied to any change in the exposure of the Index to a Component Underlying (other than the USD Cash Component Underlying). Changes in exposure incurring the Transaction Cost will occur due to (i) the removal or inclusion of each Component Underlying as part of a Rebalancing or (ii) due to the adjustment of the Index's day-to-day exposure to the synthetic portfolio via the "Exposure Modulation" process described above. The Transaction Cost is 0.02% with respect to each Component Underlying, other than the Component Underlyings contained in the Component Category FX EM Trackers to which a Transaction Cost of 0.10% - 0.30% is applied, depending on the individual Component Underlying. The Index Return will be further reduced because the Index calculation formula takes into account for synthetic reinvestment 70%, rather than 100%, of the value of distributions made by US Exchange-Traded Components held in the synthetic portfolio tracked by the Index.

The Index Allocation Agent and Rebalancings

The Index Allocation Agent will select, from time to time from the list of Component Underlyings, such Component Underlyings as it wishes to comprise the synthetic basket tracked by the Index, as well as their relative weights ("**Weights**") within the synthetic basket. The Index Allocation Agent will select the initial Component Underlyings and initial weights, and then from time to time add, remove and re-weight Component Underlyings on Rebalancing Dates of its choosing. As a result, the Index Allocation Agent's selections will be the most important variable in determining the performance of the Index. The Index Allocation Agent will act with complete discretion, subject to the Allocation Restrictions contained in the Index Rules. The Notes are intended to be held only by the Index Allocation Agent and by discretionary accounts managed by the Index Allocation Agent, and by no other person.

Subject to the restrictions described below, the timing and number of rebalancings will be in the sole discretion of the Index Allocation Agent, subject to constrains on the timing and number of rebalancings set forth in the Index Rules. The Index Allocation Agent may, on any NYSE Business Day, trigger a rebalancing by providing its Proposed Synthetic Allocations (i.e., the composition and relative weights of Component Underlyings) to the Index Sponsor and Index Calculation Agent in order to comprise an entirely reformulated synthetic portfolio. Proposed Synthetic Allocations received prior to 2 p.m., New York time, on a NYSE Business Day will be deemed to be provided on that NYSE Business Day, and Proposed Synthetic Allocations received at or after 2 p.m. will be deemed to be received on the next following NYSE Business Day. The day that Proposed Synthetic Allocations are deemed received by the Index Sponsor and Index Calculation Agent is referred to as the "**Rebalancing Notification Date**".

If the Index Sponsor determines that the Proposed Synthetic Allocations satisfy the Allocation Restrictions, then the synthetic portfolio will be rebalanced as on the associated Rebalancing Date. If the Rebalancing Notification Date is a Rebalance Eligible Day, the Rebalancing Notification Date will be the "Rebalancing Date". If the Rebalancing Notification Date is not a Rebalance Eligible Day, the Rebalance Eligible Day immediately following such Rebalancing Notification Date will be the "Rebalancing Date".

The term "**Rebalance Eligible Day**" means a day that is both (x) an Index Calculation Day and (y) a Component Valuation Day (as defined in the Index Rules) for each Component Underlying with a non-zero weight in the Proposed Synthetic Allocations. In other words, a Rebalance Eligible Day must be a "Component Valuation Day" (i.e., a non-disrupted, or "good" trading day) for any Component Underlying having a non-zero weight in the then-current synthetic portfolio or in the synthetic portfolio as proposed per the rebalancing request. A Component Valuation Day generally means a day on which it is possible to trade a given Component Underlying at the closing price of the primary market for such Component Underlying.

So long as the Proposed Synthetic Allocations adhere to the Allocation Restrictions (described below), as confirmed by the Index Sponsor, the Index shall be rebalanced in a process that could take one or multiple days, commencing on the relevant Rebalancing Date, with each Component

Underlying being deemed purchased or sold, as applicable, in accordance with the rebalancing request, as of the next good closing price for that Component Underlying in its relevant primary market after the time at which valid Proposed Synthetic Allocations are received.

The Allocation Restrictions

The following restrictions (the "**Allocation Restrictions**") will apply to the Weight that the Index Allocation Agent may allocate to each Component Underlying on a Rebalancing Date:

- a Component Underlying that is not a US Exchange Traded Component may either have:
    - a Same Way Directional Linkage and a Specified Weight equal to or greater than zero percent (that is, 0%) and less than or equal to the Positive Weight Cap identified for such Component Underlying in the Index Rules (from 25% to 100%); or
    - an Opposite Way Directional Linkage and a Specified Weight equal to or greater than the Negative Weight Floor identified for such Component Underlying in the Index Rules (from 0% to - 100%) and less than or equal to zero percent (that is, 0%);

- a Component Underlying that is a US Exchange-Traded Component may either have:

    (i) a Same Way Directional Linkage and a Specified Weight

    (a) equal to or greater than zero percent (that is, 0%), and

    (b) less than or equal to the Positive Weight Cap identified for such Component Underlying in the Index Rules (from 25% to 100%), and

    (c) less than or equal to the ADTV Weight Limit applicable to such Component Underlying (as described under "ADTV Weight Limits" below); or

    (ii) an Opposite Way Directional Linkage and a Specified Weight

    (a) equal to or greater than the Negative Weight Floor identified for such Component Underlying in the Index Rules (from 0% to -50%),

    (b) and less than or equal to zero percent (that is, 0%), and

    (c) with an absolute value of such Specified Weight being less than or equal to the ADTV Weight Limit applicable to such Component Underlying (as described under "ADTV Weight Limits" below), and

    (d) with an absolute value of such Specified Weight being less than or equal to the US Exchange-Traded Component Hard-to-Borrow Limit calculated in respect of such Component Underlying as of the Rebalancing Notification Date (as described under “Hard-to-Borrow Limits for US Exchange Traded Components” below)

- a Component Underlying that is a UCITS Fund may only have a Same Way Directional Linkage and a Specified Weight that is less than or equal to the Positive Weight Cap for such Component Underlying identified in the Index Rules (50%);
- for a Component Underlying that is an FX EM Tracker or Equity Futures Tracker, the Absolute Weight Change calculated in respect of that FX EM Tracker or Equity Futures Tracker and that Rebalancing Date must be less than the Applicable Maximum Rebalancing Amount calculated in respect of that FX EM Tracker or Equity Futures Tracker and that Rebalancing Date (as described under “Applicable Maximum Rebalancing Amounts for FX EM Trackers and Equity Futures Trackers” below);
- the sum of the Specified Weights of all Component Underlyings in a single Weight Category shall be no greater than the Maximum Weight indicated for such Weight Category in the Weight Category Restrictions Table below;
- the sum of the absolute values of the Specified Weights of all Component Underlyings in a single Weight Category shall be no greater than the Maximum Weight indicated for such Weight Category in the Weight Category Restrictions Table below; and
- in respect of all the Component Underlyings, the sum of the absolute values of the Specified Weights of all Component Underlyings shall be equal to one hundred percent (that is, +100%).

Where:

(1) A "**Same Way Directional Linkage**" denotes an economic ‘long’ position in the applicable Component Underlying (*i.e.*, a position that will benefit from appreciation in the price or level of that Component Underlying); and

(2) An “**Opposite Way Directional Linkage**” denotes an economic ‘short’ position in the applicable Component Underlying (*i.e.*, a position designed to benefit from depreciation in the price or level of that Component Underlying).

ADTV Weight Limits

The Allocation Restrictions limit exposure upon a rebalancing to the Component Underlyings that are US Exchange-Traded Components based on observed Average Daily Trading Value (ADTV). Average Daily Trading Value for a US Exchange-Traded Component will be determined as of the most recent Index Calculation Day, by taking the product of (a) the average volume of trading in the shares of such US Exchange-Traded Component on all U.S. exchanges over the preceding three-month period prior to that on that Index Calculation Day, and (b) the closing share price of the US Exchange-Traded Component on that Index Calculation Day.

The relevant ADTV-based weight limits applicable to Component Underlyings that are US Exchange-Traded Component s are set forth in the ADTV Weight Limit Table below.

Average Daily Trading Value (ADTV)	Weight Limit
Less than USD 5 million	0%
Greater than or equal to USD 5 million and less than USD 15 million	25%
Greater than or equal to USD 15 million and less than USD 50 million	50%
Greater than or equal to USD 50 million and less than USD 100 million	75%
Greater than or equal to USD 100 million	100%

Hard-to-Borrow Limits for US Exchange-Traded Components

For each US Exchange-Traded Component and a Rebalancing Notification Date, the associated "**Exchange-Traded Component Hard-to-Borrow Limit**" will be:

- if the Borrow Rate calculated in respect of a US Exchange-Traded Component and a Rebalancing Notification Date (t) is greater than the Hard-to-Borrow Threshold, zero (0.00%), or
- if the Borrow Rate calculated in respect of a US Exchange-Traded Component and a Rebalancing Notification Date (t) is equal to or less than the Hard-to-Borrow Threshold, one hundred percent (100.00%).

Where:

"**Hard-to-Borrow Threshold**" means 0.50%.

The "**Borrow Rate**" for a US Exchange-Traded Component will be an amount determined by the Determining Person (*i.e.*, the Index Sponsor or the Index Calculation Agent acting at the direction of the Index Sponsor) that equals the sum of: (a) the market average rate for all open loans secured by U.S. dollar collateral for such US Exchange-Traded Component (the "**Loan Rate Average**"), and (b) the US Federal Funds Effective Rate (the "**Base Interest Rate**"); provided that, if the Determining Person is unable to determine the Loan Rate Average for a US Exchange-Traded Component due to the unavailability of information to the Determining Person for any reason (including, without limitation, due to the occurrence or continuation of a Data Rights Disruption or a Data Discontinuation), then the affected US Exchange-Traded Component shall be deemed to have a Borrow Rate of 100%.

The "market average rate for all open loans secured by U.S. dollar collateral" will be obtained from data supplied by a third-party Borrow Data Provider retained by the Index Sponsor for this purpose.

The "US Federal Funds Effective Rate" for any date of determination means the daily effective federal funds rate as published on Bloomberg page "FEDL01" (or any successor page) at approximately 9:00 a.m., New York time, on the applicable date of determination, as calculated by the Federal Reserve Bank of New York, provided, however, that if the Federal Reserve Bank of New York does not calculate a level in respect of such date of determination, the "US Federal Funds Effective Rate" shall be the level that appears on Bloomberg page "FEDL01" (or any successor page) in respect of the most recent prior calendar day in respect of which the Federal Reserve Bank of New York calculated a level.

Applicable Maximum Rebalancing Amounts for FX EM Trackers and Equity Futures Trackers

Proposed Synthetic Allocations to FX EM Trackers and Equity Futures Trackers are limited by a constraint on the Absolute Weight Change in exposure to the applicable Component Underlying. The term "Absolute Weight Change" means, in respect of a Component Underlying and a Rebalancing Notification Date, the absolute value of the difference between (a) the Specified Weight specified for a Component Underlying as part of the set of Proposed Synthetic Allocations given in respect of that Rebalancing Notification Date and (b) the Specified Weight for that Component Underlying in respect of the Rebalancing Date immediately preceding the Rebalancing Notification Date.

The Absolute Weight Change in respect of that FX EM Tracker or Equity Futures Tracker must be less than the Applicable Maximum Rebalancing Amount calculated in respect of that FX EM Tracker or Equity Futures Tracker. For each Component Underlying that is an FX EM Tracker or Equity Futures Tracker, the Applicable Maximum Rebalancing Amount will be the product of (a) the specified Maximum Rebalancing Amount for that Component Underlying, as identified in the Index Rules (from 1% to 10% for FX EM Trackers and 25% to 100% for Equity Futures Trackers) and (b) the Market Stress Adjustment Factor. The Market Stress Adjustment Factor is (a) if the daily performance of the Component Underlying, calculated using the Closing Levels as of each day on any of the 5 Component Valuation Days immediately preceding that Rebalancing Date is less than -2.5%, then 0.2; or (b) if the condition specified in the preceding clause is not satisfied, 1.0.

Weight Category Restrictions Table

The Allocation Restrictions limit concentration exposure upon a rebalancing to Component Underlyings included in the same Weight Category. The Weight Category concentration limits are set forth in the table below.

Weight Category	**Category Description**	**Maximum Weight***
DM Equity	Developed market equities	+100%
EM Equity	Emerging Markets equities	+100%
DM Bond	Developed market credit instruments	+100%
EM Bond	Emerging market credit instruments	+50%
FX G10 Tracker	Developed market currency in U.S. dollar terms	+50%
FX EM tracker	Emerging market currency in U.S. dollar terms	+50%
Commodity	Commodities exposures	+100%
Government Bond Tracker	Sovereign credit tracker index	+50%
UCITS Fund	Mutual fund registered under European UCITS regime	+100%
Cash	U.S. dollar or European Union cash index	+100%

* *i.e.*, the sum of the absolute value of the weight of each Component Underlying within the specified Weight Category.

The number and timing of rebalancings will be driven by the discretionary decisions of the Index Allocation Agent, subject to the restrictions on the number and timing of rebalancings set forth in the Index Rules.

Note that the Index's exposure to the synthetic portfolio will be potentially reduced or increased, relative to 100%, by the Exposure mechanisms described above as such mechanism is applied on a day-to-day basis, even though a selected portfolio complies with the Allocation Restrictions.

Allocations to Component Underlyings may Achieve Long or Short Exposures

The Allocation Restrictions permit the Index Allocation Agent to allocate negative (*i.e.*, "short") weights down to -50% with respect to a Component Underlying in the Component Type, “EM Equity”, "FX EM Tracker" or “Commodity”, or down to -100% with respect to a Component Underlying in the Component Type, “DM Equity”, “DM Bond”, “EM Bond”, “FX G10 Tracker”, and “Government Bond Tracker”. The Cash Components may not have a weight less than 0%. A negative weight with respect to a Component Underlying is a traditional economically “short” position against that Component Underlying. Therefore, synthetic allocations may achieve long or short exposures with respect to these Component Underlyings. Short positions are intended to perform inversely to asset values, meaning that an increase in the value of a reference asset will lead to a loss in a short position, and vice versa. Because there is no theoretical limit to the value of a given asset, potential losses on a short position are theoretically infinite.

The Allocation Restrictions limit Proposed Synthetic Allocations to economically “long” positions only in Component Underlyings that are UCITS Funds.

Each FX G10 Tracker and FX EM Tracker can be viewed as a positon in the value of the specified non-USD currency against the U.S. dollar. Therefore, a "negative" weight accorded to an FX G10 Tracker or FX EM Tracker can be viewed as a position that will increase in value if the specified currency depreciates against the USD.

Synthetic Exposure Events

The Index Allocation Agent’s proposed allocations will be disallowed if any of such allocations would cause the occurrence of a Synthetic Exposure Event. A “**Synthetic Exposure Event**” will occur if any proposed allocation to a Component Underlying (including due solely to the proposed weight thereof) may cause the Hypothetical Hedging Entity’s (or its affiliates’) hedging transactions in respect of the Index, taken together with all positions maintained by it and its affiliates independent of its transactions and holdings in respect of the Index, to violate holdings or investment limits imposed under any law, rule, regulation or other restriction that limits or prohibits holdings in respect of such Component Underlying (“**Holdings Limits**”) or such lower limits as may be set by internal policy as part of the Hypothetical Entity’s (or its affiliates’) compliance policies in respect of such Holdings Limits (all as determined by the Index Sponsor). For this purpose a “**Hypothetical Hedging Entity**” means a U.S.-registered broker-dealer, that is incorporated in the jurisdiction of the Index Sponsor and that has an ultimate parent that is a bank holding company under the laws of the United States.

Limitations on Number and Timing of Rebalancings

The Index Rules limit the number and frequency of rebalancings. The Index Allocation Agent will be able to trigger synthetic portfolio rebalancings a maximum of 36 times during each annual period (as measured from the Index Base Date of 15 February 2019 to the anniversary thereof, and each subsequent annual period). In addition, the Index Allocation Agent may not trigger a synthetic portfolio rebalancing prior to the second Index Calculation Day immediately following the most recent Rebalancing Date.

The Component Underlyings of the Index

The initial Component Underlyings of the Index are set out in the table below. The table also contains the Bloomberg ticker for each Component Underlying for ease of identification, and identifies the Component Sponsor and Weight Category of each initial Component Underlying. The initial Component Underlyings Table, attached as Annex 1 to the Index Rules, has further details with respect to each Component Underlying.

As described below, the Index Allocation Agent will have the right to add and to substitute Component Underlyings, subject to the restrictions set forth in the Index Rules. The composition of the universe of Component Underlyings will also be subject to the occurrence of certain extraordinary events the occurrence of which permit the Index Sponsor to remove and replace Component Underlyings.

Initial Component Underlyings

	Component Underlying	**Component Sponsor**	**Bloomberg Code**	**Weight Category**
1	SPDR S&P 500 ETF Trust	State Street Global Advisors Trust Company	SPY	DM Equity
2	iShares Russell 2000 ETF	BlackRock Fund Advisors	IWM	DM Equity
3	Invesco QQQ Trust Series 1	Invesco Capital Management	QQQ	DM Equity
4	SPDR EURO STOXX 50 ETF	SSGA Funds Management, Inc.	FEZ	DM Equity
5	iShares MSCI Japan ETF	BlackRock Fund Advisors	EWJ	DM Equity
6	iShares MSCI United Kingdom ETF	BlackRock Fund Advisors	EWU	DM Equity
7	iShares MSCI Germany ETF	BlackRock Fund Advisors	EWG	DM Equity
8	iShares MSCI France ETF	BlackRock Fund Advisors	EWQ	DM Equity
9	iShares MSCI Switzerland ETF	BlackRock Fund Advisors	EWL	DM Equity
10	iShares MSCI Spain ETF	BlackRock Fund Advisors	EWP	DM Equity
11	iShares MSCI Italy ETF	BlackRock Fund Advisors	EWI	DM Equity

12	iShares MSCI Sweden ETF	BlackRock Fund Advisors	EWD	DM Equity
13	iShares MSCI Turkey ETF	BlackRock Fund Advisors	TUR	EM Equity
14	iShares MSCI Canada ETF	BlackRock Fund Advisors	EWC	DM Equity
15	iShares MSCI Australia ETF	BlackRock Fund Advisors	EWA	DM Equity
16	iShares MSCI India ETF	BlackRock Fund Advisors	INDA	EM Equity
17	VanEck Vectors Russia ETF	Van Eck Associates Corporation	RSX	EM Equity
18	iShares China Large-Cap ETF	BlackRock Fund Advisors	FXI	EM Equity
19	iShares MSCI South Africa ETF	BlackRock Fund Advisors	EZA	EM Equity
20	iShares MSCI South Korea ETF	BlackRock Fund Advisors	EWY	EM Equity
21	iShares MSCI Malaysia ETF	BlackRock Fund Advisors	EWM	EM Equity
22	iShares MSCI Thailand ETF	BlackRock Fund Advisors	THD	EM Equity
23	iShares MSCI Singapore ETF	BlackRock Fund Advisors	EWS	EM Equity
24	iShares MSCI Taiwan ETF	BlackRock Fund Advisors	EWT	EM Equity
25	iShares MSCI Mexico ETF	BlackRock Fund Advisors	EWW	EM Equity
26	iShares MSCI Brazil ETF	BlackRock Fund Advisors	EWZ	EM Equity
27	iShares MSCI Chile ETF	BlackRock Fund Advisors	ECH	EM Equity
28	iShares MSCI Peru ETF	BlackRock Fund Advisors	EPU	EM Equity
29	WisdomTree Europe Hedged Equity Fund	WisdomTree Asset Management, Inc.	HEDJ	DM Equity
30	WisdomTree Japan Hedged Equity Fund	WisdomTree Asset Management, Inc.	DXJ	DM Equity
31	iShares Currency Hedged MSCI Eurozone ETF	BlackRock Fund Advisors	HEZU	DM Equity
32	iShares Currency Hedged MSCI Germany ETF	BlackRock Fund Advisors	HEWG	DM Equity
33	iShares 1-3 Year Treasury Bond ETF	BlackRock Fund Advisors	SHY	DM Bond
34	iShares 7-10 Year Treasury Bond ETF	BlackRock Fund Advisors	IEF	DM Bond
35	iShares 20+ Year Treasury Bond ETF	BlackRock Fund Advisors	TLT	DM Bond

36	iShares TIPS Bond ETF	BlackRock Fund Advisors	TIP	DM Bond
37	iShares iBoxx $ Investment Grade Corporate Bond ETF	BlackRock Fund Advisors	LQD	DM Bond
38	iShares iBoxx High Yield Corporate Bond ETF	BlackRock Fund Advisors	HYG	DM Bond
39	SPDR Bloomberg Barclays International Treasury Bond ETF	SSGA Funds Management, Inc.	BWX	DM Bond
40	SPDR Bloomberg Barclays Short Term International Treasury Bond ETF	SSGA Funds Management, Inc.	BWZ	DM Bond
41	United States Oil Fund LP	United States Commodities Fund LLC	USO	Commodity
42	Invesco DB Agriculture Fund	Invesco Capital Management	DBA	Commodity
43	Global X MSCI Argentina ETF	Global X Management Co LLC	ARGT	EM Equity
44	iShares JP Morgan USD Emerging Markets Bond ETF	BlackRock Fund Advisors	EMB	EM Bond
45	iShares Emerging Markets High Yield Bond ETF	BlackRock Fund Advisors	EMHY	EM Bond
46	iShares Floating Rate Bond ETF	BlackRock Fund Advisors	FLOT	DM Bond
47	PIMCO 0-5 Year High Yield Corporate Bond Index Exchange-Traded Fund	PIMCO Funds	HYS	DM Bond
48	SPDR Bloomberg Barclays 1-3 Month T-Bill ETF	SSGA Funds Management, Inc.	BIL	DM Bond
49	iShares 10-20 Year Treasury Bond ETF	BlackRock Fund Advisors	TLH	DM Bond
50	iShares 3-7 Year Treasury Bond ETF	BlackRock Fund Advisors	IEI	DM Bond
51	iShares Gold Trust	BlackRock Fund Advisors	IAU	Commodity
52	iShares Silver Trust	BlackRock Fund Advisors	SLV	Commodity
53	Materials Select Sector SPDR Fund	State Street Bank & Trust Company	XLB	DM Equity
54	Energy Select Sector SPDR Fund	State Street Bank & Trust Company	XLE	DM Equity

55	Financial Select Sector SPDR Fund	State Street Bank & Trust Company	XLF	DM Equity
56	Industrial Select Sector SPDR Fund	State Street Bank & Trust Company	XLI	DM Equity
57	Technology Select Sector SPDR Fund	State Street Bank & Trust Company	XLK	DM Equity
58	Consumer Staples Select Sector SPDR Fund	State Street Bank & Trust Company	XLP	DM Equity
59	Real Estate Select Sector SPDR Fund	State Street Bank & Trust Company	XLRE	DM Equity
60	Utilities Select Sector SPDR Fund	State Street Bank & Trust Company	XLU	DM Equity
61	Health Care Select Sector SPDR Fund	State Street Bank & Trust Company	XLV	DM Equity
62	Consumer Discretionary Select Sector SPDR Fund	State Street Bank & Trust Company	XLY	DM Equity
63	iShares MSCI ACWI ETF	BlackRock Fund Advisors	ACWI	DM Equity
64	iShares MSCI EAFE ETF	BlackRock Fund Advisors	EFA	DM Equity
65	iShares MSCI All Country Asia ex Japan ETF	BlackRock Fund Advisors	AAXJ	DM Equity
66	iShares MSCI Emerging Markets ETF	BlackRock Fund Advisors	EEM	EM Equity
67	Vanguard FTSE Emerging Markets ETF	The Vanguard Group	VWO	EM Equity
68	iShares Latin America 40 ETF	BlackRock Fund Advisors	ILF	EM Equity
69	J.P. Morgan German Long Bond Futures Tracker Index (USD)	J.P. Morgan	JFBERXUS	Government Bond Tracker
70	J.P. Morgan German Short Bond Futures Tracker Index (USD)	J.P. Morgan	JFBEDUUS	Government Bond Tracker
71	J.P. Morgan Japanese Long Bond Futures Tracker Index (USD)	J.P. Morgan	J10EUSJP	Government Bond Tracker
72	J.P. Morgan U.K. Long Bond Futures Tracker Index (USD)	J.P. Morgan	JFBG10US	Government Bond Tracker

73	The J.P. Morgan US Treasury Note Futures Tracker	J.P. Morgan	RFJPUSBE	Government Bond Tracker
74	J.P. Morgan AUD FX Tracker Index	J.P. Morgan	JPFCTAUD	FX G10 Tracker
75	J.P. Morgan NZD FX Tracker Index	J.P. Morgan	JPFCTNZD	FX G10 Tracker
76	J.P. Morgan EUR FX Tracker Index	J.P. Morgan	JPFCTEUR	FX G10 Tracker
77	J.P. Morgan GBP FX Tracker Index	J.P. Morgan	JPFCTGBP	FX G10 Tracker
78	J.P. Morgan JPY FX Tracker Index	J.P. Morgan	JPFCTJPY	FX G10 Tracker
79	J.P. Morgan CAD FX Tracker Index	J.P. Morgan	JPFCTCAD	FX G10 Tracker
80	J.P. Morgan CHF FX Tracker Index	J.P. Morgan	JPFCTCHF	FX G10 Tracker
81	J.P. Morgan NOK FX Tracker Index	J.P. Morgan	JPFCTNOK	FX G10 Tracker
82	J.P. Morgan SEK FX Tracker Index	J.P. Morgan	JPFCTSEK	FX G10 Tracker
83	J.P. Morgan MXN FX Tracker Index	J.P. Morgan	JPFCTMXN	FX EM Tracker
84	J.P. Morgan CZK FX Tracker Index	J.P. Morgan	JPFCTCZK	FX EM Tracker
85	J.P. Morgan HUF FX Tracker Index	J.P. Morgan	JPFCTHUF	FX EM Tracker
86	J.P. Morgan PLN FX Tracker Index	J.P. Morgan	JPFCTPLN	FX EM Tracker
87	J.P. Morgan SGD FX Tracker Index	J.P. Morgan	JPFCTSGD	FX EM Tracker
88	J.P. Morgan TRY FX Tracker Index	J.P. Morgan	JPFCTTRY	FX EM Tracker
89	J.P. Morgan ZAR FX Tracker Index	J.P. Morgan	JPFCTZAR	FX EM Tracker
90	J.P. Morgan ILS FX Tracker Index	J.P. Morgan	JPFCTILS	FX EM Tracker

91	J.P. Morgan RUB FX Tracker Index	J.P. Morgan	JPFCTRUB	FX EM Tracker
92	J.P. Morgan CNH FX Tracker Index	J.P. Morgan	JPFCTCNH	FX EM Tracker
93	J.P. Morgan RON FX Tracker Index	J.P. Morgan	JPFCTRON	FX EM Tracker
94	J.P. Morgan BRL FX Tracker Index	J.P. Morgan	JPFCTBRL	FX EM Tracker
95	J.P. Morgan INR FX Tracker Index	J.P. Morgan	JPFCTINR	FX EM Tracker
96	J.P. Morgan KRW FX Tracker Index	J.P. Morgan	JPFCTKRW	FX EM Tracker
97	J.P. Morgan TWD FX Tracker Index	J.P. Morgan	JPFCTTWD	FX EM Tracker
98	J.P. Morgan CLP FX Tracker Index	J.P. Morgan	JPFCTCLP	FX EM Tracker
99	J.P. Morgan IDR FX Tracker Index	J.P. Morgan	JPFCTIDR	FX EM Tracker
100	J.P. Morgan PEN FX Tracker Index	J.P. Morgan	JPFCTPEN	FX EM Tracker
101	J.P. Morgan PHP FX Tracker Index	J.P. Morgan	JPFCTPHP	FX EM Tracker
102	J.P. Morgan COP FX Tracker Index	J.P. Morgan	JPFCTCOP	FX EM Tracker
103	J.P. Morgan ARS FX Tracker Index	J.P. Morgan	JPFCTARS	FX EM Tracker
104	S&P GSCI Gold Official Close Index ER	Standard & Poors	SPGCGCP	Commodity
105	S&P GSCI Crude Oil Official Close Index ER	Standard & Poors	SPGCCLP	Commodity
106	S&P GSCI Agriculture ER	Standard & Poors	SPGSAGP	Commodity
107	J.P. Morgan Front Month Wheat Index	J.P. Morgan	JMC10WE	Commodity
108	J.P. Morgan Front Month Corn Index	J.P. Morgan	**JMC10** CE	Commodity
109	J.P. Morgan Front Month Soybeans Index	J.P. Morgan	**JMC10** SE	Commodity

110	J.P. Morgan Front Month Lean Hogs Index	J.P. Morgan	JMC10LHE	Commodity
111	J.P. Morgan World Equity Futures (G) Tracker	J.P. Morgan	FTJGWOEE	DM Equity
112	J.P. Morgan US Equity Futures (G) Tracker	J.P. Morgan	FTJGUSEE	DM Equity
113	J.P. Morgan European Equity Futures (G) Tracker	J.P. Morgan	FTJGEUEE	DM Equity
114	J.P. Morgan Japanese Equity Futures (G) Tracker	J.P. Morgan	FTJGJPEE	DM Equity
115	J.P. Morgan UK Equity Futures (G) Tracker	J.P. Morgan	FTJGUKEE	DM Equity
116	J.P. Morgan China-A Equity Futures (G) Tracker	J.P. Morgan	FTJFACEE	EM Equity
117	J.P. Morgan China-H Equity Futures (G) Tracker	J.P. Morgan	FTJFHCEE	EM Equity
118	J.P. Morgan Emerging Markets Futures Tracker (G)	J.P. Morgan	FTJFEMUE	EM Equity
119	J.P. Morgan Hong Kong Equity Futures (G) Tracker	J.P. Morgan	FTJFHKEE	EM Equity
120	The J.P. Morgan German Equity Futures Tracker	J.P. Morgan	FTJFDEEE	DM Equity
121	J.P. Morgan Australian Equity Futures (G) Tracker	J.P. Morgan	FTJFAUEE	DM Equity
122	J.P. Morgan Canadian Equities Futures Tracker(Net)	J.P. Morgan	FTJPCEEE	DM Equity
123	J.P. Morgan Spanish Equity Futures Tracker (G)	J.P. Morgan	FTJGSEEE	DM Equity
124	J.P. Morgan France Equity Futures Tracker	J.P. Morgan	FTJGFREE	DM Equity
125	J.P. Morgan Italian Equity Futures Tracker (G)	J.P. Morgan	FTJGIEEE	DM Equity
126	J.P. Morgan Swiss Equity Futures Tracker (gross)	J.P. Morgan	FTJFCHEE	DM Equity
127	J.P. Morgan Korean Equity Futures (G) Tracker	J.P. Morgan	FTJFSKEE	DM Equity

128	MSCI Europe Growth Net Total Return USD Index	MSCI	NDUGE15	DM Equity
129	MSCI Europe Value Net Total Return EUR Index	MSCI	MSVEUNTR	DM Equity
130	MSCI Europe Small Cap Net Return EUR Index	MSCI	M7EUSC	DM Equity
131	MSCI Europe Barra Momentum Index	MSCI	M00BEU02	DM Equity
132	MSCI Europe Barra Low Volatility Net Total Return EUR Index	MSCI	M07IEU02	DM Equity
133	J.P. Morgan Equity Risk Premium - Global Balanced Multi-Factor (Long / Short) US Index	J.P. Morgan	JPQFMFW1	DM Equity
134	FTSE US Risk Premium Index Series: Cash Flow/Invested Capital Trend Long Only Total Return Index	FTSE Russell	FTUSYLUT	DM Equity
135	FTSE US Risk Premium Index Series: Price Momentum Long Only Total Return Index	FTSE Russell	FTUSMLUT	DM Equity
136	FTSE US Risk Premium Index Series: Seasonality Long Only Total Return Index	FTSE Russell	FTUSNLUT	DM Equity
137	FTSE US Risk Premium Index Series: Extended Price Momentum Long Only Total Return Index	FTSE Russell	FTUSXLUT	DM Equity
138	FTSE US Risk Premium Index Series: NOA Trend Long Only Total Return Index	FTSE Russell	FTUSALUT	DM Equity
139	FTSE US Risk Premium Index Series: ROE Long Only Total Return Index	FTSE Russell	FTUSELUT	DM Equity
140	FTSE US Risk Premium Index Series: Cash Flow/Invested Capital Long Only Total Return Index	FTSE Russell	FTUSILUT	DM Equity

141	FTSE US Risk Premium Index Series: Dividend Yield Long Only Total Return Index	FTSE Russell	FTUSDLUT	DM Equity
142	FTSE US Risk Premium Index Series: Cash Flow Yield Long Only Total Return Index	FTSE Russell	FTUSFLUT	DM Equity
143	FTSE US Risk Premium Index Series: Forward Earnings Yield Long Only Total Return Index	FTSE Russell	FTUSPLUT	DM Equity
144	FTSE US Risk Premium Index Series: Forward Dividend Yield Long Only Total Return Index	FTSE Russell	FTUSWLUT	DM Equity
145	FTSE US Risk Premium Index Series: Low Volatility Long Only Total Return Index	FTSE Russell	FTUSVLUT	DM Equity
146	FTSE US Risk Premium Index Series: Size Long Only Total Return Index	FTSE Russell	FTUSZLUT	DM Equity
147	Janus Henderson United Kingdom Absolute Return Fund	Janus Henderson	HUKARBU LX	UCITS Fund
148	BlackRock Global Funds - Global Multi-Asset Income Fund	BlackRock Fund Advisors	BGMAIA2 LX	UCITS Fund
149	DWS Concept Kaldemorgen		DWSKA2H LX	UCITS Fund
150	Merian Global Investors Series PLC - Merian Global Equity Absolute Return Fund		OMEAUSA ID	UCITS Fund
151	AB FCP I - American Income Portfolio		ALAMITI LX	UCITS Fund
152	AXA World Funds - Global Inflation Bonds		AXAGIAA LX	UCITS Fund
153	GAM Star PLC - Credit Opportunities USD		GAMSCOU ID	UCITS Fund
154	Jupiter JGF - Dynamic Bond		JUPLEUR LX	UCITS Fund
155	PIMCO GIS Capital Securities Fund	PIMCO Funds	PIMEAUS ID	UCITS Fund

156	PIMCO GIS Income Fund	PIMCO Funds	PINEEHA ID	UCITS Fund
157	Global Evolution Funds - Frontier Markets		SXGFMRU LX	UCITS Fund
158	J.P. MORGAN CASH INDEX USD 3 MONTH	J.P. Morgan	JPCAUS3M	Cash

Additions and Substitutions to the Universe of Component Underlyings

Under the circumstances and subject to the restrictions described below, the Index Allocation Agent may make additions and substitutions with respect to the universe of Component Underlyings that may be included in the basket tracked by the Index. The Index Sponsor will maintain and revise the official list of Component Underlyings and distribute the same to the Index Allocation Agent and Index Calculation Agent.

Index Allocation Agent May Add Additional ETFs as Component Underlyings

The Index Allocation Agent may add exchange traded funds to the list of Component Underlyings. Added exchange traded funds must be index tracker funds that track a single country's stock market. The Index Allocation Agent may, on any NYSE Business Day (as defined in the Index Rules) following the Index Base Date, trigger the addition process by delivering an Addition Request to the Index Sponsor and the Index Calculation Agent to propose the addition (a "**Proposed Component Underlying**"). An Addition Request received by the Index Allocation Agent prior to 2:00 p.m., New York time, on a NYSE Business Day, shall be deemed received on such NYSE Business Day. An Addition Request received by the Index Allocation Agent at or after 2:00 p.m., New York time, on a NYSE Business Day (or at any time on any date that is not a NYSE Business Day), shall be deemed received by the Index Allocation Agent on the next NYSE Business Day. The NYSE Business Day on which the Addition Request is deemed to be received is referred to as the "**Addition Request Date**".

The Index Sponsor shall review each Addition Request to determine whether the Proposed Component Underlying is a Qualified Additional ETF. On or before the fifth NYSE Business Day following the Addition Request Date (the "**Proposed Addition Determination Date**"), the Index Sponsor shall notify the Index Allocation Agent and the Index Calculation Agent of its determination regarding whether the Proposed Component Underlying is a Qualified Additional ETF. If the Index Sponsor determines that the Proposed Component Underlying is a Qualified Additional ETF, then the Proposed Component Underlying shall be a Component Underlying with effect as of the Index Calculation Day that is ten (10) NYSE Business Days after the Addition Request Date.

An ETF will be a Qualified Additional ETF if the ETF:

(i) is an Eligible ETF (as defined in the Index Rules)

(ii) is an Index Tracker ETF;

(iii) the Reference Index with respect to such US Exchange-Traded Component is a Single Country Market Cap Index;

(iv) the investment adviser of such US Exchange-Traded Component is a Designated ETF Sponsor;

(v) has an ETF Initial Listing Date (as defined in the Index Rules) that falls at least two calendar years prior to such Proposed Addition Determination Date;

(vi) meets all of the Qualified Additional ETF Trading Criteria; and

(vii) no Extraordinary Event has occurred or is continuing in respect of such Exchange Traded Fund in the 24-month period ending on the Addition Request Date or Substitution Request Date, as applicable.

Where:

"**Designated ETF Sponsor**" means each of the following (including their respective successors in interest and affiliates under common control): SSGA Funds Management, Inc.; State Street Global Advisors Trust Company; BlackRock Fund Advisors; WisdomTree Asset Management, Inc.; Invesco Capital Management LLC; and The Vanguard Group, Inc.

"**Index Tracker ETF**" means an Exchange Traded Fund, the publicly announced investment strategy of which is to generally track the performance of an unleveraged long investment in the Reference Index with respect to such Exchange Traded Fund by means of a passive sampling or passive replication investment strategy.

"**Reference Index**" means with respect to an Exchange Traded Fund, the index tracked by such Exchange Traded Fund, as announced by such Exchange Traded Fund.

"**Single Country Market Cap Index**" means an index (i) that is intended to track the performance of common equities focused in a single country (the "**Reference Country**") other than the United States, (ii) the name of which includes the name of the Reference Country; (iii) the Reference Country of which is not named in the Component Underlyings Table, as amended from time to time, under the column titled "Country Focus"; (iv) is calculated on a market capitalization basis (i.e., not on a price-weighted or equal-weighted basis, but which may employ generally accepted variations on market capitalization measures, including, without limitation, limiting recognized market capitalization by free float or concentration caps); (v) contains not less than 20 issuers. For the avoidance of doubt, the term "performance of common equities" in clause of (i) of the preceding sentence means the performance of an unleveraged "long" investment in such equities.

And where:

"**Qualified Additional ETF Trading Criteria**" means, with respect to any Exchange Traded Fund:

(i) an Average Daily Trading Value (as defined in the Index Rules) of not less than USD 10,000,000;

(ii) a Market Capitalization (as defined in the Index Rules) of not less than USD250,000,000; and

(iii) an Observed Volatility (as defined in the Index Rules) equal to or less than 40%.

Index Allocation Agent May Substitute ETF Component Underlyings

The Index Allocation Agent may substitute Component Underlyings that are exchange traded funds that track the performance of developed market bonds with substitute exchange traded funds that track similar underlying instruments. The Index Allocation Agent may trigger the substitution process on any NYSE Business Day by delivering a Substitution Request to the Index Sponsor and Index Calculation Agent to request the substitution (the "**Proposed Substitution**").

A Substitution Request received by the Index Allocation Agent prior to 2:00 p.m., New York time, on a NYSE Business Day, shall be deemed received on such NYSE Business Day. A Substitution Request received by the Index Allocation Agent at or after 2:00 p.m., New York time, on a NYSE Business Day (or at any time on any date that is not a NYSE Business Day), shall be deemed received by the Index Allocation Agent on the next NYSE Business Day. The NYSE Business Day on which the Substitution Request is deemed to be received in accordance with this paragraph is referred to as the "**Substitution Request Date**".

The Index Sponsor shall review each Substitution Request to determine whether the Proposed Substitution is a Qualifying Substitution, as of the Substitution Request Date. On or before the fifth NYSE Business Day following the Substitution Request Date (the "**Proposed Substitution Determination Date**"), the Index Sponsor shall notify in writing (by electronic mail or such other method as selected by the Index Sponsor) the Index Allocation Agent and the Index Calculation Agent of its determination regarding whether the Proposed Substitution is a Qualifying Substitution.

If the Index Sponsor determines that the Proposed Substitution is a Qualifying Substitution, then the Proposed Removed Component Underlying shall immediately be removed from the Component Underlyings Table and may not be selected as a Component Underlying in any Rebalancing Notice, and the Proposed Substitute shall be a Component Underlying with effect as of the Index Calculation Day that is ten (10) NYSE Business Days after the Substitution Request Date.

A Proposed Substitution will be a "**Qualifying Substitution**" if (i) the Proposed Substitute is a Qualified Substitute ETF; (ii) the Proposed Removed Component is an ETF that tracks a developed market bond index; and (iii) the Proposed Removed Component is not be then included in the synthetic portfolio tracked by the Index.

Where:

"**Qualified Substitute ETF**" means an investment fund meeting all of the following criteria as of the date of the Proposed Substitution Determination Date:

(i) must be an Eligible ETF (as defined in the Index Rules);

(ii) the investment adviser of such US Exchange-Traded Component must be a Designated ETF Sponsor;

(iii) the Reference Index (as defined above) with respect to such Proposed Substitute must be the same Reference Index as the Reference Index for the Proposed Removed Component;

(iv) must have an ETF Initial Listing Date (as defined in the Index Rules) that falls at least two calendar years prior to such Proposed Substitution Determination Date;

(v) must meet all of the Qualified Additional ETF Trading Criteria (as described above); and

(vi) no Extraordinary Event shall have occurred or be continuing in respect of such Exchange Traded Fund.

Publication of Index Levels

Subject to the occurrence of a Market Disruption Event, the Index Calculation Agent will calculate and publish the Index Level in respect of each Index Calculation Day at or before approximately 8:00 a.m., New York time, on the NYSE Business Day following such Index Calculation Day on Bloomberg page JPZMBRL1 <Index>, or any successor page or another recognized financial information provider should the need arise. All Index Levels that are published shall be rounded to two decimal places, although the Index Calculation Agent shall retain a higher precision for the purposes of ongoing calculation. The Index Calculation Agent may publish the Index Level on any alternative or successor publication source if the Bloomberg page becomes unavailable from time to time for any reason.

The term "Index Calculation Day" means each calendar day:

(i) on which each of the following exchanges is scheduled to be open for trading and does in fact open for its regular trading session for such calendar day: (i) the New York Stock Exchange and (ii) Nasdaq;

(ii) that is a Component Valuation Day (as defined in the Index Rules) for each Component Underlying then contained in the synthetic portfolio tracked by the Index; and

(iii) that is not a Component Disrupted Day (as defined in the Index Rules) for the USD Cash Component Underlying or the EUR Cash Index.

Foreign Currency Denominated Component Underlying; and Closing FX Hedged Levels

When computing the level of the Index, the Calculation Agent will calculate a U.S. dollar Closing FX Hedged Level for each Component Underlying that is denominated in a currency other than the U.S. dollar (a "**Foreign Currency Denominated Component Underlying**"). For this purpose, the Calculation Agent will effect a synthetic daily foreign currency hedge of the level of such Foreign Currency Denominated Component Underlying as of the prior day into U.S. dollars, in accordance with a formula designed with the objective of (1) removing the impact of any change in foreign exchange rates from the level of the Foreign Currency Denominated Component Underlying as of the prior day and (2) scaling such Foreign Currency Denominated Component Underlying's return for that day by the change in foreign exchange rates.

Provisions Relating to Market Disruptions and Corrections

Calculation of the level of the Index and implementation of synthetic portfolio rebalancings will be suspended in the event of the occurrence of a Market Disruption Event. However, if a Component Continuing Disruption Event occurs for any Component Underlying, then the next Component Dealing Day, notwithstanding the existence of any Market Disruption in respect of such Component Underlying on such Component Dealing Day, will be a Component Valuation Day for such Component Underlying (the "**Final Disruption Determination Date**").

A "**Component Dealing Day**" is defined as (a) in respect of a Component Underlying that is an index, including the Cash Components, a day on which the Closing Level for that Component Underlying is (or, but for the occurrence of a Market Disruption Event, would have been) scheduled to be calculated and published by the relevant sponsor of such Component Underlying; and (b) in respect of a Component Underlying that is a US Exchange Traded Component, a day on which the primary exchange in the United States on which such US Exchange-Traded Component is listed is scheduled to be open for trading for its regular trading session.

On a Final Disruption Determination Date in respect of a Component Underlying, the Index Sponsor or the Index Calculation Agent with the approval of the Index Sponsor (the "**Determining Person**") will calculate its good faith estimate of the Closing Level of such Component Underlying for that Component Dealing Day and thereafter calculate its good faith estimate of the Index Level of the Index as of such Final Disruption Determination Date (notwithstanding the fact that such Final Disruption Determination Date is a Component Disrupted Day for at least one Component Underlying) using a good faith estimate. Any such estimate of the Index Level of the Index or any precursor calculation may be subject to correction on the first day on which the market disruption ceases. The Final Disruption Determination Date will be an Index Calculation Day for the purposes of the Index Rules.

The following terms used in this section have the following meanings:

- "**Component Disrupted Day**" means, in respect of a Component Underlying, a Component Dealing Day on which a Market Disruption Event occurs or is continuing in respect of such Component Underlying or the Relevant Index in respect thereof.
- "**Component Continuing Disruption Event**" means, in respect of a Component Underlying or the Relevant Index in respect thereof, the occurrence of the fifth consecutive Component Dealing Day that is Component Disrupted Day.
- A "**Market Disruption Event**" occurs, in respect of a Component Underlying, if the Determining Person determines in its sole discretion that on a Component Dealing Day there has been:

  (i) in respect of any Component Underlying, any event that, in the determination of the Determining Person, disrupts or impairs the ability of market participants to effect transactions in or obtain levels or market values for (a) such Component Underlying, (b) a component or constituent of such Component Underlying, (c) a component or constituent of a reference index or reference asset of such Component Underlying, or (d) any transaction or instrument that references either (x) such Component Underlying or (y) a component or constituent of a reference index or reference asset of such Component Underlying (in any case, which transaction or instrument is exchange-listed, cleared or commonly transacted in over-the-counter markets);

  (ii) in respect of a Relevant Index of a Component Underlying,, (a) a failure by the index sponsor of such Relevant Index or its agent to calculate and publish the Closing Level for such Relevant Index on such Component Dealing Day or (b) the occurrence of a Relevant Index Disruption Event; (c) if such Component Underlying is a Commodity Index, the occurrence of a Commodity Disruption Event with respect to such Component Underlying or a Relevant Index of such Component Underlying;

  (iii) in respect of an US Exchange-Traded Component, an Exchange-Traded Product Disruption Event;

(iv) in respect of a Foreign Currency Denominated Component Underlying, an FX Disruption Event; or

(v) in respect of a UCITS Fund, a failure by the NAV Provider to calculate and publish the NAV for the UCITS Fund in respect of such day within the scheduled or usual timeframe for publication.

(i) in respect of the Relevant Index for such Component Underlying (if any), (a) a failure by the index sponsor of such Relevant Index or its agent to calculate and publish the Closing Level for such Relevant Index on such Component Dealing Day, (b) if such Relevant Index is an Equity Index, the occurrence of Equity Index Disruption Event with respect to such Relevant Index, (c) if such Relevant Index is a Commodity Index, the occurrence of a Commodity Disruption Event with respect to such Relevant Index, or (d) any event that, in the determination of the Determining Person, disrupts or impairs the ability of market participants to effect transactions in or obtain levels or market values for the Relevant Index; or

(ii) in respect of a US Exchange Traded Component, an Exchange-Traded Product Disruption Event.

- "**Relevant Index**" means (i) in respect of a Component Underlying that is an index (including any Component Underlying in the Component Type "FX EM Tracker", "FX G10 Tracker", "Government Bond Tracker", "Equity Index", "Commodity Index", "Equity Futures Tracker" or "Commodity Futures Tracker"), such Component Underlying, (ii) in respect of a Component Underlying that has a reference index, such reference index, (iii) in respect of a Component Underlying that has a reference asset, which reference asset has a reference index, such reference index,, and (ii) in respect of an US Exchange-Traded Component, the Reference Index with respect to such US Exchange-Traded Component.

A "**Relevant Index Disruption Event**" means, in each case as determined by the Determining Person in its sole discretion, and subject to the provisions described below under "Determinations Relating to Exchange-Traded Product Disruption Events and Relevant Index Disruption Events" below subject to the Determination Guidelines described below:

(i) the occurrence or existence of a suspension, absence or material limitation of trading of securities then constituting 20% or more of the level of the Relevant Index on the relevant primary exchanges for such securities for more than two hours of trading during, or during the last one-half hour period preceding the close of, the principal trading session on such relevant primary exchanges; or

(ii) if applicable, the occurrence or existence of a suspension, absence or material limitation of trading on the primary exchange or market for trading in futures or options contracts related to the Relevant Index for more than two hours of trading during, or during the last one-half hour period preceding the close of, the principal trading session on such applicable exchange or market.

An "**FX Disruption Event**" means, for any Foreign Currency Denominated Component Underlying, generally, (i) in respect of the relevant foreign currency pair, it becomes impossible for the Index Calculation Agent to obtain information about the spot rate for the conversion of such currency pair from the price source for such Component Underlying Currency, or (ii) the imposition of Exchange Restrictions (as defined in the Index Rules) by a governmental authority of a government relevant to either currency of such currency pair.

A "**Commodity Disruption Event**" means, in each case as determined by the Determining Person in its sole discretion:

(i) A material limitation, suspension, discontinuation or disruption of trading in one or more of the relevant Commodities or Reference Commodities;

(ii) A material limitation, suspension, discontinuation or disruption of trading in one or more options or futures contracts on (x) a relevant commodity or commodities related to the relevant Commodity or Commodity Index or (y) any of the relevant Commodities or Reference Commodities, which results in failure by the relevant exchange on which any such option(s) and/or futures contract(s) is/are traded to report an official settlement price for such option(s) and/or futures contract(s) on the day on which such event occurs or any succeeding day on which it continues;

(iii) a limitation, suspension or disruption of trading in one or more options or futures contracts on (x) a relevant commodity or commodities related to the relevant Commodity or Commodity Index or (y) any of the relevant Reference Commodities, by reason of movements exceeding "limit up" or "limit down" levels permitted by the relevant exchange and which the Determining Person determines is material to trading volume or market conditions in such option(s) and/or futures contract(s) for the relevant day;

(iv) publication by the relevant exchange of a "limit price" as the official settlement price for one or more futures contracts on (x) a relevant commodity or commodities related to the relevant Commodity or Commodity Index or (y) any of the relevant Commodities or Reference Commodities, by reason of movements exceeding "limit up" or "limit down" levels permitted by the relevant exchange;

(v) the occurrence of a Commodity Index Non-Publication Event (as defined in the Index Rules);

(vi) the relevant exchange for any options or futures contracts on (x) the relevant commodity or commodities related to the relevant Commodity or Commodity Index or (y) any of the relevant Commodities or Reference Commodities, is not open for trading during its regular trading session as scheduled for the relevant day; or

(vii) the relevant market for any of the relevant Commodities or Reference Commodities is not open for trading during its regular trading session as scheduled for the relevant day.

"Exchange-Traded Product Disruption Event" means, with respect to an US Exchange-Traded Component, in each case as determined by the Determining Person in its sole discretion, and subject to the provisions described below under "Determinations Relating to Exchange-Traded Product Disruption Events and Relevant Index Disruption Events" below:

(i) the occurrence or existence of a suspension, absence or material limitation of trading of the securities of such US Exchange-Traded Component on the relevant primary exchange for such securities for more than two hours of trading during, or during the last one-half hour period preceding the close of, the principal trading session on such relevant primary exchange;

(ii) a breakdown or failure in the price and trade reporting systems of the relevant primary exchange for the securities of such US Exchange-Traded Component as a result of which the reported trading prices for such securities are materially inaccurate for more than two hours of trading during, or during the last one-half hour period preceding the close of, the principal trading session on such relevant primary exchange;

(iii) if applicable, the occurrence or existence of a suspension, absence or material limitation of trading on the primary exchange or market for trading in futures or options contracts related to the securities of such US Exchange-Traded Component or on any Related Exchange (as defined in the Index Rules) for such US Exchange-Traded Component for more than two hours of trading during, or during the last one-half hour period preceding the close of, the principal trading session on the applicable exchange or market;

(iv) as applicable, if any of the following is calculated or announced in the ordinary course, but is not calculated or is not announced by or on behalf of the relevant sponsor or issuer of such US Exchange-Traded Component or the relevant calculation agent or information provider that the relevant sponsor or issuer of such US Exchange-Traded Component designates: the intraday net asset value or the intraday indicative value of an US Exchange-Traded Component, the intraday indicative value of a

Reference Index or a Reference Commodity of an US Exchange-Traded Component, or any intraday value or level that indicates or affects the approximate intrinsic economic value of an US Exchange-Traded Component or the amount of any payment in respect of such US Exchange-Traded Component;

(v) as applicable, if any of the following is calculated or announced in the ordinary course, but is not calculated or is not announced by or on behalf of the relevant sponsor or issuer of the US Exchange-Traded Component or the relevant calculation agent or information provider that the relevant sponsor or issuer of the US Exchange-Traded Component designates: the closing net asset value or the closing indicative value of an US Exchange-Traded Component, the closing indicative value of a Reference Index or a Reference Commodity of an US Exchange-Traded Component, or any closing value or level or other value or level that indicates or affects the approximate intrinsic economic value of an US Exchange-Traded Component or the amount of any payment in respect of an US Exchange-Traded Component; or

(vi) as applicable, the relevant sponsor or issuer of an US Exchange-Traded Component suspends creations, issuances or redemptions of securities of such US Exchange-Traded Component.

Determinations Relating to Exchange-Traded Product Disruption Events and Relevant Index Disruption Events

For the purpose of determining whether a Relevant Index Disruption Event or an Exchange-Traded Product Disruption Event has occurred:

(1) a limitation on the hours or number of days of trading will not constitute a Relevant Index Disruption Event or an Exchange-Traded Product Disruption Event if it results from an announced change in the regular business hours of the relevant primary exchange or the primary exchange or market for trading in futures or options contracts related to the relevant securities;

(2) limitations pursuant to the rules of any relevant primary exchange similar to New York Stock Exchange Rule 80B (or any applicable rule or regulation enacted or promulgated by any other self-regulatory organization or any government agency of scope similar to New York Stock Exchange Rule 80B as determined by the Determining Person) on trading during significant market fluctuations will constitute a suspension, absence or material limitation of trading;

(3) a suspension of trading in futures or options contracts on the applicable Relevant Index or securities of a US Exchange-Traded Component by the primary exchange or market for trading in such contracts or securities of such US Exchange-Traded Component by reason of (a) a price change exceeding limits set by such exchange or market, (b) an imbalance of orders relating to such contracts or securities of such US Exchange-Traded Component or (c) a disparity in bid and ask quotes relating to such contracts or securities of such US Exchange-Traded Component, will constitute a suspension, absence or material limitation of trading in futures or options contracts related to such Relevant Index or the securities of such US Exchange-Traded Component; and

(4) a suspension, absence or material limitation of trading on any relevant primary exchange or, if applicable, on the primary exchange or market on which futures or options contracts related to the applicable Relevant Index or the securities of an US Exchange-Traded Component are traded will not include any time when such exchange or market is itself closed for trading under ordinary circumstances.

Corrections

If (i) the Closing Level of any Component Underlying as of any date which is published or otherwise made available in respect of the relevant Component Underlying is subsequently corrected and such correction is published or otherwise made available in respect of such Component Underlying; or (ii) the Index Calculation Agent identifies an error or omission in any of its calculations, determinations or interpretations in respect of the Index, then the Index Calculation Agent may, if practicable and if the Index Calculation Agent determines in good faith that such correction, error or omission (as the case may be) is material, adjust or correct the relevant calculation, determination or interpretation and/or the Index Level as of any Index Calculation Day to take into account any such correction, subject to the prior agreement of the Index Sponsor. If the Index Sponsor identifies an error or omission in any calculations, determinations or interpretations in respect of the Index, then the Index Sponsor may, if practicable and if the Index Sponsor determines in good faith that such correction, error or omission (as the case may be) is material, adjust or correct the relevant calculation, determination or interpretation and inform the Index Calculation Agent of such correction so that the Index Calculation may correct the Index Level as of any Index Calculation Day to take into account any such correction.

Events Relating to Component Underlyings Removals, Replacements and Modifications

The occurrence of certain extraordinary events may cause the removal of Component Underlyings from the Index, either with or without substitution or may cause modifications to the valuation or other determinations with respect to the Component Underlyings.

Successor Component Underlyings

(a) For a US Exchange Traded Component, (x) if any of the following is calculated or announced in the ordinary course, but is not calculated or is not announced by or on behalf of the relevant sponsor or issuer for the US Exchange-Traded Component or the relevant calculation agent or information provider that such sponsor or issuer designates: its intraday or closing net asset value or another value or level that indicates or affects the approximate intrinsic economic value of the US Exchange-Traded Component or the amount of any payment in respect of the US Exchange-Traded Component, (y) yet such value or level is calculated and announced by or on behalf of a successor sponsor or issuer acceptable to the Index Sponsor or a calculation agent or information agent (in either case, that such successor sponsor or issuer designates) acceptable to the Index Sponsor;

(b) for a Component Underlying that is an index (including the Cash Components) or for the Reference Index of a US Exchange Traded Component, (x) if the relevant index is replaced by a successor index, (y) yet such successor index uses, in the determination of the Index Sponsor, the same or a substantially similar formula for and method of calculation as used in the calculation of the relevant index or such successor index is otherwise acceptable to the Index Sponsor;

(c) for a Component Underlying that is an index (including, for the avoidance of doubt, the Cash Components) or for the Reference Index of a US Exchange Traded Component, (x) if the relevant index sponsor makes a material change in the formula for or the method of calculating that index or in any other way materially modifies that index (other than a modification prescribed in that formula or method to maintain that index in routine circumstances), (y) yet such change or modification is acceptable to the Index Sponsor;

(d) for a US Exchange Traded Component that has one or more Reference Commodities, (x) if it is replaced by a successor U.S.-listed Exchange-Traded Fund, (y) yet any Reference Commodities of such successor U.S.-listed Exchange-Traded Fund are the same as that of the replaced US Exchange-Traded Component or such successor U.S.-listed Exchange-Traded Fund is otherwise acceptable to the Index Sponsor; or

(e) for a US Exchange Traded Component, (x) if it is replaced by a successor US Exchange-Traded Component, (y) yet (1) the Reference Index of such successor Exchange-

Traded Component is either the same as that of the replaced US Exchange-Traded Component or is an index using, in the determination of the Index Sponsor, the same or a substantially similar formula for and method of calculation as used in the calculation of the replaced US Exchange-Traded Component's Reference Index or (2) such successor US Exchange-Traded Component is otherwise acceptable to the Index Sponsor,

then, in each case, that Component Underlying, that Reference Index or the relevant sponsor, issuer, calculation agent or information provider will thereafter be deemed to be the successor Component Underlying, successor Reference Index or the successor sponsor, issuer, calculation agent or information provider described in the relevant clause above, with effect from a date determined by the Index Sponsor, which may make such adjustments to the Index Rules as it determines in good faith are appropriate to account for such change (including, without limitation, adjustments to market disruption provisions in respect of an index that includes securities or components that are bonds or loans).

For the avoidance of doubt, the Index Sponsor shall not accept a particular successor U.S.-listed Exchange-Traded Fund or successor index if the Index Sponsor determines, in its sole discretion, that doing so would immediately result in the occurrence of an Extraordinary Event.

Extraordinary Events; Removal and Potential Substitution of Component Underlyings

If an Extraordinary Event occurs in respect of a Component Underlying, the Index Sponsor, acting in good faith and a commercially reasonable manner, shall select as a substitute for such Component Underlying:

- A U.S.-listed Exchange-Traded Fund has a Reference Index;
- a U.S.-listed Exchange-Traded Fund that has one or more Reference Commodities; or
- an index,

(such substitute U.S.-listed Exchange-Traded Fund or index being referred to herein as a "substitute U.S.-listed Exchange-Traded Fund" or "substitute index," respectively) that, in any case, the Index Sponsor determines, in its sole discretion, possesses substantially similar characteristics or provides a substantially similar exposure (as considered prior to the occurrence of such Extraordinary Event, with the understanding that (1) a substitute U.S.-listed Exchange-Traded Fund or a substitute index can be substantially similar to a US Exchange Traded Component and (2) a substitute U.S.-listed Exchange-Traded Fund or a substitute index can be substantially similar to an index that is a Component Underlying) as compared to the Component Underlying that is being replaced, *provided that*, if the Index Sponsor determines that no such substitute is available, the Index Sponsor shall instead select an appropriate substitute by considering the context of the Index.

In such a case, the Index Sponsor shall, in good faith, make such adjustments that it determines to be appropriate to any variable, calculation methodology, valuation terms or any other rule in relation to the Index to account for such substitution (including, without limitation, adjustments to market disruption provisions in respect of an index that includes securities or components that are bonds or loans); *provided that*:

(i) the Index Sponsor shall not select a substitute U.S.-listed Exchange-Traded Fund for a Cash Component, but may select a substitute index for a Cash Component;

(ii) for any Component Underlying other than a Cash Component, if the Index Sponsor determines, in its sole discretion, that no such substitute U.S.-listed Exchange-Traded Fund or substitute index is available, then the Index Sponsor will, in its sole discretion, (x) determine its good faith estimate of the closing price of such Component Underlying as of a date on or prior to the occurrence of such Extraordinary Event and use such estimate of the closing price (without modification over time) in respect of such Component Underlying in subsequent calculations of the Index Level of the Index, (y) replace such Component Underlying with the Cash Component as of the next Index Calculation Day following the date of the occurrence of such Extraordinary Event and (z) in good faith, make such adjustments that it determines to be appropriate to any variable, calculation methodology, valuation terms or any other rule in relation to the Index to account for such substitution. *provided further that,* for the Cash Component, if the Index Sponsor determines, in its sole discretion, that no such substitute index is available, then the Index Sponsor will, in its sole discretion, calculate the level of the Cash Component using, in lieu of a published level for the Cash Component, the level for the Cash Component as of any future Component Dealing Day as determined by the Index Sponsor in accordance with the formula for and method of calculating the Cash Component last in effect prior to the occurrence of such Extraordinary Event, but using only the types of components that composed the Cash Component immediately prior to such Extraordinary Event (and in the case of components with an expiration or maturity, any components required to roll any expiring positions in accordance with the formula for and method of calculating the Cash Component shall be permitted).

(iii) in the event of an Index Disqualification Event in respect of any Exchange-Traded Component that is a Qualified Index Linked ETF, any substitute U.S.-listed Exchange-Traded Fund must reference a Qualified Index (as defined in the Index Rules and generally meaning an index the exchange traded funds linked to which are exempt from certain U.S. tax withholding on dividend equivalent payments);

(iv) the Index Sponsor shall not select a particular substitute U.S.-listed Exchange-Traded Fund or index if the Index Sponsor determines, in its sole discretion, that doing so would immediately result in the occurrence of an Extraordinary Event.

An "**Extraordinary Event**" occurs if the Index Sponsor determines in its sole discretion that one or more of the following events has occurred in respect of a Component Underlying and the event materially interferes with the ability of market participants to transact in positions with respect to the Index (including, positions in a Component Underlying or the index or commodity referenced by the Component Underlying):

(1) for any US Exchange-Traded Component for which the securities of the relevant U.S.-listed Exchange-Traded Fund are issued by a trust (such issuer trust, the "**Trust Issuer**"), the trust agreement or any similar governing document of the Trust Issuer is terminated, or the Trust

Issuer becomes, for any reason, subject to voluntary or involuntary termination, liquidation, bankruptcy, insolvency, dissolution or winding-up or any other analogous proceeding;

(2) for any US Exchange-Traded Component, the issuer becomes, for any reason, subject to voluntary or involuntary termination, liquidation, bankruptcy, insolvency, dissolution or winding-up or any other analogous proceeding;

(3) for any US Exchange-Traded Component or its issuer, all the securities of the US Exchange-Traded Component or its issuer or all or substantially all of the assets of the US Exchange-Traded Component or its issuer are nationalized, expropriated or otherwise required to be transferred to any governmental agency, authority, entity or instrumentality thereof;

(4) for any Component Underlying, the sponsor or issuer of the Component Underlying permanently cancels the Component Underlying, and no successor exists, or the Component Underlying's level, net asset value or indicative value is not calculated and is not announced by or on behalf of the relevant sponsor or issuer of the Component Underlying, and is not calculated and announced by or on behalf of a successor sponsor or issuer acceptable to the Index Sponsor;

(5) for any Component Underlying, if an event specified in clause (x) of paragraphs (a) - (e) under *Successor Component Underlyings* above occurs, but the relevant event specified in clause (y) of such triggered paragraph does not occur;

(6) for a Component Underlying that is an index, a failure by the relevant sponsor to calculate and publish its closing level for five (5) consecutive Component Dealing Days;

(7) in respect of any US Exchange-Traded Component, such US Exchange-Traded Component is de-listed from the relevant primary exchange for such US Exchange-Traded Component and is not concurrently listed on a U.S. securities exchange acceptable to the Index Sponsor;

(8) in respect of any US Exchange-Traded Component, the occurrence of an ETF Material Event;

(9) in respect of any Component Underlying that is a UCITS Fund, a UCITS Fund Material Event occurs in respect of such UCITS Fund;

(10) in respect of any US Exchange-Traded Component that is a Qualified Index Linked ETF, an Index Disqualification Event occurs;

(11) a Market Disruption Event for a Component Underlying occurs for 10 consecutive Component Dealing Days, and the Index Sponsor determines that such Market Disruption Event is reasonably likely to continue for a period of an indeterminate duration;

(12) in respect of a Component Underlying, (x) a suspension or limitation on trading in respect of a Relevant Underlying is announced or imposed for 10 consecutive relevant days or for a period of indeterminate duration that the Index Sponsor determines is reasonably likely to include 10 consecutive relevant days or (y) any other event occurs or condition exists that causes trading to cease in respect of a Relevant Underlying for 10 consecutive relevant days;

(13) in respect of a Component Underlying, at any time, the license granted (if required) by a non-affiliate of the Index Sponsor to the Index Sponsor (or its affiliates) to use such Component Underlying for the purposes of the Index terminates, or the Index Sponsor determines that the Index Sponsor's rights to use the Component Underlying for the purpose of the Index have become impaired or ceased (for any reason); or

(14) the occurrence or continuation of a Change in Law.

An "**ETF Material Event**" consists of each of the following events, where the Index Sponsor determines in its sole discretion that such event or combination of events is material:

(a) there is an amendment, variation or modification to the constitutional documents or offering documents of the US Exchange-Traded Component, that the Index Sponsor determines has or is reasonably likely to have an adverse impact on the ability of market participants to trade in securities of the US Exchange-Traded Component;

(b) there is an amendment, variation or modification to the terms of the US Exchange-Traded Component or the obligations of the issuer in respect of the US Exchange-Traded Component, in any case and by any means, that the Index Sponsor determines has or is reasonably likely to have an adverse impact on the value, redeemability or liquidity of the securities of the US Exchange-Traded Component;

(c) an ETF Regulatory Action occurs in respect of the US Exchange-Traded Component. The term "ETF Regulatory Action" is defined in the Index Rules and generally encompasses adverse regulatory events affecting a US Exchange Traded Component or its issuer, sponsor or adviser;

(d) its Average Daily Trading Value (as defined in the Index Rules) declines below (x) an amount equal to 20 percent of its Average Daily Trading Value as of 15 February 2019 or (y) $7.5 million;

(e) its Market Capitalization (as defined in the Index Rules) declines below (x) an amount equal to 20 percent of its Market Capitalization as of 15 February 2019 or (y) $500 million;

(f) an announcement of the delisting of the US Exchange-Traded Component from its primary exchange;

(g) if any of the following is calculated or announced in the ordinary course, but, for a period of five (5) consecutive Component Dealing Days, is not calculated or is not announced by or on behalf of the relevant sponsor or issuer of the US Exchange-Traded Component or the relevant calculation agent or information provider that the relevant sponsor or issuer of the US Exchange-Traded Component designates: the intraday net asset value of the US Exchange-Traded Component, the intraday indicative value of a Reference Index or a Reference Commodity of the US Exchange-Traded Component, or any intraday value or level that indicates or affects the approximate intrinsic economic value of the US Exchange-Traded Component or the amount of any payment in respect of the US Exchange-Traded Component;

(h) if any of the following is calculated or announced in the ordinary course, but, for a period of five (5) consecutive Component Dealing Days, is not calculated or is not announced by or on behalf of the relevant sponsor or issuer of the US Exchange-Traded Component or the relevant calculation agent or information provider that the relevant sponsor or issuer of the US Exchange-Traded Component designates: the closing net asset value of the US Exchange-Traded Component, the closing indicative value of a Reference Index or a Reference Commodity of the US Exchange-Traded Component, or any closing value or level or other value or level that indicates or affects the approximate intrinsic economic value of the US Exchange-Traded Component or the amount of any payment in respect of the US Exchange-Traded Component;

(i) if any of the following is calculated or announced in the ordinary course, but, for a period of five (5) consecutive Component Dealing Days, the Closing Level of the US Exchange-Traded Component reflects a premium greater than 5% or a discount greater than 5% as compared to the closing net asset value of the US Exchange-Traded Component, the closing indicative value of a Reference Index or a Reference Commodity of the US Exchange-Traded Component, or any closing value or level or other value or level that indicates or affects the approximate intrinsic economic value of the US Exchange-Traded Component or the amount of any payment in respect of the US Exchange-Traded Component;

(j) the relevant sponsor of the Reference Index of the US Exchange-Traded Component fails to calculate and publish the Closing Level for such index for five consecutive Component Dealing Days; or

(k) the relevant sponsor of the US Exchange-Traded Component suspends new issuances, creations or redemptions of securities of such US Exchange-Traded Component for five consecutive Component Dealing Days or announces a suspension of unlimited duration of such creations or redemptions.

An "**Index Disqualification Event**" shall occur with respect to a Qualified Index Linked ETF if the Index Sponsor determines that the equity index tracked by such Qualified Index Linked ETF does not meet the requirements for classification as a "qualified index" (a "**Qualified Index**") under the regulations of the United States Treasury relating to the imposition of withholding taxes on dividend equivalent payments promulgated under Section 871(m) of the United States Internal Revenue Code of 1986, as amended, as such regulations may be amended or interpreted from time to time.

A “**Change in Law**” occurs when, due to either:

(a) the adoption of, or any change in, any applicable law, regulation or rule (including, without limitation, (x) any tax law or (y) adoption or promulgation of new regulations authorized or mandated by existing statute); or

(b) the promulgation of, or any change in, the announcement or statement of a formal or informal interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, as implemented by the U.S. Commodity Futures Trading Commission, the U.S. Securities and Exchange Commission or any exchange or trading facility), and

the Index Sponsor determines in good faith that (x) it is contrary to such law, rule, regulation or order for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) a position in or a transaction referencing or relating to (1) a Component Underlying, (2) a component of a Component Underlying that is an index, (3) a component of a Reference Index of a US Exchange Traded Component or (4) a Reference Commodity of a US Exchange Traded Component (each such underlying described in any of the immediately preceding clauses (1), (2) , (3) and (4), being a “**Relevant Underlying**”) or (y) holding a position in or a transaction referencing or relating to a Relevant Underlying is (or, but for the consequent disposal or termination thereof, would otherwise be) in excess of any allowable position limit(s) applicable to any market participants that are brokers or financial intermediaries (individually or collectively) under any such law, rule or regulation in relation to a Relevant Underlying, including in any case traded on any exchange(s), market or other trading facility.

The Index Sponsor has no obligation to monitor actively whether or not an ETF Material Event has occurred.

Upon the selection of a substitute ETF or index due to the successor or extraordinary event provisions described above, such substitute shall take the place of the relevant Component Underlying. The substitute's prior performance (if available) will be used in determining simulated historical volatility used in modulating the Index's exposure to synthetic portfolio.

A “**UCITS Fund Material Event**” will be deemed to have occurred with respect to a UCITS Fund if any of the following, as determined by the Determining Person (and, for the avoidance of doubt, the

Determining Person has no obligation actively to monitor whether or not any of the following events has occurred, and provided that, if any of the following events would amount to both a Lock-in Event and a Market Disruption Event, the Determining Person may determine whether to treat such event as either or both of a Lock-in Event or a Market Disruption Event in respect of such UCITS Fund):

(a) an Insolvency (as defined in the Index Rules, and, generally, events relating to bankruptcy and dissolution) in respect of a UCITS Fund, its Management Company or any of its Fund Service Providers;

(b) a Fund Merger Event (as defined in the Index Rules, and, generally, events of merger or transfer of control) in respect of a UCITS Fund;

(c) a Fund Termination (as defined in the Index Rules, and, generally, events constituting a cancellation or cessation of operations) in respect of a UCITS Fund;

(d) a Nationalisation (as defined in the Index Rules, and, generally, events constituting a nationalization or governmental expropriation) in respect of a UCITS Fund; or

(e) the occurrence of a Lock-in Event.

"**Lock-in-Events**" are potential events affecting Component Underlyings that are UCITS Funds. The Lock-in-Events are defined in the Index Rules and generally consist of a Determining Person's determination that one of the following circumstances has occurred:

(a) Global Events. These events include; (i) Modification of Fund Offering Documents (generally, events that would adversely affect a hypothetical investor as a holder of interest in such a UCITS Fund, including a change in strategy or investment objective or the currency in which the fund's shares are denominated); and (ii) Disputes (generally, a UCITS Fund or its management company becomes party to litigation or a dispute).

(b) Net Asset Value and Performance. These events include (i) Failure to Calculate NAV (generally, the UCITS Fund or service provider fails to calculate and announce or publish the net asset value per share, and such breach is not cured within 8 UCITS Fund local business days, and provided that, if such breach occurs on five consecutive occasions, the cure period shall not apply in respect of any fifth or subsequent breach, or changes are made to the frequency or dates on which the net asset value is calculated); (ii) Audited NAV (generally, any audited net asset value per share of the UCITS Fund is different from the published level or the UCITS Fund's auditors qualify or refuse to provide an unqualified report for the UCITS Fund or its net asset value); (iii) Assets under Management (generally, the UCITS Fund's assets under management have declined by at least 50% over the preceding three months); and (iv) Performance and Risk Measurements (generally, the volatility of a UCITS Fund over the preceding 30 days, using the historical net asset value figures that are available for the preceding 30 days, is greater than 30%.

(c) Trading. These events include (i) Mandatory Redemption (generally, a Hypothetical Investor would be required, or it would be appropriate for a Hypothetical Investor, for any reason whatsoever including without limitation, regulatory reasons or any mandatory redemption imposed by a UCITS Fund, to redeem any Fund Shares it may hold); (ii) Material Change in Strategy (generally, a material change is made to the risk profile, investment objective or investment restrictions of the UCITS Fund or the Fund is not being managed in accordance with its applicable rules and description); (iii) Notification from Manager (generally, a notification by a UCITS Fund's management company that, in its opinion, it is not advisable to continue operation of such UCITS Fund, the risk profile, strategy or investment objective of a UCITS Fund will not, or can no longer, be met in the foreseeable future or liquidation, dissolution or discontinuance of such UCITS Fund is recommended; (iv) Suspension of Trading (generally, a suspension or limitation in trading of the UCITS Fund, limitation on redemptions, deferral of transactions; and (v) Increase in Fees (generally, an increase in the applicable fees payable to the UCITS Fund's management company or service providers are amended or fees applicable to a Hypothetical Investor in respect of a purchase, sale or holding of the fund shares have increased).

(d) Operational failures. These events include (i) Change in Manager and/or Service Providers (generally, resignation, termination or replacement of a UCITS Fund's management company or service provider, or an adverse change affecting any such person, breach of contract by any such person; (ii) Operational Failures (generally, a change in the operation, organization or policies of the UCITS Fund, its management company, or a change in service provider); (iii) Reporting Failures (generally, failure by the UCITS Fund or its management company or any service provider to provide to the Hypothetical Investor any information that it is normally provided or which is necessary to allow the Determining Person to make determinations under the Index Rules);

(e) Regulatory and legal constraints. These events include (i) Regulatory Action (generally, the UCITS Fund or its management company or service provider is subject to adverse legal or regulatory action or an investigation or to a loss of registration); (ii) Regulatory Constraints (generally, a Hypothetical Investor may be unable to hold fund shared in the UCITS Fund due to legal or regulatory constraints).

Where: "**Hypothetical Investor**" means a hypothetical investor comparable to a sophisticated international financial institution, and incorporated in the jurisdiction of the Index Sponsor, having exposure to an investment in the Fund Shares of any UCITS Fund.

Anti-Dilution Adjustments

With respect to each Component Underlying that is either a US Exchange-Traded Component or a UCITS Fund (or the relevant successor or substitute), the Determining Person will make anti-dilution adjustments to the Closing Level of such Component Underlying only (a) if the securities or shares of such Component Underlying are subject to a split or reverse split, once such split has become effective, and (b) if such Component Underlying is subject to (i) an issuance of additional securities or shares of such Component Underlying that is given ratably to all or substantially all holders of securities or shares of such Component Underlying or (ii) a distribution of securities or shares of such Component Underlying as a result of the triggering of any provision of the corporate charter or other organizational documents of such Component Underlying or its issuer, as applicable, once the dividend or distribution has become effective and the securities or shares of such Component Underlying are trading ex-distribution or would otherwise be considered as being post-distribution. The Determining Person will be solely responsible for the determination and calculation of any such anti-dilution adjustments and any related determinations and calculations, and its determinations and calculations with respect thereto will be conclusive in the absence of manifest error.

Data Access Event

Certain events affecting the Index Sponsor's access to data required to calculate the levels of Component Underlyings or make other determinations under the Index Rules (including calaculation of the Borrow Rate) could result in changes to or the cancellation of the Index. If, at any time, any relevant licence or other right to use or refer to any price, level, market data or other information for or relating to any Component Underlying is terminated, or is otherwise disputed, impaired or replaced for any reason (a "**Data Rights Interruption**") or discontinued (a "**Data Discontinuation**"), then the Index Sponsor may: (i) (a) find a replacement data source or provider or select an alternative source of information, (b) determine a date on which such replacement is effective, and (c) adjust the Index Rules to account for such replacement or (ii) cancel the Index.

Amendments to the Index Rules

The Index Sponsor may, acting reasonably and in good faith, amend the Index Rules where it considers such amendment necessary (i) to comply with applicable law or regulation, including any changes in applicable law or regulation or in the interpretation thereof, and/or (ii) to correct any errors, omissions or ambiguities identified by the Index Calculation Agent or Index Sponsor as the case may be. To the extent permitted by applicable law, rules and regulations and internal policies, the Index Sponsor shall use commercially reasonable efforts to provide notice to the Index Allocation Agent fifteen calendar days immediately preceding such a proposed amendment and shall consider input, if any, from the Index Allocation Agent in good faith and in a commercially reasonable manner, but shall not be obligated to alter such proposed amendment. The Index Sponsor may also vary the Component Underlyings in accordance with the Index Rules in the event of the occurrence of certain Component Underlying Adjustment Events.

Changes made to the Index Rules annex that lists the Component Underlyings to account for additions, substitutions or removals in accordance with the Index Rules will not constitute amendments to the Index Rules to the extent made in accordance with the provisions of the Index Rules but not pursuant to Section 3 of the Index Rules (Amendments).

Termination of the Index

The Index will be terminated in the event that the Index Allocation Agreement under which the Index Allocation Agent serves as such is terminated. A termination can occur under the following circumstances:

- Upon 60 days' notice of either the Index Allocation Agent or the Index Sponsor;
- Upon the occurrence of certain bankruptcy-related events with respect to either the Index Allocation Agent or the Index Sponsor;
- Either the Index Allocation Agent or the Index Sponsor determines that the other is involved in regulatory or legal proceedings that materially affect its ability to perform its obligations under the Index Allocation Agreement, or such regulatory or legal proceedings would result in the continued performance of the terminating party's obligations under the Index Allocation Agreement being materially adverse to the reputation of the terminating party;
- The Index Sponsor may terminate the Index Allocation Agreement if at any time the Index Allocation Agent no longer holds all necessary licences, approvals, registrations, authorizations and permissions required to fulfill its obligations under the Index Allocation Agreement or to hold the Notes, or if the ability of the Index Allocation Agent to fulfill its obligations under the Agreement is substantially curtailed by any competent legal or regulatory authority;
- The Index Allocation Agreement may be terminated by the Index Allocation Agent or the Index Sponsor with immediate effect should the other party fail to comply with any material

obligation under the Index Allocation Agreement; provided that such other party has not remedied such breach within 15 calendar days after receiving notice from such terminating party requiring the breach to be remedied; and

- The Index Allocation Agreement would terminate immediately if the Index Allocation Agent announces that it intends to cease to be engaged in the business of investment management services.

Disclosures Concerning Certain Factors Affecting the Index

No assurance can be given that the investment strategy used to construct the Index will be successful or that the Index will outperform any alternative basket or strategy that might be constructed from the Component Underlyings.

The rebalancing of the Component Underlyings of the Index will be made under the direction of the Index Allocation Agent at times chosen by the Index Allocation Agent. The Index Allocation Agent may also add or substitute Component Underlyings and thereby materially alter the universe of Component Underlyings potentially comprising the synthetic portfolio tracked by the Index. As a result, both the composition and success of the Index will depend largely upon the decisions and abilities of the Index Allocation Agent and certain key individuals employed by the Index Allocation Agent. There can be no assurance that the Index Allocation Agent will be successful in the rebalancing of the Index and the loss of one or more such key individuals may have a material adverse impact on the performance of the Index.

Furthermore, no assurance can be given that the Index will achieve its volatility target of 10%. The actual realized volatility of the Index may be greater or less than 10%.

The Index is described as a “notional” or synthetic portfolio or basket of assets because there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Index merely references certain assets, the performance of which will be used as a reference point for calculating the Index Level.

Schedule 2

The Republica AFAP Dynamic Index (Fourth Series) Index Rules

[Available from J.P. Morgan Securities LLC upon request]

Schedule 3

Summary Description of ETF Component Underlyings

SPDR S&P 500 ETF Trust

The SPDR S&P 500 ETF Trust (the "**ETF**") is sponsored by PDR Services LLC, a registered investment company. State Street Global Markets, LLC is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P 500 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "SPY".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a capitalization-weighted index of 500 stocks. The Underlying Index is designed to measure performance of the broad U.S. economy through changes in the aggregate market value of 500 stocks representing all major industries. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

PDR Services LLC files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 33-46080 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares Russell 2000 ETF

The iShares Russell 2000 ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Russell 2000 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "IWM".

The Underlying Index is sponsored by Frank Russell Company. The Underlying Index measures the performance of the small-capitalization sector of the U.S. equity market. The Underlying Index includes issuers representing approximately 9% of the total market capitalization of all publicly-traded U.S. equity securities. The Underlying Index is a float-adjusted capitalization-weighted index of equity securities issued by the approximately 2,000 smallest issuers in the Russell 3000 Index. Total market capitalization reflects all equity shares outstanding, while total market value reflects float-adjusted capitalizations based on equity shares available for general investment. Components primarily include consumer discretionary, financials, healthcare and information technology companies. Components of the Underlying Index primarily include energy, financials and utilities companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

Invesco QQQ Trust, Series 1

The Invesco QQQ (the "**ETF**") is issued by Invesco QQQ Trust, Series 1. Invesco Capital Management LLC is the sponsor and investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the NASDAQ-100 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NASDAQ Global Select Market under the trading symbol "QQQ".

The Underlying Index is sponsored by The NASDAQ OMX Group, Inc. The Underlying Index includes 100 of the largest domestic and international non-financial securities listed on The NASDAQ Stock Market based on market capitalization. The Underlying Index reflects companies across major industry groups including computer hardware and software, telecommunications, retail/wholesale trade and biotechnology. The Underlying Index may include large-, mid- or small-capitalization companies, and components primarily include consumer staples, energy, financials and materials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

Invesco QQQ Trust, Series 1 files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-8947 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

SPDR EURO STOXX 50 ETF

The SPDR EURO STOXX 50 ETF (the "**ETF**") is issued by SPDR Index Shares Funds, a registered investment company. SSGA Funds Management is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the EURO STOXX 50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "FEZ".

The Underlying Index is sponsored by STOXX Limited. The Underlying Index is a market capitalization weighted index designed to represent the performance of some of the largest companies across components of the 19 EURO STOXX Supersector Indexes. The EURO STOXX Supersector Indexes are subsets of the EURO STOXX Index. The EURO STOXX Index is a broad yet liquid subset of the STOXX Europe 600 Index, which covers the 600 largest companies in Europe. The Underlying Index captures approximately 60% of the free-float market capitalization of the EURO STOXX Total Market Index, which in turn covers approximately 95% of the free float market capitalization of the represented countries. Index composition is reviewed annually and weights are reviewed quarterly. Countries covered in the Underlying Index have historically included, among others, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands and Spain. The 50 companies in the Underlying Index are selected by first identifying the companies that equal approximately 60% of the free-float market capitalization of each corresponding EURO STOXX Total Market Index Supersector Index. In addition, any stocks that are currently components of the Underlying Index are added to the list. From that list, the 40 largest stocks are selected to be components of the Underlying Index. In addition, any stocks that are current components of the Underlying Index (and ranked 41-60 on the list) are included as components. If there are still less than 50 component stocks, the applicable number of the largest remaining stocks on the list ranked 41 or higher are included as components of the Underlying Index. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

SPDR Index Shares Funds files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-21145 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Japan ETF

The iShares MSCI Japan ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Japan Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWJ".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Tokyo Stock Exchange. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer discretionary, financials and industrials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI United Kingdom ETF

The iShares MSCI United Kingdom ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI United Kingdom Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWU".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the London Stock Exchange. The Underlying Index may include large, mid or small capitalization companies, and components primarily include consumer staples, energy and financials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Germany ETF

The iShares MSCI Germany ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Germany Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWG".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Frankfurt Stock Exchange. The Underlying Index may include large, mid or small capitalization companies, and components primarily include consumer discretionary, financials and materials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI France ETF

The iShares MSCI France ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI France Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWQ".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Paris Stock Exchange. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer discretionary, financials and industrials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares MSCI Switzerland ETF

The iShares MSCI Switzerland ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Switzerland 25/50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWL".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Zurich Stock Exchange. The Underlying Index is a free float-adjusted market capitalization-weighted index with a capping methodology applied to issuer weights so that no single issuer of a component exceeds 25% of the Underlying Index weight, and all issuers with weight above 5% do not cumulatively exceed 50% of the Underlying Index weight. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer staples, financials and healthcare companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares MSCI Spain ETF

The iShares MSCI Spain ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Spain 25/50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWP".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Madrid Stock Exchange. The Underlying Index is a free-float adjusted market capitalization-weighted index with a capping methodology applied to issuer weights so that no single issuer of a component exceeds 25% of the Underlying Index weight, and all issuers with weight above 5% do not exceed 50% of the Underlying Index weight. The Underlying Index may include large-, mid- or small-capitalization companies, and components primarily include financials, industrials, telecommunications and utilities companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Italy ETF

The iShares MSCI Italy ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Italy 25/50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWI".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Milan Stock Exchange. The Underlying Index is a free float-adjusted market capitalization-weighted index with a capping methodology applied to issuer weights so that no single issuer of a component exceeds 25% of the Underlying Index weight, and all issuers with weight above 5% do not cumulatively exceed 50% of the Underlying Index weight. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include energy, financials and utilities companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Sweden ETF

The iShares MSCI Sweden ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Sweden Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWD".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Stockholm Stock Exchange. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer discretionary, financials and industrials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares MSCI Turkey ETF

The iShares MSCI Turkey ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Turkey Investable Market Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "TUR".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index is a free float-adjusted market capitalization index designed to measure broad-based equity market performance in Turkey. The Underlying Index consists of stocks traded primarily on the Istanbul Stock Exchange. The Underlying Index may include large-, mid- or small- capitalization companies. Components of the Underlying Index primarily include consumer staples, financials and industrials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares MSCI Canada ETF

The iShares MSCI Canada ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Canada Custom Capped Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWC".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index is designed to measure the performance of the large and mid-cap segments of the Canadian market. The Underlying Index uses a variation of MSCI 25/50 Indexes methodology, where the weight of any single group index will be constrained at 22.5% of the Underlying Index weight, and the sum of the weights of all group entities representing more than 5% weight will be constrained at 24.5% of the Underlying Index weight. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Australia ETF

The iShares MSCI Australia ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Australia Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWA".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Australian Stock Exchange. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer staples, financials and materials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI India ETF

The iShares MSCI India ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI India Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the BATS Exchange in the United States under the trading symbol "INDA".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index is designed to measure the performance of equity securities of companies whose market capitalization, as calculated by the index provider, represents the top 85% of companies in the Indian securities market. Components of the Underlying Index primarily include consumer staples, financials, healthcare and information technology companies. The component companies include large-and mid-capitalization companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

VanEck Vectors Russia ETF

The Market Vectors Russia ETF (the "**ETF**") is issued by Market Vectors ETF Trust, a registered investment company. Van Eck Associates Corporation is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MVIS Russia Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "RSX".

The Underlying Index is sponsored by Market Vectors Index Solutions GmbH. The Underlying Index is comprised of securities of Russian companies. A company is generally considered to be a Russian company if it is incorporated in Russia or is incorporated outside of Russia but generates at least 50% of its revenues (or, in certain circumstances, has at least 50% of its assets) in Russia. Such companies may include medium-capitalization companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

Market Vectors ETF Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-10325 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares China Large-Cap ETF

The iShares China Large-Cap ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the FTSE China 50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "FXI".

The Underlying Index is sponsored by FTSE International Limited. The Underlying Index s designed to track the performance of the largest companies in the Chinese equity market that are available to international investors. The Underlying Index consists of 50 of the largest and most liquid Chinese companies. Securities in the Underlying Index are weighted based on the total market value of their shares, so that securities with higher total market values generally have a higher representation in the Underlying Index. Each security in the Underlying Index is a current constituent of the FTSE All World Index and all of the securities in the Underlying Index currently trade on the Hong Kong Stock Exchange. Components primarily include financials, oil and gas and telecommunications companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI South Africa ETF

The iShares MSCI South Africa ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI South Africa 25/50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EZA".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Johannesburg Stock Exchange. The Underlying Index may include large- and mid-capitalization companies. The Underlying Index applies certain investment limits that are imposed on regulated investment companies under the current US Internal Revenue Code. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares MSCI South Korea ETF

The iShares MSCI South Korea ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Korea 25/50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWY".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Stock Market Division of the Korea Exchange. The Underlying Index is a free float-adjusted market capitalization-weighted index with a capping methodology applied to issuer weights so that no single issuer of a component exceeds 25% of the Underlying Index weight, and all issuers with weight above 5% do not cumulatively exceed 50% of the Underlying Index weight. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer discretionary, financials and information technology companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Malaysia ETF

The iShares MSCI Malaysia ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Malaysia Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWM".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Kuala Lumpur Stock Exchange. The Underlying Index may include large-, mid- or small- capitalization companies. Components of the Underlying Index primarily include financials, industrials and utilities companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares MSCI Thailand Capped ETF

The iShares MSCI Thailand Capped ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Thailand IMI 25/50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "THD".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index is a free float-adjusted market capitalization index designed to measure broad-based equity market performance in Thailand. The Underlying Index consists of stocks traded primarily on the Stock Exchange of Thailand. A capping methodology is applied to issuer weights so that no single issuer of a component exceeds 25% of the Underlying Index weight, and all issuers with weight above 5% do not cumulatively exceed 50% of the Underlying Index weight. The Underlying Index may include large-, mid- or small- capitalization companies. Components of the Underlying Index primarily include energy, financials, industrials, materials and telecommunications companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares MSCI Singapore ETF

The iShares MSCI Singapore ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Singapore 25/50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWS".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Singapore Stock Exchange. The Underlying Index may include large- and mid-capitalization companies. A capping methodology is applied to issuer weights so that no single issuer of a component exceeds 25% of the Underlying Index weight, and all issuers with weight above 5% do not cumulatively exceed 50% of the Underlying Index weight. Components of the Underlying Index primarily include financials, industrials and telecommunications companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares MSCI Taiwan ETF

The iShares MSCI Taiwan ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Taiwan Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWT".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Taiwan Stock Exchange. The Underlying Index may include large, mid or small capitalization companies, and components primarily include financials, information technology and materials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Mexico ETF

The iShares MSCI Mexico ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Mexico Investable Market Index (IMI) 25/50 (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWW".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Mexican Stock Exchange. The Underlying Index is a free float-adjusted market capitalization-weighted index with a capping methodology applied to issuer weights so that no single issuer of a component exceeds 25% of the Underlying Index weight, and all issuers with weight above 5% do not cumulatively exceed 50% of the Underlying Index weight. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer staples, financials and telecommunications companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Brazil ETF

The iShares MSCI Brazil ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Brazil 25/50 Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EWZ".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the BM&FBOVESPA (the Brazilian exchange). The Underlying Index is a free float-adjusted market capitalization-weighted index with a capping methodology applied to issuer weights so that no single issuer of a component exceeds 25% of the Underlying Index weight, and all issuers with weight above 5% do not cumulatively exceed 50% of the Underlying Index weight. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer staples, energy and financials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Chile ETF

The iShares MSCI Chile ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Chile Investable Market Index (IMI) 25/50 (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "ECH".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Santiago Stock Exchange. The Underlying Index is a free float-adjusted market capitalization index that is designed to measure broad-based equity market performance in Chile. A capping methodology is applied to issuer weights so that no single issuer of a component exceeds 25% of the Underlying Index weight, and all issuers with weight above 5% do not cumulatively exceed 50% of the Underlying Index weight. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer staples, financials, materials and utilities companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Peru ETF

The iShares MSCI Peru ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI All Peru Capped Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EPU".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index is an index designed to measure the performance of Peruvian equity securities as well as securities of companies that are headquartered in Peru or have the majority of their operations based in Peru. The Underlying Index may include large-, mid- or small- capitalization companies. Components of the Underlying Index primarily include consumer staples, financials and materials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

WisdomTree Europe Hedged Equity Fund

The WisdomTree Europe Hedged Equity Fund (the "**ETF**") is issued by WisdomTree Trust, a registered investment company. WisdomTree Asset Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the WisdomTree Europe Hedged Equity Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "HEDJ".

The Underlying Index is sponsored by WisdomTree Investments, Inc. The Underlying Index is a dividend weighted index designed to provide exposure to European equity securities, particularly shares of European exporters, while at the same time neutralizing exposure to fluctuations between the value of the U.S. dollar and the euro. Shares of European exporters stand to benefit from weakness in the value of the euro as this decreases the relative cost of the goods and services they are exporting. The Underlying Index consists of those dividend-paying companies within the WisdomTree International Equity Index, which defines the dividend-paying universe of companies in the industrialized world, excluding Canada and the United States, that are organized under the laws of a European country, trade in euros, have at least USD 1 billion in market capitalization, and derive at least 50% of their revenue from countries outside of Europe. Countries historically represented in the Underlying Index include: Germany, France, the Netherlands, Spain, Belgium, Finland, Italy, Portugal, Austria and Ireland. To be eligible for inclusion in the Underlying Index, a company must meet the following criteria: (i) payment of at least USD 5 million in cash dividends on shares of common stock in the annual cycle prior to the annual Underlying Index screening date; (ii) average daily dollar trading volume of at least USD 200,000 for three months preceding the Underlying Index screening date; and (iii) trading of at least 250,000 shares per month for each of the six months preceding the Underlying Index screening date. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

WisdomTree Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-21864 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

WisdomTree Japan Hedged Equity Fund

The WisdomTree Japan Hedged Equity Fund (the "**ETF**") is issued by WisdomTree Trust, a registered investment company. WisdomTree Asset Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the WisdomTree Japan Hedged Equity Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "DXJ".

The Underlying Index is sponsored by WisdomTree Investments, Inc. The Underlying Index is designed to provide exposure to Japanese equity markets while at the same time neutralizing exposure to fluctuations of the Japanese yen relative to the U.S. dollar. The Underlying Index consists of dividend-paying companies incorporated in Japan and traded on the Tokyo Stock Exchange that derive less than 80% of their revenue from sources in Japan. By excluding companies that derive 80% or more of their revenue from Japan, the Underlying Index is tilted towards companies with a more significant global revenue base. The companies included in the Underlying Index typically have greater exposure to the value of global currencies and, in many cases, their business prospects historically have improved when the value of the yen has declined and have weakened when the value of the yen has increased. To be eligible for inclusion in the Underlying Index, a company must meet the following criteria: (i) payment of at least USD 5 million in cash dividends on common shares in the annual cycle prior to the annual Underlying Index screening date; (ii) market capitalization of at least USD 100 million as of the Underlying Index screening date; (iii) average daily dollar trading volume of at least USD 100,000 for the three months preceding the Underlying Index screening date; and (iv) trading of at least 250,000 shares per month for each of the six months preceding the Underlying Index screening date. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

WisdomTree Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-21864 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares Currency Hedged MSCI Eurozone ETF

The iShares Currency Hedged MSCI Eurozone ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI EMU 100% Hedged to USD Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "HEZU".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index has been developed by MSCI Inc. as an equity benchmark for the European Monetary Union countries with the currency risk inherent in the Notes included in the Underlying Index hedged to the U.S. dollar on a monthly basis. As of September 28, 2018, the Underlying Index consists of stocks from the following 10 developed market countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal and Spain. The Underlying Index may include large- or mid-capitalization companies. Components of the Underlying Index primarily include consumer discretionary, financials and industrials companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares Currency Hedged MSCI Germany ETF

The iShares Currency Hedged MSCI Germany ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Germany 100% Hedged to USD Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "HEWG".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks traded primarily on the Frankfurt Stock Exchange with the currency risk inherent in the Notes included in the Underlying Index hedged to the U.S. dollar on a monthly basis. The Underlying Index may include large- or mid-capitalization companies. Components of the Underlying Index primarily include consumer discretionary, financials and healthcare companies. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares 1-3 Year Treasury Bond ETF

The iShares 1-3 Year Treasury Bond ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the ICE U.S. Treasury 1-3 Year Bond Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "SHY".

The Underlying Index is sponsored by Interactive Data Pricing and Reference Data LLC. The Underlying Index measures the performance of public obligations of the U.S. Treasury that have a remaining maturity of greater than or equal to one year and less than three years. The Underlying Index includes publicly-issued U.S. Treasury securities that have a remaining maturity of greater than or equal to one year and less than three years and have $300 million or more of outstanding face value, excluding amounts held by the Federal Reserve. In addition, the securities in the Underlying Index must be fixed rate and denominated in U.S. dollars. Excluded from the Underlying Index are inflation-linked securities, Treasury bills, cash management bills, any government agency debt issued with or without a government guarantee and zero-coupon issues that have been stripped from coupon-paying bonds. The Underlying Index is weighted by market capitalization excluding amounts held by the Federal Reserve and the securities in the Underlying Index are updated on the last business day of each month.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares 7-10 Year Treasury Bond ETF

The iShares 7-10 Year Treasury Bond ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the ICE U.S. Treasury 7-10 Year Bond Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "IEF".

The Underlying Index is sponsored by Interactive Data Pricing and Reference Data LLC. The Underlying Index measures the performance of public obligations of the U.S. Treasury that have a remaining maturity of greater than or equal to twenty years. The Underlying Index includes publicly-issued U.S. Treasury securities that have a remaining maturity of greater than or equal to twenty years and have $300 million or more of outstanding face value, excluding amounts held by the Federal Reserve. In addition, the securities in the Underlying Index must be fixed rate and denominated in U.S. dollars. Excluded from the Underlying Index are inflation-linked securities, Treasury bills, cash management bills, any government agency debt issued with or without a government guarantee and zero-coupon issues that have been stripped from coupon-paying bonds. The Underlying Index is weighted by market capitalization excluding amounts held by the Federal Reserve and the securities in the Underlying Index are updated on the last business day of each month.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares 20+ Year Treasury Bond ETF

The iShares 20+ Year Treasury Bond ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the ICE U.S. Treasury 20+ Year Bond Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the Nasdaq under the trading symbol "TLT".

The Underlying Index is sponsored by Interactive Data Pricing and Reference Data LLC. The Underlying Index measures the performance of public obligations of the U.S. Treasury that have a remaining maturity of greater than or equal to seven years and less than ten years. The Underlying Index includes publicly- issued U.S. Treasury securities that have a remaining maturity of greater than or equal to seven years and less than ten years and have $300 million or more of outstanding face value, excluding amounts held by the Federal Reserve. In addition, the securities in the Underlying Index must be fixed rate and denominated in U.S. dollars. Excluded from the Underlying Index are inflation-linked securities, Treasury bills, cash management bills, any government agency debt issued with or without a government guarantee and zero-coupon issues that have been stripped from coupon-paying bonds. The Underlying Index is weighted by market capitalization excluding amounts held by the Federal Reserve and the securities in the Underlying Index are updated on the last business day of each month.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares TIPS Bond ETF

The iShares TIPS Bond ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Bloomberg Barclays U.S. Treasury Inflation Protected Securities (TIPS) Index (Series-L) (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "TIP".

The Underlying Index is sponsored by Bloomberg Barclays Indices. The Underlying Index measures the performance of the inflation-protected public obligations of the U.S. Treasury, commonly known as “TIPS.” TIPS are securities issued by the U.S. Treasury that are designed to provide inflation protection to investors. TIPS are income-generating instruments whose interest and principal payments are adjusted for inflation — a sustained increase in prices that erodes the purchasing power of money. The inflation adjustment, which is typically applied monthly to the principal of the bond, follows a designated inflation index, the consumer price index (“CPI”), and TIPS’ principal payments are adjusted according to changes in the CPI. A fixed coupon rate is applied to the inflation-adjusted principal so that as inflation rises, both the principal value and the interest payments increase. This can provide investors with a hedge against inflation, as it helps preserve the purchasing power of an investment. Because of this inflation adjustment feature, inflation-protected bonds typically have lower yields than conventional fixed-rate bonds. The Underlying Index includes all publicly-issued U.S. Treasury inflation-protected securities that have at least one year remaining to maturity, are rated investment-grade and have $250 million or more of outstanding face value. In addition, the securities in the Underlying Index must be denominated in U.S. dollars and must be fixed-rate and non-convertible. The Underlying Index is market capitalization-weighted and the securities in the Underlying Index are updated on the last calendar day of each month.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares iBoxx $ Investment Grade Corporate Bond ETF

The iShares iBoxx $ Investment Grade Corporate Bond ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Markit iBoxx USD Liquid Investment Grade Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "LQD".

The Underlying Index is sponsored by Markit Indices Limited. The Underlying Index, which is a rules based index consisting of liquid, U.S. dollar-denominated, investment-grade corporate bonds for sale in the United States, as determined by Markit Indices Limited. The Underlying Index is designed to provide a broad representation of the U.S. dollar denominated liquid investment-grade corporate bond market. The Underlying Index is a modified market-value weighted index with a cap on each issuer of 3%. The Underlying Index may include large-, mid- or small-capitalization companies. Components of the Underlying Index primarily include consumer services, consumer staples, energy, financials, oil & gas and telecommunications companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time. The Underlying Index is a subset of the Markit iBoxx USD Corporate Bond Index. Bonds in the Underlying Index are selected from the universe of eligible bonds in the Markit iBoxx USD Corporate Bond Index using defined rules. Currently, the bonds eligible for inclusion in the Underlying Index include U.S. dollar-denominated corporate bonds that: (i) are issued by companies domiciled in countries classified as developed markets by Markit Indices Limited; (ii) have an average rating of investment grade. Ratings from Fitch Ratings, Inc., Moody's Investors Services or Standard & Poor's Ratings Services are considered. If more than one agency provides a rating, the average rating is attached to the bond; (iii) are from issuers with at least USD 2 billion outstanding face value; (iv) have at least USD 750 million of outstanding face value; and (v) have at least three years to maturity.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares iBoxx $ High Yield Corporate Bond ETF

The iShares iBoxx $ High Yield Corporate Bond ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Markit iBoxx USD Liquid High Yield Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "HYG".

The Underlying Index is sponsored by Markit Indices Limited. The Underlying Index, which is a rules-based index consisting of liquid U.S. dollar- denominated, high yield corporate bonds for sale in the United States, as determined by Markit Indices Limited. The Underlying Index is designed to provide a broad representation of the U.S. dollar-denominated liquid high yield corporate bond market. The Underlying Index is a modified market-value weighted index with a cap on each issuer of 3%. Bonds in the Underlying Index are selected using a rules-based criteria, as defined by Markit Indices Limited. The Underlying Index may include large-, mid- or small- capitalization companies. Components of the Underlying Index primarily include consumer cyclical, consumer discretionary, consumer services, consumer staples, energy, financials, industrials, oil & gas and telecommunications companies. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time. Currently, the bonds eligible for inclusion in the Underlying Index include U.S. dollar-denominated high yield corporate bonds that: (i) are issued by companies domiciled in countries classified as developed markets by Markit Indices Limited; (ii) have an average rating of sub-investment grade. Ratings from Fitch Ratings, Inc., Moody's Investors Services and Standard & Poor's Ratings Services are considered. If more than one agency provides a rating, the average rating is attached to the bond; (iii) are from issuers with at least USD 1 billion outstanding face value; (iv) have at least USD 400 million of outstanding face value; (v) have an original maturity date of less than 15 years; and (vi) have at least one year to maturity. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

SPDR Bloomberg Barclays International Treasury Bond ETF

The SPDR Bloomberg Barclays International Treasury Bond ETF (the "**ETF**") is issued by SPDR Series Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Bloomberg Barclays Global Treasury Ex-US Capped Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "BWX".

The Underlying Index is sponsored by Bloomberg Barclays Indices. The Underlying Index is designed to track the fixed-rate local currency sovereign debt of investment grade countries outside the United States. The Index includes government bonds issued by investment grade countries outside the United States, in local currencies, that have a remaining maturity of one year or more and are rated investment grade (Baa3/BBB-/BBB- or higher using the middle rating of Moody's Investors Service, Inc., Standard & Poor's Financial Services, LLC and Fitch Inc., respectively). Each of the component securities in the Underlying Index is a constituent of the Barclays Global Treasury ex-US Index, screened such that the following countries are included: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Latvia, Luxembourg, Malaysia, Malta, Mexico, Netherlands, New Zealand, Norway, Poland, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey and the United Kingdom. In addition, the securities in the Underlying Index must be fixed-rate and have certain minimum amounts outstanding, depending upon the currency in which the bonds are denominated. The Underlying Index is calculated by Barclays using a modified "market capitalization" methodology. This design ensures that each constituent country within the Underlying Index is represented in a proportion consistent with its percentage with respect to the total market capitalization of the Index. Component securities in each constituent country are represented in a proportion consistent with their percentage relative to the other component securities in the constituent country. Under certain conditions, however, the par amount of a component security within the Underlying Index may be adjusted to conform to requirements under the Internal Revenue Code of 1986, as amended. As of September 30, 2015, there were approximately 690 securities in the Underlying Index and the modified adjusted duration of securities in the Underlying Index was approximately 7.78 years.

SPDR Series Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08839 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

SPDR Bloomberg Barclays Short Term International Treasury Bond ETF

The SPDR Bloomberg Barclays Short Term International Treasury Bond ETF (the "ETF") is issued by SPDR Series Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Bloomberg Barclays 1-3 Year Global Treasury Ex-US Capped Index (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "BWZ".

The Underlying Index is sponsored by Bloomberg Barclays Indices. The Underlying Index is designed to measure the performance of fixed-rate local currency sovereign debt of investment grade countries outside the United States that have remaining maturities of one to three years. The Underlying Index includes government bonds issued by investment grade countries outside the United States, in local currencies, that have remaining maturities of one to three years and are rated investment grade (Baa3/BBB-/BBB- or higher using the middle rating of Moody's Investors Service, Inc., Standard & Poor's, Financial Services, LLC and Fitch Inc., respectively). Each of the component securities in the Underlying Index is a constituent of the Barclays Global Treasury ex-US Index, screened such that the following countries are included: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Latvia, Luxembourg, Malaysia, Malta, Mexico, Netherlands, New Zealand, Norway, Poland, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey and the United Kingdom. In addition, the securities in the Underlying Index must be fixed-rate and have certain minimum amounts outstanding, depending upon the currency in which the bonds are denominated. The Underlying Index is calculated by Barclays using a modified "market capitalization" methodology. This design ensures that each constituent country within the Underlying Index is represented in a proportion consistent with its percentage with respect to the total market capitalization of the Underlying Index. Component securities in each constituent country are represented in a proportion consistent with their percentage relative to the other component securities in the constituent country. Under certain conditions, however, the par amount of a component security within the

Underlying Index may be adjusted to conform to requirements under the Internal Revenue Code of 1986, as amended. The securities in the Underlying Index are updated monthly, on the last business day of each month. As of September 30, 2015, there were approximately 192 securities in the Underlying Index and the modified adjusted duration of securities in the Index was approximately 1.77 years.

SPDR Series Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08839 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

United States Oil Fund LP

The United States Natural Gas Fund, LP (the "ETF") is an exchange traded fund organized as a limited partnership. The ETF is managed and controlled by its general partner, United States Commodity Funds LLC ("USCF"). USCF is registered as a commodity pool operator with the U.S. Commodity Futures Trading Commission and is a member of the United States National Futures Association. USCF is also the investment advisor to the ETF. The shares of the ETF are listed on the NYSE Arca under the trading symbol "USO".

The investment objective of the ETF is for the daily changes in percentage terms of the Share's net asset value to reflect the daily changes in percentage terms of the spot price of light, sweet crude oil delivered to Cushing, Oklahoma, as measured by the daily changes in price of the changes in price of the futures contract on light, sweet crude oil traded on the New York Mercantile Exchange that is the near month contract to expire, except when the near month contract is within two weeks of expiration, in which case it will be measured by the futures contract that is the next month contract to expire (the "Benchmark Oil Futures Contract"), less the ETF's expenses. There is no assurance that the price and yield performance of the Benchmark Oil Futures Contract can be fully matched.

USCF files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 333-209362 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Invesco DB Agriculture Fund

The Invesco DB Agriculture Fund (the "ETF") is a separate series of Invesco DB Multi-Sector Commodity Trust. Invesco Capital Management LLC is the sponsor and investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the DBIQ Diversified Agriculture Index Excess Return™ (DBIQ Diversified Agriculture Index ER) (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "DBA".

The Underlying Index is sponsored by Deutsche Investment Management Americas Inc. The Underlying Index is based on eleven commodities drawn from the agriculture sectors. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

Invesco Capital Management files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 001-33238 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

Global X MSCI Argentina ETF

The Global X MSCI Argentina ETF (the "ETF") is administered by Global X Management Company LLC, a registered investment company. Global X Management Company LLC is also the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI All Argentina 25/50 Index (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "ARGT".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index consists of stocks in the broad Argentina equity universe. The Underlying Index targets a minimum of 25 securities and 20 issuers at construction. The Underlying Index is designed to take into account the 25% and 50% concentration constraints required for a funds to qualify as a regulated investment company (RIC) in the United States. At each quarterly rebalance, no single index constituent may exceed 25% of the index weight, and the sum of all constituents with index weights greater than 5% may not exceed 50%. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

Global X Management Company LLC. files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 812-14549 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares JPMorgan USD Emerging Markets Bond ETF

The iShares JPMorgan USD Emerging Markets Bond ETF (the "ETF") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the J.P. Morgan EMBI Global Core Index (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EMB".

The Underlying Index is sponsored by JPMorgan Chase & Co. The Underlying Index is a broad, diverse U.S. dollar denominated emerging markets debt benchmark that tracks the total return of actively traded external debt instruments in emerging market countries. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares Emerging Markets High Yield Bond ETF

The iShares Emerging Markets High Yield Bond ETF (the "ETF") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Morningstar Emerging Markets High Yield Bond Index (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EMHY".

The Underlying Index is sponsored by Morningstar, Inc. The Underlying Index tracks the performance of the below-investment grade U.S. dollar-denominated emerging market sovereign and corporate high yield bond market. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 033-97598 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares Floating Rate Bond ETF

The iShares Floating Rate Bond ETF (the "ETF") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Bloomberg Barclays US Floating Rate Note < 5 Years Index (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "FLOT".

The Underlying Index is sponsored by Bloomberg Index Services Limited. The Underlying Index measures the performance of U.S. dollar denominated, investment-grade floating rate notes. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

PIMCO 0-5 Year High Yield Corporate Bond Index ETF

The PIMCO 0-5 Year High Yield Corporate Bond Index ETF (the "ETF") is issued by PIMCO ETF Trust, a registered investment company. PIMCO ETF Trust is also the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the ICE BofAML 0-5 Year US High Yield

Constrained Index (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "HYS".

The Underlying Index is an unmanaged index comprised of U.S. dollar denominated below investment grade corporate debt securities publicly issued in the U.S. domestic market with remaining maturities of less than 5 years. The Underlying Index constituents are capitalization-weighted, based on their current amount outstanding, provided the total allocation to an individual issuer does not exceed 2%. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

PIMCO ETF Trust files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 333-155395 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

SPDR Bloomberg Barclays 1-3 Month T-Bill ETF

The SPDR Bloomberg Barclays 1-3 Month T-Bill ETF (the "**ETF**") is issued by SPDR Series Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks to provide investment results that, before fees and expenses, correspond generally to the total return performance of the Bloomberg Barclays 1-3 Month U.S. Treasury Bill Index (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "BIL".

The Underlying Index is designed to measure the performance of public obligations of the U.S. Treasury that have a remaining maturity of greater than or equal to 1 month and less than 3 months. The Underlying Index includes all publicly issued zero-coupon U.S. Treasury Bills that have a remaining maturity of less than 3 months and at least 1 month, are rated investment-grade, and have $300 million or more of outstanding face value.

SPDR Series Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-21145 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares 10-20 Year Treasury Bond ETF

The iShares 10-20 Year Treasury Bond ETF (the "ETF") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the ICE U.S. Treasury 10-20 Year Bond Index (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "TLH".

The Underlying Index measures the performance of public obligations of the U.S. Treasury that have a remaining maturity of greater than ten years and less than or equal to twenty years. The Underlying Index consists of publicly-issued U.S. Treasury securities that have a remaining maturity of greater than ten years and less than or equal to twenty years and have $300 million or more of outstanding face value, excluding amounts held by the Federal Reserve System. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares 3-7 Year Treasury Bond ETF

The iShares 3-7 Year Treasury Bond ETF (the "ETF") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the ICE U.S. Treasury 3-7 Year Bond Index (the "Underlying Index"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "IEI".

The Underlying Index measures the performance of public obligations of the U.S. Treasury that have a remaining maturity of greater than three years and less than or equal to seven years. The Underlying Index consists of publicly-issued U.S. Treasury securities that have a remaining maturity of greater than three years and less than or equal to seven years and have $300 million or more of outstanding face value, excluding amounts held by the Federal Reserve System. The components of the Underlying Index, and the degree to which these components represent certain industries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares Gold Trust

The purpose of the iShares Gold Trust (the "ETF") is to own gold transferred to it in exchange for shares that it issues. The sponsor of the ETF is iShares Delaware Trust Sponsor LLC. The Bank of New York Mellon is the trustee of the ETF.

The ETF seeks to reflect generally the performance of the price of gold. The ETF seeks to reflect such performance before payme nt of the Trust’s expenses and liabilities. There is no assurance that the performance of gold can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "IAU".

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended. Such information can be located by reference to SEC file number 001-32418 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Notes linked to the performance of the ETF.

iShares Silver Trust

The iShares Silver Trust (the "**ETF**") is sponsored by iShares Delaware Trust Sponsor LLC, an indirect subsidiary of BlackRock, Inc. The ETF seeks to reflect generally the performance, before fees and expenses, of the price of silver. There is no assurance that the performance of the price of silver can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "SLV".

The ETF files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 001-32863 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Materials Select Sector SPDR Fund

The Materials Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Materials Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLB".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Materials Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Energy Select Sector SPDR Fund

The Energy Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Energy Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLE".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Energy Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Financial Select Sector SPDR Fund

The Financial Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Financial Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLF".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Financials Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Industrial Select Sector SPDR Fund

The Industrial Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Industrial Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLI".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Industrial Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Technology Select Sector SPDR Fund

The Technology Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Technology Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLK".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Technology Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Consumer Staples Select Sector SPDR Fund

The Consumer Staples Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Consumer Staples Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLP".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Consumer Staples Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Real Estate Select Sector SPDR Fund

The Real Estate Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Real Estate Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLRE".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Real Estate Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Utilities Select Sector SPDR Fund

The Utilities Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Utilities Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLU".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Utilities Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Health Care Select Sector SPDR Fund

The Health Care Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Health Care Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLV".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Health Care Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Consumer Discretionary Select Sector SPDR Fund

The Consumer Discretionary Select Sector SPDR Fund (the "**ETF**") is issued by The Select Sector SPDR Trust, a registered investment company. SSGA Funds Management, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Consumer Discretionary Select Sector Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "XLY".

The Underlying Index is sponsored by S&P Dow Jones Indices LLC. The Underlying Index is a subindex of the S&P 500® Index. All components of the S&P 500® Index are assigned to one of the eleven Select Sector Indices. Stock classifications are based on the Global Industry Classification Standard. The components of the Underlying Index are from the Consumer Discretionary Select Sector. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

The Select Sector SPDR Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-08837 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI ACWI ETF

The iShares MSCI ACWI ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI ACWI Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on NASDAQ Global Market under the trading symbol "ACWI".

The Underlying Index is a free float-adjusted market capitalization weighted index designed to measure the combined equity market performance of developed and emerging markets countries. The Underlying Index may include large- and mid-capitalization companies. The components of the Underlying Index, and the degree to which these components represent certain industries and/or countries, are likely to change over time. As of September 28, 2018, the Underlying Index consisted of securities from the following countries or regions: Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, the Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Pakistan, Peru, the Philippines, Poland, Portugal, Qatar, Russia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, the United Arab Emirates, the United Kingdom and the United States.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "SEC") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI EAFE ETF

The iShares MSCI EAFE ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI EAFE Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EFA".

The Underlying Index is sponsored by MSCI Inc. The Underlying Index is a free float-adjusted market capitalization index intended to measure the equity market performance of certain developed markets. The Underlying Index may include large- and mid-capitalization companies across 21 developed markets countries around the world, excluding Canada and the United States. The components of the Underlying Index, and the degree to which these components represent certain industries, may change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI All Country Asia ex Japan ETF

The iShares MSCI All Country Asia ex Japan ETF (the "**ETF**") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI AC Asia ex Japan Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on NASDAQ Global Market under the trading symbol "AAXJ".

The Underlying Index, as of July 31, 2017, is a free float adjusted market capitalization index designed to measure equity market performance of securities from the following 11 developed, emerging and frontier market countries or regions: China, Hong Kong, India, Indonesia, Malaysia, Pakistan, the Philippines, Singapore, South Korea, Taiwan and Thailand. The Underlying Index may include large- or mid-capitalization companies. As of July 31, 2017, a significant portion of the Underlying Index is represented by securities of financials and information technology companies. The components of the Underlying Index, and the degree to which these components represent certain industries and/or countries, are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares MSCI Emerging Markets ETF

The iShares MSCI Emerging Markets ETF (the "**ETF**") is issued by iShares, Inc., a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the MSCI Emerging Markets Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "EEM".

As of August 31, 2017, the Underlying Index consisted of securities from the following 24 emerging market countries: Brazil, Chile, China, Colombia, the Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, the Philippines, Poland, Qatar, Russia, South Africa, South Korea, Taiwan, Thailand, Turkey and the United Arab Emirates. The Underlying Index may include large- and mid-capitalization companies. As of August 31, 2017, a significant portion of the Underlying Index is represented by securities of financials and information technology companies. The components of the Underlying Index, and the degree to which these components represent certain industries and/or countries, are likely to change over time.

iShares, Inc. files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09102 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Vanguard FTSE Emerging Markets ETF

The Vanguard FTSE Emerging Markets ETF (the "**ETF**") is issued by the Vanguard International Equity Index Funds, a registered investment company. The Vanguard Group, Inc. is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the FTSE Emerging Markets All Cap China A Inclusion Index (the "**Underlying Index**"). There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "VWO".

The Underlying Index is a market-capitalization-weighted index representing large-,mid-, and small-cap stocks of companies located in emerging markets around the world. . The index is part of the FTSE China A Inclusion indexes, which contain FTSE China A All Cap Index securities adjusted for the aggregate approved QFII and RQFII quotas available to foreign investors. Brazil, Russia, India, Taiwan, China, and South Africa are among the markets included in the index.

Vanguard International Equity Index Funds files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-05972 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Issuer, the Guarantor or the Dealer makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Securities should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

iShares Latin America 40 ETF

The iShares Latin America 40 ETF (the "ETF") is issued by iShares Trust, a registered investment company. BlackRock Fund Advisors is the investment advisor to the ETF. The ETF seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P Latin America 40 (the "**Underlying Index**"), which is comprised of selected equities trading on the exchanges of five Latin American countries. There is no assurance that the price and yield performance of the Underlying Index can be fully matched. The shares of the ETF are listed on the NYSE Arca under the trading symbol "ILF".

The Underlying Index includes securities that S&P Dow Jones Indices LLC Inc., considers to be highly liquid from major economic sectors of the Mexican and South American equity markets. Companies from Brazil, Chilé, Colombia, Mexico and Peru are represented in the Underlying Index. The Underlying Index includes large blue-chip companies. As of March 31, 2018, a significant portion of the Underlying Index is represented by securities of companies in the financials and materials industries or sectors. The components of the Underlying Index are likely to change over time.

iShares Trust files information with the U.S. Securities and Exchange Commission (the "**SEC**") pursuant to the U.S. Securities Exchange Act of 1934, as amended, and the U.S. Investment Company Act of 1940, as amended. Such information can be located by reference to SEC file number 811-09729 through the SEC's website at www.sec.gov. Information regarding the ETF may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. None of the Index Sponsor, the Issuer of the Notes or their respective affiliates makes any representation or warranty as to the accuracy or completeness of such information. Potential investors in the Notes should undertake an independent investigation of the ETF as in their judgment is appropriate to make an informed decision with respect to an investment in the Securities linked to the performance of the ETF.

Disclosure Supplement for the J.P. Morgan Bond Futures Tracker Index Family (USD)
(dated February 19, 2016)

About this Disclosure Supplement

This Disclosure Supplement dated February 19, 2016 (the "**Disclosure Supplement**") for the J.P. Morgan Bond Futures Tracker Index Family (USD) (each, an "**Index**"), when read in conjunction with the materials described below, is intended to constitute a summary of the strategy and methodology employed by the Index. This Disclosure Supplement is being provided to you pursuant to 17 CFR Part 23 (*Business Conduct Standards for Swap Dealers and Major Swap Participants*) and constitutes our disclosure to you of the material economic terms, material risks and potential conflicts of interests associated with entering into a transaction (a "**Transaction**") that references the Index. Any terms not defined herein shall have the meaning ascribed thereto in the Index Rules (as defined below).

The terms of a Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Transaction and its governing documentation. Before entering into a Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under a Transaction, its value and its appropriateness for your particular objectives.

Disclosure Documents Incorporated by Reference

This Disclosure Supplement supplements and should be read in conjunction with the General Disclosure Statement (the "**General Disclosure Statement**") and the Disclosure Annex for Interest Rate Transactions (the "**Interest Rate Disclosure Annex**"), each dated April 26, 2013, and published by the International Swaps & Derivatives Association Inc. The General Disclosure Statement and the Interest Rate Disclosure Annex are available via the following hyperlink:

http://www2.isda.org/functional-areas/legal-and-documentation/disclosures/

NOTHING IN THIS DISCLOSURE SUPPLEMENT AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions in this Disclosure Supplement of the operation of the Index and of any Transactions referencing the Index, and the consequences of various events described herein, are in all cases subject to the actual terms of any Transaction executed between you and us and its governing documentation.

Index Summary

Each Index in the J.P. Morgan Bond Futures Tracker Index Family (USD) is a synthetic, rules-based proprietary index developed and maintained by J.P. Morgan Securities plc ("**JPMS plc**" or the "**Index Calculation Agent**"). The relevant Index Level is published under the Bloomberg ticker as per the table below. The Index was first published as per relevant Index Live Date as specified in each of the rules of each index (the "Index Rules") available via the hyperlinks set forth in the table below, and therefore has limited historical performance.

Index Name	Bloomberg Ticker	Index Rules
JPM US 2 year Treasury Note Futures Tracker	JFBU2USD	http://www.jpmorgan.com/directdoc/JFBU2USD
JPM US 5 year Treasury Note Futures Tracker	JFBU5USD	http://www.jpmorgan.com/directdoc/JFBU5USD
JPM US 10 year Treasury Note Futures Tracker	JFBU10US	http://www.jpmorgan.com/directdoc/JFBU10US
JPM US Long Treasury Note Futures Tracker	JFBULBUS	http://www.jpmorgan.com/directdoc/JFBULBUS
JPM US Ultra Long Treasury Note Futures Tracker	JFBUSBUS	http://www.jpmorgan.com/directdoc/JFBUSBUS
JPM 2 Year Schatz Futures Tracker in USD	JFBEDUUS	http://www.jpmorgan.com/directdoc/JFBEDUUS
JPM 5 Year Bobl Futures Tracker in USD	JFBEBLUS	http://www.jpmorgan.com/directdoc/JFBEBLUS
JPM 10 year Bund Futures Tracker in USD	JFBERXUS	http://www.jpmorgan.com/directdoc/JFBERXUS
JPM 25 year Buxl Futures Tracker in USD	JFBEBXUS	http://www.jpmorgan.com/directdoc/JFBEBXUS
JPM 10 year Italy Futures Tracker in USD	JFBEBPUS	http://www.jpmorgan.com/directdoc/JFBEBPUS
JPM 10 year France Futures Tracker in USD	JFBEOTUS	http://www.jpmorgan.com/directdoc/JFBEOTUS
JPM 10 year JGB Futures Tracker in USD	J10EUSJP	http://www.jpmorgan.com/directdoc/J10EUSJP
JPM 10 year Gilt Futures Tracker in USD	JFBG10US	http://www.jpmorgan.com/directdoc/JFBG10US
JPM 3 Year Australian Futures Tracker in USD	JFBA3USD	http://www.jpmorgan.com/directdoc/JFBA3USD
JPM 10 Year Australian Futures Tracker in USD	JFBA10US	http://www.jpmorgan.com/directdoc/JFBA10US
JPM 10 year Canadian Futures Tracker in USD	JFBC10US	http://www.jpmorgan.com/directdoc/JFBC10US

Each Index is a notional rules-based proprietary index that aims to replicate the returns of a long position in near listed futures contracts that reference certain government bonds (the "**Futures Contracts**"), as specified in the Index Rules in respect of each Index.

Rolling Futures Contracts

On each quarterly Roll Date as specified in the Index Rules with respect to each Index, the Index Calculation Agent will calculate the Index Level based on the official settlement price of the current second near month Futures Contract (instead of the current first near month Futures Contract), as published by the Relevant Exchange as specified in the Index Rules with respect to each Index, thereby rolling the synthetic exposure of the Index from the current First Near Futures Contract to the current second near month Futures Contract, subject to the market disruption provisions set forth in the Index rules. The Index only tracks the applicable price of the relevant futures contract and does not include any returns associated with rolling one futures contract to another futures contract.

RISK FACTORS

The following risk factors relate solely to the J.P. Morgan Bond Futures Tracker Index Family (USD) and supplements the other disclosures relating to risks set forth in the accompanying General Disclosure Statement and Interest Rate Disclosure Annex. These risk factors should be read together with the risk factors set forth in the General Disclosure Statement, the Interest Rate Disclosure Annex and any other disclosure annex. ***You should carefully review these risk factors (including the risk factors relating to potential conflicts of interest) prior to making your investment decision to enter into any Transaction referencing the Index.***

Proprietary and rules-based Index

The Index follows a notional rules-based proprietary trading strategy that operates on the basis of pre-defined rules. Accordingly, potential investors in Transactions linked to the performance of the Index should determine whether the applicable rules-based proprietary trading strategy (as described in the Index Rules) is appropriate in light of their individual circumstances and investment objectives.

No assurance can be given that any synthetic investment strategy on which the Index is based will be successful or that the Index will outperform any alternative strategy that might be employed in respect of the Futures Contracts referenced therein.

Notional Exposure

The Index is constructed on a "notional" synthetic portfolio that references certain Futures Contracts. There is no actual portfolio to which any person is entitled or in which any person has any ownership interest. The Index merely defines certain Futures Contracts as well as a notional rules-based proprietary trading strategy, the performances of which are used as a reference point for the purposes of calculating the Index Level. Consequently, investment in Transactions that are linked to the performance of the Index will not have any claim against any of the Futures Contracts referenced by the Index.

Lack of Operating History

The Index is only recently established and therefore there is limited history to evaluate its past performance. Any back-testing or similar analysis performed by any person in respect of the Index must be considered illustrative only and may be based on estimates or assumptions not used by the Index Calculation Agent when determining the Index Level. Past performance should not be considered indicative of future performance.

The Index may not perform as expected

The Index may not perform in the manner that is expected. Various market factors and circumstances at any time and/or over any period could cause the Index to perform differently than how it is expected to perform. Neither the Index Sponsor nor the Index Calculation Agent provides any assurance as to the expected results of the Index over any period of time.

Index Level

The Index Level can be volatile and move dramatically over short periods of time. There can be no assurance that the relevant synthetic exposures will not be subject to substantial negative returns. Positive returns on the Index may therefore be reduced or eliminated entirely due to movements in any market parameters negatively affecting the relevant synthetic exposures.

Market risks

The performance of the Index is dependent in part on the Futures Contracts referenced by the Index and the relevant notional rules-based proprietary trading strategy. As a consequence, investors in Transactions linked to the Index should appreciate that their investment is exposed to the performance of each of the Futures Contracts and such rules-based strategy. In particular, the Index Level depends significantly on changes in current interest rates.

The Index is subject to significant risks associated with fixed-income securities, including interest rate-related risks.

The Index tracks the performance of fixed-income securities by referencing the Futures Contracts. The market prices of these bonds are volatile and significantly influenced by a number of factors, particularly the yields on these bonds as compared to current market interest rates and the actual or perceived credit quality of the issuer of these bonds.

In general, fixed-income securities are significantly affected by changes in current market interest rates. As interest rates rise, the price of fixed-income securities is likely to decrease. Securities with longer durations tend to be more sensitive to interest rate changes, usually making them more volatile than securities with shorter durations. The eligibility criteria for the securities included in the fixed-income securities that underlie the Futures Contracts referenced by the Index mandate that each security must have a minimum term remaining to maturity for continued eligibility. This means that, at any time, only longer-term securities underlie the Index, which thereby increases the risk of price volatility in the underlying securities and, consequently, the volatility in the value of the Index. As a result, rising interest rates may cause the value of the securities underlying the Index to decline, possibly significantly. Interest rates are subject to volatility due to a variety of factors, including:

- sentiment regarding underlying strength of the economy of the country issuing the securities;
- expectations regarding the level of price inflation;
- sentiment regarding credit quality of the country issuing the securities;
- central bank policies regarding interest rates; and
- the performance of the U.S. and international capital markets.

The Index is subject to significant risks associated with fixed-income securities, including credit risk.

The prices of the bonds underlying the Index are significantly influenced by the creditworthiness of the issuers of the bonds. The bonds underlying the Futures Contracts referenced by the Index may have their credit ratings downgraded, or have their credit spreads widen significantly. Following a ratings downgrade or the widening of credit spreads, the bonds underlying the Futures Contracts may suffer significant and rapid price declines. These events may affect only a few or a large number of the underlying bonds. For example, during the recent credit crisis in the United States, credit spreads widened significantly as the market demanded very high yields on corporate bonds and, as a result, the prices of the bonds underlying Futures Contracts referenced by the Index dropped significantly. There can be no assurance that some or all of the factors that contributed to this credit crisis will not continue or return and, consequently, depress the price, perhaps significantly, of the underlying bonds and therefore the value of the Index.

Continued publication of constituent data

The publication of the Index Level may depend on the maintenance of requisite index licenses, the continued publication and determination of the Futures Contracts. Any disturbance or discontinuation of any of these actions may adversely affect the ability of the Index Calculation Agent to continue with the calculation and publication of the Index Level.

Index Calculation Agent Discretion

The Index Rules confer on the Index Calculation Agent discretion in making certain determinations and calculations from time to time. The exercise of such discretion in the making of calculations and determinations may adversely affect the performance of the Index.

Potential Conflicts of Interest

Potential conflicts of interest may exist in the structure and operation of the Index and the course of the normal business activities of the Index Sponsor, the Index Calculation Agent and any of their affiliates or subsidiaries or their respective directors, officers, employees, representatives or agents (each a "**Relevant Person**").

During the course of their normal business, the Index Sponsor, the Index Calculation Agent and each Relevant Person may enter into or promote, offer or sell transactions or investments (structured or otherwise) linked to the Index. In addition, the Index Sponsor, the Index Calculation Agent and any Relevant Person may have, or may have had, interests or positions, or may buy, sell or otherwise trade positions in or relating to the Index, or may invest or engage in transactions with other persons, or on behalf of such persons relating to any of these items. Such activity may or may not have an impact on the Index Level but all persons reading this document should be aware that a conflict of interest could arise where anyone is acting in more than one capacity, and such conflict may have an impact, positive or negative, on the Index Level. None of the Index Sponsor, the Index Calculation Agent or any Relevant Person has any duty to consider the circumstances of any person when participating in such transactions or to conduct themselves in a manner that is favorable to anyone with exposure to the Index.

Market Disruption Events

The publication and/or determination of the Index Level may be affected by the occurrence of certain market disruption events with respect to the Futures Contracts, including the failure of the Relevant Exchange to publish an official settlement price in respect of the Futures Contract, or any event that disrupts or impairs the ability of market participants generally to effect transactions in or obtain market values for the Futures Contract. Such events are set out more fully in the Index Rules and are referred to as Market Disruption Events. If a Market Disruption Event occurs, the Index Calculation Agent will not calculate the Index Level for such Index Calculation Day and will suspend the calculation and publication of the Index Level until the first succeeding Index Calculation Day that is not a Disrupted Index Calculation Day, provided that the Index Calculation Agent may determine the value of a Futures Contract for purposes of calculating the Index Level following eleven consecutive Calculation Days that are Disrupted Index Calculation Days.

Extraordinary Events

The calculation of the Index Level depends on, amongst other things, the continued existence of any Futures Contract. As a result, any discontinuation of any such Futures Contract may adversely affect the ability of the Index Calculation Agent to continue with the calculation and publication of the Index Level. In addition, amongst other things, a change in law that makes it contrary to law to hold, acquire or dispose of any transaction or interest in or relating to a Futures Contract may also result in the Index Calculation Agent excluding or substituting an affected Futures Contract. All such events are set out more fully in the Index Rules under the heading "Extraordinary Events" and in the related definitions.

The occurrence of certain Extraordinary Events (other than a Change in Law) with respect to a Futures Contract may result in the affected Futures Contract being replaced by a substitute Futures Contract having similar characteristics to the affected Futures Contract or the Index Calculation Agent may cease publishing the Index.

In respect of a Change in Law, the Index Calculation Agent may exclude or substitute any Futures Contract following such Change in Law and, if it excludes or substitutes such affected Futures Contract, then the Index Calculation Agent may adjust the Index Rules as it determines in good faith to be appropriate to account for such exclusion or substitution.

Amendments

The Index Rules for an Index may be amended from time to time at the discretion of the Index Sponsor and will be re-published (in a manner determined by the Index Sponsor from time to time) no later than one calendar month following such amendment. Although the Index Rules are intended to be comprehensive, ambiguities may arise. If ambiguities arise, the Index Calculation Agent (if necessary, in consultation with the Index Sponsor) will resolve such ambiguities in its discretion and, if necessary, the Index Sponsor will amend the Index Rules to reflect such resolution.

Disclosure Supplement for the J.P. Morgan FX Tracker Indices
(dated December 7, 2018)

This Disclosure Supplement for the J.P. Morgan FX Tracker Indices (the "**Disclosure Supplement**"), supplements and should be read in conjunction with the General Disclosure Statement dated March 1, 2018 (the "**General Disclosure Statement**"), the Updated FX Disclosure Annex dated October 30, 2018 (the "**Updated FX Disclosure Annex**"), the Updated Equity Derivatives Disclosure Annex dated November 9, 2018 (the "**Updated FX Disclosure Annex**") and the Updated Interest Rate Derivatives Disclosure Annex dated March 1, 2018 (the "**Interest Rate Disclosure Annex**"), respectively, published by the International Swaps & Derivatives Association Inc. NOTHING IN THIS SUPPLEMENT AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions in this Disclosure Supplement of the operation of Transactions (as defined below) and the consequences of various events are in all cases subject to the actual terms of a Transaction executed between you and us and its governing documentation. Any terms not defined herein shall have the meaning ascribed thereto in the Index Rules (as defined below). The General Disclosure Statement and the Commodities Disclosure Annex are each available via the following hyperlink:

https://www.isda.org/tag/cftc-disclosure-documents/

When we refer to a "Transaction", we are referring to Transactions in which the underlying(s) is/are the Index (as defined herein). The terms of a Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Transaction and its governing documentation. Before entering into a Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under the Transaction, its value and its appropriateness for your particular objectives.

To the extent you enter into a Transaction that references the J.P. Morgan FX Tracker Indices, in whole or in part, you should carefully review the disclosure set forth herein. This Disclosure Supplement, together with the Index Rules (as defined below), the documents governing your Transaction, the disclosure annexes referenced above and any other disclosure delivered by us to you related to your specific Transaction, constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Transaction. You should carefully consider all of these documents prior to entering into a Transaction.

Index Summary

The J.P. Morgan FX Tracker Indices (the "**Index Family**", and each, individually, an "**Index**") are a family of synthetic, rules-based proprietary indices developed and maintained by J.P. Morgan Securities plc ("**JPMS plc**" or the "**Index Calculation Index**"). The Index Level for each Index in the Index Family is published under the applicable Bloomberg ticker specified in Table 1 or Table 2 below. Each Index has an Index Live Date as specified in Table 1 or 2 below, and therefore may have limited historical performance. The rules of the Index (the "**Index Rules**") are available via the following hyperlink:

http://www.jpmorgan.com/directdoc/04202018_JPFCTXXX_Deliverable.pdf
http://www.jpmorgan.com/directdoc/04202018_JPFCTXXX_NDF.pdf

The Index aims to replicate the returns of a notional rolling portfolio of synthetic forwards transactions that have a scheduled term of twenty (20) Calculation Days and reference a single Currency pair as specified in Table 1 below with respect to each Index. The Index implements this idea by initiating synthetic FX forward positions in the applicable Currency Pairs set out in Table 1 below with respect to each Index.

Table 1: Indices

Index Name	Bloomberg Page	Index Base Date	Index Live Date	Currency Pair$_i$
J.P. Morgan EUR FX Tracker Index	JPFCTEUR <Index>	1 January 1999	26 November 2014	EUR/USD
J.P. Morgan GBP FX Tracker Index	JPFCTGBP <Index>	1 January 1999	26 November 2014	GBP/USD
J.P. Morgan CHF FX Tracker Index	JPFCTCHF <Index>	1 January 1999	26 November 2014	USD/CHF
J.P. Morgan NOK FX Tracker Index	JPFCTNOK <Index>	1 January 1999	26 November 2014	USD/NOK
J.P. Morgan SEK FX Tracker Index	JPFCTSEK <Index>	1 January 1999	26 November 2014	USD/SEK
J.P. Morgan AUD FX Tracker Index	JPFCTAUD <Index>	1 January 1999	26 November 2014	AUD/USD
J.P. Morgan NZD FX Tracker Index	JPFCTNZD <Index>	1 January 1999	26 November 2014	NZD/USD
J.P. Morgan CAD FX Tracker Index	JPFCTCAD <Index>	1 January 1999	26 November 2014	USD/CAD
J.P. Morgan JPY FX Tracker Index	JPFCTJPY <Index>	1 January 1999	26 November 2014	USD/JPY
J.P. Morgan DKK FX Tracker Index	JPFCTDKK <Index>	1 January 1999	26 November 2014	USD/DKK
J.P. Morgan SGD FX Tracker Index	JPFCTSGD <Index>	1 January 1999	26 November 2014	USD/SGD
J.P. Morgan MXN FX Tracker Index	JPFCTMXN <Index>	1 January 1999	26 November 2014	USD/MXN
J.P. Morgan CZK FX Tracker Index	JPFCTCZK <Index>	1 January 1999	26 November 2014	USD/CZK
J.P. Morgan HUF FX Tracker Index	JPFCTHUF <Index>	1 January 1999	26 November 2014	USD/HUF
J.P. Morgan ILS FX Tracker Index	JPFCTILS <Index>	1 July 2004	26 November 2014	USD/ILS
J.P. Morgan PLN FX Tracker Index	JPFCTPLN <Index>	11 February 2002	26 November 2014	USD/PLN
J.P. Morgan TRY FX Tracker Index	JPFCTTRY <Index>	2 January 2002	26 November 2014	USD/TRY
J.P. Morgan ZAR FX Tracker Index	JPFCTZAR <Index>	1 January 1999	26 November 2014	USD/ZAR
J.P. Morgan RUB FX Tracker Index	JPFCTRUB <Index>	1 July 2004	26 November 2014	USD/RUB
J.P. Morgan RON FX Tracker Index	JPFCTRON <Index>	1 July 2005	26 November 2014	USD/RON
J.P. Morgan CNH FX Tracker Index	JPFCTCNH <Index>	18 January2011	9 April 2018	USD/CNH

J.P. Morgan THB FX Tracker Index	JPFCTTHB <Index>	1 January 2002	9 April 2018	USD/THB
J.P. Morgan HKD FX Tracker Index	JPFCTHKD<Index>	1 January 1999	9 April 2018	USD/HKD

Table 2: Indices (non-deliverable)

Index Name	Bloomberg Page	Index Base Date	Index Live Date	Currency Pair$_i$
J.P. Morgan KRW FX Tracker Index	JPFCTKRW <Index>	1 January 2002	9 April 2018	USD/KRW
J.P. Morgan IDR FX Tracker Index	JPFCTIDR <Index>	1 January 2002	9 April 2018	USD/IDR
J.P. Morgan INR FX Tracker Index	JPFCTINR <Index>	1 January 2002	9 April 2018	USD/INR
J.P. Morgan MYR FX Tracker Index	JPFCTMYR <Index>	1 January 2002	9 April 2018	USD/MYR
J.P. Morgan PHP FX Tracker Index	JPFCTPHP <Index>	1 January 2002	9 April 2018	USD/PHP
J.P. Morgan TWD FX Tracker Index	JPFCTTWD <Index>	1 January 2002	9 April 2018	USD/TWD
J.P. Morgan ARS FX Tracker Index	JPFCTARS <Index>	1 January 1999	9 April 2018	USD/ARS
J.P. Morgan BRL FX Tracker Index	JPFCTBRL <Index>	1 January 1999	9 April 2018	USD/BRL
J.P. Morgan CLP FX Tracker Index	JPFCTCLP <Index>	1 January 1999	9 April 2018	USD/CLP
J.P. Morgan COP FX Tracker Index	JPFCTCOP <Index>	1 January 2000	9 April 2018	USD/COP
J.P. Morgan PEN FX Tracker Index	JPFCTPEN <Index>	1 January 1999	9 April 2018	USD/PEN

Index Summary

The J.P. Morgan FX Tracker Indices are a family of rules based proprietary indices. The family of indices currently includes twenty-three (23) deliverable reference currencies and eleven (11) non-deliverable reference currencies, each of which is expressed in a base currency and is described in greater detail in the Index Rules.

Each Index referencing a deliverable currency seeks to track the performance of a notional portfolio of synthetic forwards transactions that have a scheduled term of twenty (20) Calculation Days and reference a single Currency Pair. In respect of each Calculation Day that is not a Disrupted Day, each Index will synthetically initiate a new synthetic forward transaction on its applicable Currency Pair, and that synthetic forward transaction will have an initial notional amount equal to 1/20th of the Index Level of such Index on the immediately preceding Calculation Day that was not a Disrupted Day.

Similarly, each Index referencing a non-deliverable currency seeks to track the performance of a notional portfolio of synthetic forward transactions that have a scheduled term of forty (40) Calculation Days and reference a single Currency Pair. In respect of each Calculation Day that is not a Disrupted Day, each Index will synthetically initiate a new synthetic non-deliverable forward transaction on its applicable Currency Pair, until a portfolio of forty (40) synthetic non-deliverable forwards is established, after which the first of the synthetic non-deliverable forwards to have been added to the current portfolio will be removed and replaced with another synthetic non-deliverable forward, such that the total number of synthetic non-deliverable forwards comprising the synthetic portfolio will remain at forty (40).

Index Methodology Overview

As of the Index Base Date, the notional portfolio of each Index initially held no synthetic forwards transaction, and on such Index Base Date and each subsequent Calculation Day that is not a Disrupted Day, each Index initiates a new synthetic forward transaction. As of the twentieth (20^{th}) Calculation Day from the Index Base Date, the notional portfolio of each Index referencing synthetic deliverable forwards is generally composed of twenty (20) synthetic forwards transactions and as of the fortieth (40^{th}) Calculation Day from the Index Base Date, the Notional portfolio of each Index referencing synthetic non-deliverable forwards is generally composed of forty (40) synthetic forwards transactions.

The Index Calculation Agent will calculate the Index Level in respect of each Index on any Calculation Day that is not a Disrupted Day. In respect of each Calculation Day that is not a Disrupted Day, the Index Level for each Index is a valuation of its notional portfolio of synthetic forward transactions as of such Calculation Day and will be based on (a) the Index Level as of the immediately preceding Calculation Day that was not a Disrupted Day, (b) the change in the mark-to-market value of the portfolio of synthetic forward transactions on such Calculation Day that is not a Disrupted Day and (c) the settlement amount of any synthetic forward transaction referenced by that Index, which terminated in the period from and excluding the previous Calculation Day that was not a Disrupted Day to and including such Calculation Day, each as further described in the relevant Index Rules. **If, in respect of a Calculation Day, the calculations referenced in Step 4 would result in an Index Level that is less than or equal to zero (0), the Index Level for that Calculation Day and each subsequent Calculation Day shall be deemed to be zero (0).**

The Index Level of each Index is a mathematical calculation only and the Indices do not actually buy, sell or hold any assets.

In respect of each Calculation Day that is not a Disrupted Day, the Index Calculation Agent will determine and publish the Index Level as described in these Index Rules.

RISK FACTORS

The following risk factors relate solely to each J.P. Morgan FX Tracker Indices and supplements the other risk factors set forth in the accompanying disclosures related to any Transaction between you and us. These risk factors should be read together with the risk factors set forth in the General Disclosure Statement, the Interest Rate Disclosure Annex and any other disclosure annex. ***You should carefully review these risk factors (including the risk factors relating to potential conflicts of interest) prior to making your investment decision to enter into a Transaction referencing any J.P. Morgan FX Tracker.***

Proprietary and rules-based Index

The Index follows a notional rules-based proprietary trading strategy that operates on the basis of pre-defined rules. Accordingly, potential investors in Transactions linked to the performance of the Index should determine whether the applicable rules-based proprietary trading strategy (as described in the Index Rules) is appropriate in light of their individual circumstances and investment objectives.

No assurance can be given that any synthetic investment strategy on which the Index is based will be successful or that the Index will outperform any alternative strategy that might be employed in respect of the Currency Pairs referenced.

Notional exposure

The Index is constructed on a "notional" synthetic portfolio of forward positions in respect of the Currency Pairs. There is no actual portfolio to which any person is entitled or in which any person has any ownership interest. The Index merely defines a notional rules-based proprietary trading strategy, the performances of which are used as a reference point for the purposes of calculating the Index Level. Consequently, investment in Transactions that are linked to the performance of the Index will not have any claim against any of the Currency Pairs in, or any other components referenced by, the Index.

Lack of operating history

The Index may have been recently established and therefore there may be limited history to evaluate its actual past performance. Any back-testing or similar hypothetical performance analysis performed by any person in respect of the Index must be considered illustrative only and may be based on estimates or assumptions (including the use of alternative or proxy data or performance information) not used by the Index Calculation Index when determining the live Index Level. Past performance, whether actual or hypothetical, should not be considered indicative of future performance.

Limitations on price source data

For certain currency pairs, during the time periods specified in the Index Rules and prior to the availability of historical WMR price source data, alternative price sources were used in the calculation of the relevant Indices (including data sourced from the index calculation agent's or its affiliates' internal time series). The use of alternative data or performance in any calculation, including in the calculation of hypothetical back-tested weights and levels, may have resulted in different, perhaps significantly different, weights and Index Levels than would have resulted from the use of WMR price source data, had such data existed or been reliably available.

The Index may not perform as expected

The Index may not perform in the manner that is expected. Various market factors and circumstances at any time and/or over any period could cause the Index to perform differently than how it is expected to perform.

Neither the Index Sponsor nor the Index Calculation Index provides any assurance as to the expected results of the Index over any period of time.

The Index Level may fall

The Index Level is determined, in part, by reference to the performance of the synthetic long exposures (which are in turn determined by reference to the closing prices of certain synthetic forward transactions, ("**Synthetic Forward**")). All other things being equal, the Index Level will fall when the closing prices of the Synthetic Forwards referenced by the synthetic long synthetic exposure fall.

Index Level

The forward positions in respect of the Currency Pairs referenced by the Index can be volatile and move dramatically over short periods of time. There can be no assurance that the relevant synthetic exposures will not be subject to substantial negative returns. Positive returns on the Index may therefore be reduced or eliminated entirely due to movements in any market parameters negatively affecting the relevant synthetic exposures.

Market risks

The performance of the Index is dependent in part on the forward positions in respect of the Currency Pairs referenced by the Index and the relevant notional rules-based proprietary trading strategy. As a consequence, investors in Transactions linked to the Index should appreciate that their investment is exposed to the performance of each of the Currency Pairs and such rules-based strategy. The Index may, as applicable, reference emerging markets currencies and/or non-deliverable currencies and will therefore bear the associated risks.

Currency exchange risk

Investors in Transactions are exposed to currency exchange rate risk with respect to each of the relevant Currency Pairs. An investor's net exposure will depend on the extent to which those relevant currencies strengthen or weaken against each other in the relevant Currency Pairs. Factors with particular importance to potential currency exchange risks include:

- existing and expected rates of inflation;
- existing and expected interest rate levels;
- the balance of payments;
- governmental or central bank intervention;
- political, civil or military unrest; and
- the extent of governmental surpluses or deficits in the relevant countries and the United States.

All of these factors are, in turn, sensitive to the monetary, fiscal and trade policies pursued by the governments of various countries, the United States and other countries important to international trade and finance.

The value of your investment in a Transaction could be affected by the actions of the governments of the United States and the originating nations of the relevant currencies.

Foreign exchange rates can either be fixed by sovereign governments or floating. Exchange rates of most economically developed nations are permitted to fluctuate in value relative to the value of other currencies. However, governments do not always allow their currencies to float freely in response to economic forces.

Governments use a variety of techniques, such as intervention by their central bank or imposition of regulatory controls or taxes, to affect the trading value of their respective currencies. They may also issue a new currency to replace an existing currency or alter the exchange rate or relative exchange characteristics by devaluation or revaluation of a currency. Thus, a special risk in entering into an Transaction is that the Index could be affected by the actions of sovereign governments which could change or interfere with freely determined currency valuation, fluctuations in response to other market forces and the movement of currencies across borders, which in turn could affect the observed trend in foreign exchange rates that realized volatility is lower than implied volatility.

Currency exchange risks can be expected to heighten in periods of financial turmoil and may adversely affect the Index.

In periods of financial turmoil, capital can move quickly out of regions that are perceived to be more vulnerable to the effects of the crisis than others with sudden and severely adverse consequences to the currencies of those regions. In addition, governments around the world, including the United States government and governments of other major world currencies, have recently made, and may be expected to continue to make, very significant interventions in their economies, and sometimes directly in their currencies. Those interventions affect currency exchange rates globally and, in particular, the value of the currencies relative to the U.S. dollar. Further interventions, other government actions or suspensions of actions, as well as other changes in government economic policy or other financial or economic events affecting the currency markets, may cause currency exchange rates to fluctuate sharply in the future, which could have a material adverse effect on the return on your investment in a Transaction. These heightened currency exchange risks during periods of financial turmoil are unpredictable and may affect the observed trend in foreign exchange rates that realized volatility is lower than implied volatility.

Suspensions or disruptions of market trading in the currency markets may adversely affect the value of your investment in a Transaction.

The currency markets are subject to temporary distortions or other disruptions due to various factors, including the participation of speculators and government regulation and intervention. These circumstances could affect the value of the currencies underlying the Index, and, therefore, the amount of the return on your investment in a Transaction.

Continued publication of constituent data

The publication of the Index Level may depend on the maintenance of requisite index licenses and the continued Spot Rate publication of the currencies referenced by each of the Currency Pairs. Any disturbance or discontinuation of any of these actions may adversely affect the ability of the Index Calculation Index to continue with the calculation and publication of the Index Level.

Index Calculation Agent discretion

The Index Rules confer on the Index Calculation Index discretion in making certain determinations and calculations from time to time. The exercise of such discretion in the making of calculations and determinations may adversely affect the performance of the Index.

Potential conflicts of interest

Potential conflicts of interest may exist in the structure and operation of the Index and the course of the normal business activities of the Index Sponsor, the Index Calculation Index and any of their affiliates or subsidiaries or their respective directors, officers, employees, representatives or agents (each a "**Relevant Person**").

During the course of their normal business, the Index Sponsor, the Index Calculation Index and each Relevant Person may enter into or promote, offer or sell transactions or investments (structured or otherwise) linked to the Index. In addition, the Index Sponsor, the Index Calculation Index and any Relevant Person may have, or may have had, interests or positions, or may buy, sell or otherwise trade positions in or relating to the Index, or may invest or engage in transactions with other persons, or on behalf of such persons relating to any of these items. Such activity may or may not have an impact on the Index Level but all persons reading this document should be aware that a conflict of interest could arise where anyone is acting in more than one capacity, and such conflict may have an impact, positive or negative, on the Index Level. None of the Index Sponsor, the Index Calculation Index or any Relevant Person has any duty to consider the circumstances of any person when participating in such transactions or to conduct themselves in a manner that is favorable to anyone with exposure to the Index.

JPMorgan or JPMorgan's affiliates may have economic interests that are adverse to counterparties of a Transaction as a result of JPMorgan's hedging and other trading activities.

JPMorgan expects to hedge its obligations under a Transaction through certain affiliates or unaffiliated counterparties by taking positions in instruments the value of which is derived from one or more currencies, currency futures contracts or currency indices, or positions in futures contracts underlying one or more indices or positions in related options or futures contracts. JPMorgan may also adjust its hedge by, among other things, purchasing or selling any of the foregoing at any time and from time to time, and close out or unwind our hedge. JPMorgan cannot give you any assurances that its hedging will not negatively affect the value of the underlying index/indices or the Transactions.

JPMorgan or JPMorgan's affiliates may have economic interests that are adverse to those of the counterparties to a Transaction as a result of JPMorgan's business activities.

In the course of our business, JPMorgan or JPMorgan's affiliates may acquire nonpublic information about one or more relevant currencies, currency futures contracts or indices, and JPMorgan will not disclose any such information to you. In addition, one or more of JPMorgan's affiliates may publish research reports or otherwise express views about one or more one or more relevant currencies, currency futures contracts or indices. Any prospective counterparty in a Transaction should undertake an independent investigation of any relevant currencies, currency futures contracts or indices as in its judgment is appropriate to make an informed decision with respect to a Transaction.

Additionally, JPMorgan or one of JPMorgan's affiliates may serve as issuer, agent or underwriter for issuances of other securities or financial instruments or counterparty to derivative transactions (other than the Transactions) with returns linked or related to changes in the price or level, as applicable, of one or more relevant currencies. To the extent that JPMorgan or one of JPMorgan's affiliates serves as issuer, agent or underwriter for those securities or financial instruments or counterparty to currency transactions (other than the Transactions), JPMorgan's or JPMorgan's affiliates' interests with respect to those products may be adverse to those of the counterparty to a Transaction.

Market Disruption Events

The publication and/or determination of the Index Level may be affected by the occurrence of certain market disruption events with respect to the Currency Pairs, which could interfere with the ability of market participants generally to transact in positions with respect to the Currency Pairs. Such events are set out more fully in the Index Rules and are referred to as Market Disruption Events. If a Market Disruption Event occurs, the Index Calculation Index will not calculate the Index Level for such Calculation Day and will suspend the calculation and publication of the Index Level until the first succeeding Calculation Day that is not a Disrupted Calculation Day.

Extraordinary Events

The calculation of the Index Level depends on, amongst other things, the continued existence of the Currency Pair. As a result, any Extraordinary Event relating to any of the Currency Pairs may adversely affect the ability of the Index Calculation Index to continue with the calculation and publication of the Index Level. In addition, amongst other things, a change in law that makes it contrary to law to hold, acquire or dispose of any transaction or interest in or relating to a Currency Pair may also result in the Index Calculation Index excluding or substituting an affected Currency Pair. All such events are set out more fully in the Index Rules under the heading "Extraordinary Events" and in the related definitions.

The occurrence of certain Extraordinary Events with respect to a Currency Pair may result in the affected Currency Pair being replaced by a substitute Currency Pair and the Index Calculation Index may cease publishing the Index.

In respect of a Change in Law, the Index Calculation Index may exclude or substitute any Currency Pair following such Change in Law and, if it excludes or substitutes such affected Currency Pair, then the Index Calculation Index may adjust the Index Rules as it determines in good faith to be appropriate to account for such exclusion or substitution.

Amendments

JPMS plc or any successor, as the Index sponsor as of the date of this document (the "**Index Sponsor**") may amend the Index Rules from time to time at its discretion. Following any amendment, the Index Sponsor will make available (as soon as practicable) the amended version of the Index Rules and will include the effective date of such amendment in the new version of the Index Rules. However, the Index Sponsor is under no obligation to inform any person about any amendments to an Index (except as required by law).

The Index Sponsor may, in its reasonable discretion, at any time and without notice, terminate the calculation and publication of any Index and shall not have any responsibility to any person for any determination, interpretation or calculation made or anything done (or omitted to be done) (whether as a result of negligence or otherwise) in respect of any Index or in respect of the publication of any Index Level (or failure to publish such level) or any use to which any person may put the Index or the Index Levels.

Disclaimer

All information provided in this document regarding the Index is provided for informational purposes only and nothing in this document constitutes, or forms part of, an offer to issue or sell, or any solicitation of any offer to subscribe, purchase or sell any securities or other financial product or participate in any transaction. Furthermore, nothing in this document should be construed as a recommendation to adopt any investment strategy or as legal, tax, regulatory or accounting advice. JPMorgan expressly disclaims any responsibility for the veracity, currency, completeness or accuracy of any of the Index or any information provided in connection with the Index or any use to which such information is put.

This document is not intended to provide the full details of the Index and should be regarded as illustrative only. Persons interested in the Index should refer to the Index Rules for a complete description of the rules and operating methodology. No person should make an evaluation of the advantages and disadvantages of entering into any transaction referencing the Index on the basis of this document. Such evaluation should be made solely on the basis of the information contained in the relevant final transaction documents when available and the Index Rules. All persons should conduct their own investigations and consult with their own professional advisors when evaluating the Index without reliance on any JPMorgan nor any of its affiliates or subsidiaries or their respective directors, officers, employees, representatives or agents (each a

“**Relevant Person**”). None of the Relevant Persons is a fiduciary or advisor to any person interested in gaining exposure to the Index.

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PART B

APPENDIX 1.16

The J.P. Morgan US Treasury Note Futures Tracker

1. Introduction

This Appendix comprises the variables required to complete the Rules of the J.P. Morgan US Treasury Note Futures Tracker (the "**Variables**" and the "**Futures Tracker**"). Variables may be amended from time to time at the discretion of J.P. Morgan Securities plc ("**JPMS**") in its capacity as Calculation Agent. The Variables will be re-published no later than one calendar month following amendment to reflect any such changes. This document must be read in conjunction with Part A of the Rules of the J.P. Morgan Futures Tracker Series. This Appendix 1.16 was amended and restated as of 4 December, 2013.

2. Definitions

Variables	
Tracker Name	The J.P. Morgan US Treasury Note Futures Tracker
Price Source	Bloomberg page RFJPUSBE
Base Underlying	The 10 Year US Treasury Note
Re-weighting Date	The 2nd to last Dealing Day of February, May, August and November
Adjustment Factor	Shall equal 0.0625
Futures Tracker Currency	US Dollars (USD)
Relevant Exchange	Means, as at the Base Date, the Chicago Board of Trade (CBOT) or any successor thereof or otherwise any exchange on which any Successor Futures Contract is traded, from time to time
Initial Tracker Level	114.50
Official Settlement Price	Means the closing price published on the price source given by the relevant Bloomberg Code for the Futures Contract (defined below)
Base Date	25-Feb-99
Expiry Dates	Expected to be the 3rd Wednesday of March, June, September and December
Number of Contracts p.a.	4
Futures Contract	Means the futures contract identified by the following Bloomberg Codes from time to time

Futures Contracts				
i	**Futures Contract**	**Bloomberg Month Code**	**Currency**	**Expected Bloomberg Code***
1	March	H	USD	TYH&”Year” <Comdty>
2	June	M	USD	TYM&”Year” <Comdty>
3	September	U	USD	TYU&”Year” <Comdty>
4	December	Z	USD	TYZ&”Year” <Comdty>

*****The Bloomberg codes are typically constructed as “TY” followed by the Bloomberg Month Code followed by the year in which the Expiry Date falls, so that the March 09 Futures Contract shall have ticker TYH09 Index or TYH9 Index. If the Relevant Exchange publishes any modification to the composition of the Bloomberg code referenced in the table above, such new Bloomberg code shall be deemed to be Bloomberg code in respect of the Futures Contract. If the Calculation Agent determines that a successor Futures Contract is to replace the existing Futures Contract, then, on and from the date of such replacement, the Bloomberg code for the successor Futures Contract shall be deemed to be the relevant Bloomberg code for the futures contract in question.

3. Additional Risk Factors

Not Applicable

Summary Description of Commodity Futures Trackers Component Underlyings

S&P GSCI Gold Official Close Index ER

According to publicly available information, the S&P GSCI Gold Official Close Index ER (the "Index") is a sub-index of the S&P GSCI and provides investors with a reliable and publicly available benchmark tracking the COMEX gold future. The Index is designed to be tradeable, readily accessible to market participants and cost efficient to implement. The excess return versions of the S&P GSCI Indices is based on price levels of the futures contracts included in such S&P GSCI Index as well as the discount or premium obtained by “rolling” hypothetical positions in such contracts forward as they approach delivery. For further information on the Index, see www.spindices.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

S&P GSCI Crude Oil Official Close Index ER

According to publicly available information, the S&P GSCI Crude Oil Official Close Index ER (the "Index") provides investors with a reliable and publicly available benchmark tracking the crude oil market. The excess return versions of the S&P GSCI Indices is based on price levels of the futures contracts included in such S&P GSCI Index as well as the discount or premium obtained by “rolling” hypothetical positions in such contracts forward as they approach delivery. For further information on the Index, see www.spindices.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

S&P GSCI Agriculture ER

According to publicly available information, the S&P GSCI Agriculture ER (the "Index") is a sub-index of the S&P GSCI and provides investors with a reliable and publicly available benchmark tracking the agricultural commodity markets. The excess return versions of the S&P GSCI Indices is based on price levels of the futures contracts included in such S&P GSCI Index as well as the discount or premium obtained by “rolling” hypothetical positions in such contracts forward as they approach delivery. For further information on the Index, see www.spindices.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

Disclosure Annex For Commodity Index Derivative Transactions
(dated April 22, 2016)

This Disclosure Annex for Commodity Index Derivative Transactions, dated April 22, 2016 (the "Disclosure Annex"), supplements and should be read in conjunction with the General Disclosure Statement for Transactions, dated April 26, 2013 (the "General Disclosure Statement") and the Commodities Derivatives Disclosure Annex, dated April 26, 2013 published by the International Swaps & Derivatives Association Inc. NOTHING IN THIS ANNEX AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions in this Disclosure Annex of the operation of Commodity Index Derivative Transactions (as defined below) and the consequences of various events are in all cases subject to the actual terms of a Commodity Index Derivative Transaction executed between you and us and its governing documentation. This Disclosure Annex is being provided to you pursuant to 17 CFR Part 23 (Business Conduct Standards for Swap Dealers and Major Swap Participants) and constitutes our disclosure to you of the material economic terms, material risks and potential conflicts of interests associated with entering into a Commodity Index Derivative Transaction referencing a commodity index.

The General Disclosure Statement and the Commodities Disclosure Annex are available via the following hyperlink:

http://www2.isda.org/functional-areas/legal-and-documentation/disclosures/

When we refer to a "Commodity Index Derivative Transaction", we are referring to Transactions in which the underlying(s) is/are an index/indices that reference(s) physical commodities or contracts for the future delivery of physical commodities. The terms of a Commodity Index Derivative Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Commodity Index Derivative Transaction and its governing documentation. Before entering into a Commodity Index Derivative Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under the Commodity Index Derivative Transaction, its value and its appropriateness for your particular objectives.

As used in this Disclosure Annex, "JPMorgan," "we," "us" and "our" refer to JPMorgan Chase Bank, National Association and/or its affiliates, as applicable.

General Note Regarding This Disclosure

To the extent you enter into a Commodity Index Derivative Transaction, you should carefully review the disclosure set forth herein.

Attached to this Disclosure Annex are six Disclosure Supplements. Each of these Disclosure Supplements describes a family of commodity indices. The following families of commodity indices are described herein:

- The Bloomberg Commodity Indices, as set forth in Disclosure Supplement A attached hereto;
- The S&P GSCI Commodity Indices, as set forth in Disclosure Supplement B attached hereto;
- The JPMorgan Commodity Curve Indices, as set forth in Disclosure Supplement C attached hereto;
- The J.P. Morgan Contag Beta Indices, as set forth in Disclosure Supplement D attached hereto;

- The J.P. Morgan Single Commodity Indices, as set forth in Disclosure Supplement E attached hereto;
- The J.P. Morgan Bespoke Commodity Indices, as set forth in Disclosure Supplement F attached hereto; and
- The J.P. Morgan Commodity Indices, as set forth in Disclosure Supplement G attached hereto

If the commodity index referenced in your Commodity Index Derivative Transaction is a commodity index belonging one of the families set forth in Disclosure Supplements A through E (such index, a "Disclosed Index"), this Disclosure Annex, together with the documents governing your Commodity Index Derivative Transaction (including but not limited to the confirmation, the ISDA definitions referenced therein and the index methodology, if applicable) and the applicable Disclosure Supplement for such Disclosed Index, constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Commodity Index Derivative Transaction.

If the index referenced in your Commodity Index Derivative Transaction is not a Disclosed Index or is a J.P. Morgan Bespoke Commodity Index or a J.P. Morgan Commodity Index, we will provide you with a separate disclosure for such Index. That index disclosure should be read in conjunction with this Disclosure Annex, Disclosure Supplement F or G, if applicable, and Disclosure Supplements A through E, if applicable. Certain indices may reference a Disclosed Index as a constituent of the commodity index referenced in your Commodity Index Derivative Transaction. If such index references a Disclosed Index, the applicable index disclosure will describe the Index and reference the applicable Disclosure Supplement, which describes the constituents of such Index.

If the commodity index referenced in your Commodity Index Derivative Transaction is not a Disclosed Index or is a J.P. Morgan Bespoke Commodity Index or a J.P. Morgan Commodity Index, this Disclosure Annex, together with the documents governing your Commodity Index Derivative Transaction (including but not limited to the confirmation, the ISDA definitions referenced therein and the index methodology, if applicable), the index disclosure related to that specific index and any Disclosure Supplement that describes a constituent of an Index constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Commodity Index Derivative Transaction.

You should carefully consider all of these documents prior to entering into a Commodity Index Derivative Transaction.

Commodity Indices Generally

Commodity indices are typically composed of one or more futures contracts for physical commodities and are governed by a set of index rules or a methodology. Other commodity indices may directly reference the commodity price or prices of one or more physical commodities. Commodity indices are typically used as a benchmark or a measure of the performance of one or more commodities, as represented by certain exchange traded futures contracts specified and enumerated in the applicable index rules. The index rules of a commodity index define a methodology for determining, *inter alia*, (a) the composition and weighting of its component futures contracts, (b) the timing of the applicable roll from one futures contract to another, (c) the manner in which a market disruption event or an extraordinary event is handled and (d) the formulas for calculating the index levels. The index's composition and the index rules are, however, in certain circumstances, subject to change by the index sponsor and /or index calculation agent in their sole discretion. The index levels are generally calculated on a daily basis using the official settlement prices of the underlying futures contracts for the physical commodities. For more information about a specific commodity index or family of commodity indices, please contact your J.P. Morgan sales representative, who can provide you with specific disclosure on a specific commodity index or family of commodity indices.

Cash Settlement

Unlike commodity transactions that may be physically settled, Commodity Index Derivative Transactions are generally cash-settled. Commodity Index Derivative Transactions may reference an initial level that is based (a) on a "live" price agreed to over the phone or by some other means of communications (*e.g.,* email, Bloomberg message or an electronic market-making portal) or (b) on a daily index level that is published by the index's calculation agent or sponsor. Interim levels, such as levels on index reset dates, or final levels are generally based on the daily index level that is published by an index's calculation agent or sponsor. See "Index Sponsor and Index Calculation Agent; Price Sources."

Different Types of Commodity Indices; Effects of Contango and Backwardation

Commodity indices that reference one or more futures contracts generally fall into one of three categories: (1) price return indices, (2) excess return indices and (3) total return indices.

Price return indices reference only the change in the official settlement price of the underlying futures contracts referenced by a commodity index.

Excess return indices attempt to track (a) the price changes in the underlying futures contracts referenced by a commodity index and (b) the roll yield associated with the selling and buying of futures contracts referenced by such commodity index. Because commodity indices are generally cash settled and futures contracts are financial instruments with a finite term and provide for physical delivery, commodity indices roll exposure from one set of futures contracts to another set of futures contracts. When we refer to a commodity index "rolling" its exposure, we refer to the synthetic selling of one futures contract and the buying of another futures contract, typically with a settlement date later in time than the futures contract that is being sold.

When a commodity index rolls its exposure from one futures contract to another futures contract, the price at which the commodity index synthetically buys and sells the applicable futures contracts may have an effect on the index level. If the relevant futures contracts are in "contango," the index level will decline, assuming no change in the price of the underlying futures. "Contango" means that the price of a near month futures contract has a price that is lower than the price of a far month contract. If the relevant futures contracts are in "backwardation," the index level will increase, assuming no change in the price of the underlying futures. "Backwardation" means the price of a near month futures contract has a price that is higher than the price of a far month contract. The effect of contango or backwardation may have a material impact on the index levels of an excess return commodity index.

Total return indices attempt to track (a) the price changes in the underlying futures contracts referenced by a commodity index, (b) the roll yield associated with the selling and buying of futures contracts referenced by such commodity index and (c) the return associated with owning U.S. treasury bills with a specified duration. Similar to excess return commodity indices, contango or backwardation may have a material impact on the index levels of a total return commodity index. Total return indices include the return associated with owning three-month U.S. treasury bills because historically an investment in futures contracts was collateralized using such debt securities.

Index Sponsor and Index Calculation Agent; Price Sources

The index sponsor is responsible for maintaining an index. The index sponsor may add, delete or substitute the constituents of the index or may make other methodological changes that could change the level of that index. Additionally, the index sponsor may alter, discontinue or suspend calculation or dissemination of the applicable index. Any of these changes could adversely affect the economics of a Commodity Index Derivative Transaction. For certain of these actions, the Commodity Index Derivative Transaction may provide for adjustments similar to those described above or may treat the event as an extraordinary event, as described below. The index sponsor has no obligation to consider the interests of a counterparty in a Commodity Index Derivative Transaction in calculating or revising an index, and the rights of the index sponsor to amend or modify the index rules may have a material impact on the index levels and therefore on the Commodity Index Derivative Transaction. The intellectual property associated with a commodity index, including but not limited to rights of use and trademarks, are typically owned by an index sponsor. To the extent J.P. Morgan licenses such rights from an index sponsor, the cost of any such license is likely reflected in the fees associated with your Commodity Index Derivative Transaction.

The index calculation agent calculates the index levels in accordance with the applicable index rules or methodology. The ability of the index calculation agent to calculate the index level accurately and precisely is important and any failure to calculate accurately the index levels may have a material impact on the any Commodity Index Derivative Transaction that references that particular index.

Historic and current daily index levels are usually published by an index sponsor or an index calculation agent on Bloomberg Financial Services and other market data providers. Commodity Index Derivative Transactions generally reference a Bloomberg page or pages on which the daily index levels of the referenced indices are published.

A J.P. Morgan affiliate may act as index sponsor and/or index calculation agent with respect to a commodity index referenced by a Commodity Index Derivative Transaction. The roles and responsibilities of the J.P. Morgan affiliate acting as an index sponsor and/or index calculation agent are separate from the roles and responsibilities of the J.P. Morgan entity who may be acting as calculation agent under a Commodity Index Derivative Transaction. See “Potential Conflicts of Interest.”

Correction to Published Prices

A price source (*e.g.*, Bloomberg), index calculation agent or index sponsor may announce corrections to a previously published index levels. You should review the terms of a prospective Commodity Index Derivative Transaction to determine how such corrections are treated. The terms of a Commodity Index Derivative Transaction may specify that if the price source, index calculation agent or index sponsor for an index level publishes a correction to an index level, and, if the correction is announced within a specified time period after the original publication date, then a retroactive adjustment may apply to payments, including the payment of accrued interest from the previous payment or delivery date on amounts payable as a result of the correction.

Market Disruption Events

The terms of a Commodity Index Derivative Transaction will specify certain market disruption events. The occurrence or continuation of these market disruption events may have a material impact on any Commodity Index Derivative Transaction (see "*Consequences of a Market Disruption Event*"), including but not limited to the postponement of pricing dates or valuation dates and/or the modification of the index level of a commodity index on a valuation date. Subject to the terms of a Commodity Index Derivative Transaction and the governing documentation, such events may include:

- a material limitation, suspension, or disruption of trading in one or more of the futures contracts included in the commodity index or any direct or indirect component or constituent of the commodity index;

- The official settlement price for any futures contract included in the commodity index or any direct or indirect component or constituent of the commodity index is a "limit price", meaning that the official settlement price for such futures contract for a day has increased or decreased from the previous day's official settlement price by the maximum amount permitted under the rules of the relevant exchange on which such futures contract(s) is/are traded; or

- failure by the relevant exchange or other price source to announce or publish the official settlement price for any futures contract included in the commodity index or any direct or indirect component or constituent of the commodity index.

Consequences of a Market Disruption Event

The terms of a Commodity Index Derivative Transaction specify the consequences of a market disruption event, which generally include postponing the determination of the index level and/or using official settlement prices of futures contracts to a day on which a market disruption has not occurred.[1] If a market disruption event (as defined in the applicable Commodity Index Derivative Transaction) has occurred or is continuing, the calculation agent for the Commodity Index Derivative Transaction will generally determine the applicable index level in accordance with the then-current method for calculating the commodity index (as set forth in the relevant index rules and/or the transaction documents) using:

- with respect to each futures contract included in the commodity index that is not affected, directly or indirectly, by the market disruption event, the official settlement price of such contract(s) on the applicable determination date; and

- with respect to each futures contract included in the commodity index which is affected, directly or indirectly, by the market disruption event, the commodity index will be based on the official settlement price of each such contract on the first day following the applicable determination date on which no market disruption event is occurring (or continuing) with respect to such futures contract (a "Postponed Determination Day"); provided, however that if the Postponed Determination Day has not yet occurred on or prior to the fifth (5^{th}) trading day following such determination date, the calculation agent of the Commodity Index Derivative Transaction shall

[1] Provisions related to market disruption events may also exist at the index level, in which case the applicable index rules may provide for the determination of the index level by the index calculation agent in the event of a market disruption event.

determine the price of each such futures contract in good faith and a commercially reasonable manner on the sixth (6^{th}) trading day following such determination date.[2]

Certain Commodity Index Derivative Transactions may reference different consequences for a market disruption event or may refer to specific provisions in the index rules or methodology for determining an index level in the event of a market disruption event occurring. As a prospective counterparty of a Commodity Index Derivative Transaction, you should carefully review the terms of such Commodity Index Derivative Transaction and the governing documentation.

Adjustments to a Commodity Index

The calculation agent for a Commodity Index Derivative Transaction may be entitled to make certain changes to the Commodity Index Derivative Transaction if certain events occur. For example, if the commodity index referenced by a Commodity Index Derivative Transaction is permanently cancelled or is not calculated and announced by the index calculation agent and is replaced by a successor index, the terms of the Commodity Index Derivative Transaction may permit the calculation agent to elect that such successor index become the commodity index referenced by the Commodity Index Derivative Transaction.

Additionally, if:

- the index sponsor makes a material change in the formula for or the method for calculation the commodity index or in any other way modifies the commodity index;
- the index sponsor permanently cancels the commodity index; or
- the index sponsor fails to calculate and announce the index level for a continuous period of six trading days and the calculation agent determines that there is no successor sponsor and/or successor index

then the calculation agent will calculate such commodity index in accordance the index rules or methodology then in effect.

Evolving Documentation Practices

As of the publication date of this Disclosure Annex, there is no standard industry wide documentation practice for Commodity Index Derivative Transactions. In the future, there may be an industry-wide effort to adopt a standardized definitional framework for a broad array of Commodity Index Derivative Transactions in order to facilitate the greater use of automated trade processing. Accordingly, parties should monitor changing documentation practices and be especially alert to the possibility of documentation basis risk (*i.e.*, the risk that economically similar Commodity Index Derivative Transactions may behave differently in response to certain contingencies due to the incorporation of different documentation or terms in their transaction documents).

Potential Conflicts of Interest

We expect to hedge our obligations under Commodity Index Derivative Transactions through certain affiliates or unaffiliated counterparties by taking positions in instruments the value of which is derived

[2] In instances where certain futures contracts included in a commodity index are affected by a market disruption event while others remain unaffected, the applicable index rules will specify how the unaffected contracts will be valued. Typically, valuation will only be postponed for those contracts affected by a market disruption event.

from the one or more commodities, commodity futures contracts or commodity indices. We may also adjust our hedge by, among other actions, purchasing or selling any of the foregoing at any time and from time to time, and/or close out or unwind our hedge, in whole or in part, by selling any of the foregoing on or before any determination date. These hedging activities may be undertaken on a portfolio basis with respect to some or all of our and our affiliates' exposure to specific commodities and/or commodity futures contracts (including exposure unrelated to any Commodity Index Derivative Transaction). By hedging on a portfolio basis, we may hedge our entire obligations, a portion of our obligations or none of our obligations, and the amount of our hedge may change at any time. We cannot give you any assurances that our hedging activities will not negatively affect the performance of the commodity index or the value of the Commodity Index Derivative Transaction.

This hedging activity may present a conflict of interest between your interest, as a party to the Commodity Index Derivative Transaction, and the interests our affiliates have in executing, maintaining and adjusting hedge transactions related to the Commodity Index Derivative Transaction. These hedging activities could also affect the price at which we would be willing to unwind your Commodity Index Derivative Transaction.

Our hedging counterparties expect to make a profit. Because hedging our obligations entails risk and may be influenced by market forces beyond our control, this hedging may result in a profit that is more or less than expected, or it may result in a loss.

JPMorgan Chase Bank, National Association and our affiliates trade commodities, futures contracts on commodities, options on those futures contracts and other financial instruments related to those futures contracts, options or commodities on a regular basis (taking long or short positions or both), for their accounts, for other accounts under their management and to facilitate transactions on behalf of customers. While we cannot predict an outcome, any of these hedging or trading activities could adversely affect payments under any particular Commodity Index Derivative Transaction.

It is possible that these hedging or trading activities could result in substantial returns for us or our affiliates while the value of any particular Commodity Index Derivative Transaction declines.

Dependence on Hedging Positions

Certain events, including changes in law, regulations or rules of an exchange or self-regulatory organization or in interpretations thereof could affect our or an affiliate's ability to enter into, maintain or unwind hedging positions related to a Commodity Index Derivative Transaction. The terms of a Commodity Index Derivative Transaction may provide that under such circumstances we may terminate the Commodity Index Derivative Transaction, or that costs incurred in connection with acquiring, maintaining or unwinding any hedge positions that we or an affiliate have entered into related to the Commodity Index Derivative Transaction are passed through to you, including taxes, duties and fees, or that the terms of the Commodity Index Derivative Transaction may be adjusted to account for the economic effect of events affecting such hedge positions.

In this regard, in October 2011 the U.S. Commodity Futures Trading Commission (the "CFTC") issued a final rule imposing position limits on twenty-eight (28) core reference futures contracts related to physical commodities that are traded on U.S. futures exchanges and economically related swaps. The final rule includes a more restrictive exemption for *bona fide* hedging positions than under previous rules and interpretations. In addition, designated contract markets and swap execution facilities, as defined under the the U.S. Commodities Exchange Act, as amended (the "Commodities Exchange Act"), are required to establish and enforce position limits or position accountability requirements on their own markets and facilities. Regulators in various jurisdictions are examining the effects of speculative trading on commodity markets and any resulting initiatives may impact our ability to hedge. The legal and regulatory developments described above may cause us to invoke the types of provisions described in the previous paragraph, which may adversely affect the economics of Commodity Index Derivative Transactions.

Additional Considerations for Specific Product Types

The following is a discussion of certain material risks, terms and characteristics applicable to certain common types of Commodity Index Derivative Transactions. The manner in which the types of Commodity Index Derivative Transactions below are categorized is illustrative only, and is intended only to assist you in understanding key features of prospective Commodity Index Derivative Transactions. The discussion should not be viewed as a comprehensive description of any particular Commodity Index Derivative Transaction that may be under discussion between you and us. Because nomenclature is neither standardized nor sufficiently descriptive to capture all important transaction features and variations, a particular Commodity Index Derivative Transaction may have additional or different risks, terms and characteristics than those described below, even if it is referred to by one of the following category names.

Commodity Index Swaps

A commodity index swap is a Commodity Index Derivative Transaction that transfers the return attributable to a specified notional amount of one or more commodity indices from one party (the "commodity index amount payer") to the other (the "commodity index amount receiver"). The return is generally determined based on changes in the index level between two or more valuation dates (or, in the case of an initial valuation date, between the price or level observed as of that first valuation date and an agreed upon initial price, or in some cases an initial price that is set according to an agreed upon methodology following the trade date). Payments under this "commodity index leg" of the commodity index swap are made by the commodity index amount payer if the return is positive and by the commodity index amount receiver if the return is negative. Such payments may be due only once upon the termination of the commodity index swap (if there is only a single, final valuation date), or periodically during the term of the commodity index swap following each interim valuation date. In addition, a commodity index swap will generally also include a "financing leg" under which the commodity index amount receiver will make periodic payments to the commodity index amount payer ("financing amount payments") calculated by multiplying the notional amount by a specified fixed or floating rate (which may be specified as the sum of a spread plus a benchmark rate, such as a LIBOR rate, that is reset periodically).

Some of the important features which you should consider in reviewing the terms of a proposed commodity index swap include:

- Notional amount -- The notional amount may be specified as a monetary amount (e.g., a fixed dollar amount) or defined so that it corresponds to a fixed number of units; it may or may not be reset on interim valuation dates. The notional amount may be in a different currency than the currency (typically U.S. dollars) in which the commodity index is denominated (in which case currency gains or losses associated with a direct long or short position in the commodity index will not be part of the return, although disruption events related to that currency may affect the Commodity Index Derivative Transaction). Please refer to the Disclosure Annex for Foreign

Exchange Transactions, dated April 26, 2013, published by ISDA for certain considerations related to foreign exchange market disruptions.

- Financing leg -- Please refer to the Disclosure Annex for Interest Rate Transactions, dated April 26, 2013, published by ISDA for certain considerations relevant to the financing leg of a commodity index swap. You should note whether payment dates under the commodity index leg and the financing leg of a proposed commodity index swap coincide and consider the possibility that differences may arise, for example, due to applicable business day conventions or the occurrence of disruption events. The interest rate paid or payable under the financing leg may differ from the rate at which either of the parties to the commodity index swap may fund itself.
- Term and termination rights --The commodity index swap may provide that one or both of the parties has an optional early termination right. Early termination will result in the designation of a final valuation date, which will be used to determine the final payment. The terms of the commodity index swap may specify that a break fee is payable upon early termination. In evaluating a commodity index swap in which your counterparty has an optional early termination right, you should assess the potential magnitude of termination payments and your ability to pay them at the appropriate time.
- Economic return -- Please refer to Section II.F of the General Disclosure Statement – "The economic return of a Transaction may not be the same as the return from the Underlier".

Commodity Index Options

A commodity index option is a Commodity Index Derivative Transaction that transfers the return (above or below a specific index level generally referred to as the strike) attributable to a specified notional amount of one or more commodity indices from one party (the "commodity index option buyer") to the other (the "commodity index option seller"). The return is generally determined based on changes in the index level between the strike and one or more valuation dates. The commodity index option will indicate a "buyer" or "seller" of the option. The buyer of the commodity index option pays a premium, which may be expressed as a percentage of notional or as a fixed amount. If the commodity index option is a call, the seller pays the performance of the commodity index above the strike price, and if the commodity index option is a put, the seller pays the performance of the commodity index below the strike price. The documentation for the commodity index option will also specify the type of option and other provisions relating to its exercise. For example, the documentation will specify whether the option is an American-style option, in which case the option may be exercised by the buyer at any time prior to the expiration date, or if the option is a European-style option, in which case the option may only be exercised by the buyer at the expiration time on the expiration date.

Select Risk Considerations

The following section sets forth certain risk considerations associated with Commodity Index Dreivative Transactions generally. These risks should be read in conjunction with the risks set forth in Disclosure Supplements and any Index specific disclosure provided to you from us.

JPMorgan Chase & Co. and its affiliates (collectively, "JPMorgan") may have economic interests that are adverse to counterparties of a Commodity Index Derivative Transaction as a result of JPMorgan's hedging and other trading activities.

JPMorgan expects to hedge its obligations under the Commodity Index Derivative Transaction through certain affiliates or unaffiliated counterparties by taking positions in instruments the value of which are derived from one or more commodities, commodity futures contracts or commodity indices, or positions in futures contracts underlying one or more indices or positions in related options or futures contracts. JPMorgan may also adjust its hedge by, among other things, purchasing or selling any of the foregoing at any time and from time to time, and may close out or unwind its hedge at any time. JPMorgan cannot give you any assurances that its hedging will not negatively affect the value of the underlying index/indices or the Commodity Index Derivative Transaction.

JPMorgan may have economic interests that are adverse to those of the counterparties to a Commodity Index Derivative Transaction as a result of JPMorgan's business activities.

In the course of their business, JPMorgan may acquire nonpublic information about one or more relevant commodities, commodity futures contracts or indices, and JPMorgan will not disclose any such information to you. In addition, one or more of JPMorgan's affiliates may publish research reports or otherwise express views about one or more relevant underlying commodities, commodity futures contracts or indices. Any prospective counterparty to a Commodity Index Derivative Transaction should undertake an independent investigation of any relevant underlying commodities, commodity futures contracts or indices as in its judgment is appropriate to make an informed decision with respect to the Commodity Index Derivative Transaction.

Additionally, JPMorgan or one of JPMorgan's affiliates may serve as issuer, agent or underwriter for issuances of other securities or financial instruments or counterparty to derivative transactions (other than the Commodity Index Derivative Transaction) with returns linked or related to changes in the price or level, as applicable, of one or more relevant commodities, commodity futures contracts or indices or the commodities or commodity futures contracts underlying one or more relevant commodity futures contracts or indices. To the extent that a JPMorgan entity serves as issuer, agent or underwriter for those securities or financial instruments or counterparty to derivative transactions (other than the Commodity Index Derivative Transaction), JPMorgan's or interests with respect to those products may be adverse to those of the counterparty to a Commodity Index Derivative Transaction.

JPMorgan may have economic interests that are adverse to those of the counterparty of a Commodity Index Derivative Transaction due to JPMorgan Chase Bank, National Association's role as Calculation Agent.

JPMorgan Chase Bank, National Association or one of its affiliates may act as the Calculation Agent under the Commodity Index Derivatives Transaction. The Calculation Agent will be responsible for determining, among other things:

- the fixed amount, the floating amount or the index amount, where applicable (each as defined in the transaction documentation);
- whether a market disruption event has occurred or is continuing;
- whether any index has been discontinued; and
- whether there has been a material change in the method of calculating an index level.

In performing these duties, JPMorgan Chase Bank, National Association or one of its affiliates may have interests adverse to the interests of the counterparty of a Commodity Index Derivative Transaction, particularly where JPMorgan Chase Bank, National Association, as the Calculation Agent, is entitled to exercise discretion.

Market disruptions may adversely affect a Commodity Index Derivative Transaction.

The relevant calculation agent may, in its sole discretion, determine that the relevant markets have been affected in a manner that prevents it from properly determining the value of an index. These events may include disruptions or suspensions of trading in the markets as a whole or the termination or suspension of, or material limitation or disruption in the trading of any commodity, commodity futures contract or commodity futures contract included in any index.

An investment in the Commodity Index Derivative Transaction may not offer direct exposure to physical commodities.

If the Commodity Index Derivative Transaction is linked to one or more indices that include futures contracts on a commodity, the Commodity Index Derivative Transaction will reflect, in whole or in part, the return on those commodity futures contracts, not the return on the physical commodities underlying those commodity futures contracts. The price of a futures contract reflects the expected value of the commodity upon delivery in the future, whereas the spot price of a commodity reflects the immediate delivery value of the commodity. A variety of factors can lead to a disparity between the expected future price of a commodity and the spot price at a given point in time, such as the cost of storing the commodity for the term of the futures contract, interest charges incurred to finance the purchase of the commodity and expectations concerning supply and demand for the commodity. The price movements of a futures contract are typically correlated with the movements of the spot price of the reference commodity, but the correlation is generally imperfect and price movements in the spot market may not be reflected in the futures market (and vice versa).

Suspension or disruptions of market trading in relevant commodity and related futures markets may adversely affect the value of the Commodity Index Derivative Transaction.

The commodity markets are subject to temporary distortions or other disruptions due to various factors, including the lack of liquidity in the markets, the participation of speculators and government regulation and intervention. In addition, U.S. futures exchanges and some foreign exchanges have regulations that limit the amount of fluctuation in futures contract prices that may occur during a single trading day. These limits are generally referred to as “daily price fluctuation limits” and the maximum or minimum price of a contract on any given day as a result of these limits is referred to as a “limit price.” Once the limit price has been reached in a particular contract, no trades may be made at a price higher than the maximum price, or lower than the minimum price. Limit prices may have the effect of precluding trading in a particular contract or forcing the liquidation of contracts at disadvantageous times or prices. These circumstances could adversely affect the price or level, as applicable, of any commodity, commodity futures contract or index and, therefore, the value of a Commodity Index Derivative Transaction.

An increase in the margin requirements for any relevant commodity futures contract or commodity futures contracts included in any relevant Index may adversely affect the value of the Commodity Index Derivative Transaction.

Futures exchanges require market participants to post collateral in order to open and to keep open positions in futures contracts. If an exchange increases the amount of collateral required to be posted to hold positions in any relevant commodity futures contract or in commodity futures contracts underlying any relevant index, market participants who are unwilling or unable to post additional collateral may liquidate their positions, which may cause the price of the relevant commodity futures contract or the level of an index to decline significantly. As a result, the value of the Commodity Index Derivative Transaction may be adversely affected.

A commodity futures contract or an index may be subject to pronounced risks of pricing volatility.

As a general matter, the risk of low liquidity or volatile pricing around the maturity date of a commodity futures contract is greater than in the case of other futures contracts because (among other factors) a number of market participants take physical delivery of the underlying commodities. Many commodities, like those in the energy and industrial metals sectors, have listed futures contracts that expire every month. Therefore, these contracts are rolled forward every month. Contracts based on certain other commodities, most notably agricultural and livestock products, tend to have only a few contract months each year that trade with substantial liquidity. Thus, these commodities, with related futures contracts that expire less frequently, roll forward less frequently than every month, and can have further pronounced pricing volatility during extended periods of low liquidity. The risk of aberrational liquidity or pricing around the maturity date of a commodity futures contract may therefore be greater in these instances than in the case of other futures contracts. In respect of a commodity futures contract or an index that represents energy, it should be noted that due to the significant level of continuous consumption, limited reserves, and oil cartel controls, energy commodities are subject to rapid price increases in the event of perceived or actual shortages. These factors (when combined or in isolation) may affect the price of futures contracts and, as a consequence, the price of a commodity futures contract or the level of an index and payments under a Commodity Index Derivative Transaction.

Commodity prices are characterized by high and unpredictable volatility, which could lead to high and unpredictable volatility in a commodity, a commodity futures contract or an index.

Market prices of commodities tend to be highly volatile and may fluctuate rapidly based on numerous factors, including: changes in supply and demand relationships, governmental programs and policies, national and international monetary, trade, political and economic events, wars and acts of terror, changes in interest and exchange rates, speculation and trading activities in commodities and related contracts, weather, and agricultural, trade, fiscal and exchange control policies. The price volatility of each commodity also affects the value of the futures and forward contracts related to that commodity and therefore its price at any time. The price of any one commodity may be correlated to a greater or lesser degree with any other commodity and factors affecting the general supply and demand as well as the prices of other commodities may affect the particular commodity in question. In respect of commodities in the energy sector, due to the significant level of its continuous consumption, limited reserves, and oil cartel controls, energy prices are subject to rapid price increases in the event of perceived or actual shortages. The commodities markets are subject to temporary distortions or other disruptions due to various factors, including the lack of liquidity in the markets, the participation of speculators and government regulation and intervention. Many commodities are also highly cyclical. These factors, some of which are specific to the nature of each such commodity, may affect the price or level of a commodity, a commodity futures contract or an index in varying ways, and different factors may cause the value of a commodity, a commodity futures contract or the different commodity futures contracts included in an index to move in inconsistent directions at inconsistent rates. This, in turn, will affect the value of the Commodity Index Derivative Transaction.

Concentration risks may adversely affect the value of a Commodity Index Derivative Transaction.

If a Commodity Index Derivative Transaction is linked to a single index or to a small number of indices that are concentrated in a single or a limited number of commodities or commodity sectors, you will not benefit from the advantages of a diversified investment, and will bear the risks of a concentrated investment, including the risk of greater volatility than may be experienced in connection with a diversified investment.

The index sponsor has no obligation to consider your interests.

The index sponsor of an index is responsible for calculating and maintaining that index. The index sponsor can make methodological changes that could change the value of the index at any time and it has no obligation to consider your interests. The index sponsor may discontinue or suspend calculation or dissemination of the index. Any of these actions could adversely affect the value of and/or payment under the Commodity Index Derivative Transaction. The index sponsor has no obligation to consider your interests in calculating or revising the methodology of the index.

The Commodity Index Derivative Transactions may be linked to an excess return index, and not a total return index.

The Commodity Index Derivative Transactions may be linked to an excess return index and not a total return index. The return from investing in futures contracts derives from three sources: (a) changes in the price of the relevant futures contracts (which is known as the "price return"); (b) any profit or loss realized when rolling the relevant futures contracts (which is known as the "roll return"); and (c) any interest earned on the cash deposited as collateral for the purchase of the relevant futures contracts (which is known as the "collateral return").

Some commodity indices are excess return indices that measure the returns accrued from investing in uncollateralized futures contracts (*i.e.*, the sum of the price return and the roll return associated with an investment in futures contracts). By contrast, a total return index, in addition to reflecting those returns, also reflects interest that could be earned on funds committed to the trading of the underlying futures contracts (*i.e.*, the collateral return associated with an investment in futures contracts). If the Commodity Index Derivative Transactions are linked to an index that is an excess return index, investing in the Commodity Index Derivative Transactions will not generate the same return as would be generated from investing directly in the relevant futures contracts or in a total return index related to those futures contracts.

Higher or lower future prices of commodities included in an index relative to their current prices may lead to a decrease in the payment on the Commodity Index Derivative Transaction.

An index can be composed of futures contracts on physical commodities. As the contracts that underlie an index come to expiration, they are replaced by contracts that have a later expiration. For example, a contract purchased and held in August may specify an October expiration. As time passes, the contract expiring in October is replaced by a contract for delivery in November. This is accomplished by selling the October contract and purchasing the November contract. This process is referred to as "rolling." Excluding other considerations, if the market for these contracts is in "backwardation," where the prices are lower in the distant delivery months than in the nearer delivery months, the sale of the October contract would take place at a price that is higher than the price of the November contract, thereby creating a "positive roll yield"for an index with a long synthetic exposure to such commodity, or a "negative roll yield" for an index with a short synthetic exposure to such commodity. While many commodity futures contracts have historically exhibited consistent periods of backwardation, backwardation will most likely not exist at all times. Moreover, some of the commodity futures contracts have historically exhibited “contango” markets rather than backwardation. Contango markets are those in which prices are higher in more distant delivery months than in nearer delivery months. In case of a contango market, in the example above, the sale of the October contract would take place at a price that is lower than the price of the November contract, thereby creating a “negative roll yield” for an index with a long synthetic exposure to such commodity, or a “positive roll yield” for an index with a short synthetic exposure to such commodity. Commodities may also fluctuate between backwardation and contango markets. The presence of backwardation or of contango in the commodity markets could affect the level of an Index and, accordingly, the amount payable on the Commodity Index Derivative Transaction.

Historical performance of a commodity, a commodity futures contract or an index should not be taken as an indication of the future performance of that commodity, commodity futures contract or index.

The actual performance of a commodity, a commodity futures contract or an index, as well as the amount payable on a Commodity Index Derivative Transaction, may bear little relation to the historical performance of that commodity, commodity futures contract or index. It is impossible to predict whether the price or level, as applicable, of a commodity, commodity futures contract or an index will rise or fall.

Disclosure Supplement A for the Bloomberg Commodity Indices
(dated April 22, 2016)

This Disclosure Supplement for the Bloomberg Commodity Indices, dated April 22, 2016 (the "Disclosure Supplement"), supplements and should be read in conjunction with the General Disclosure Statement ("General Disclosure Statement") and the Disclosure Annex for Commodity Derivatives (the "Commodities Disclosure Annex"), each dated April 26, 2013, published by the International Swaps & Derivatives Association Inc. and the Disclosure Annex For Commodity Index Derivative Transactions, dated April 22, 2016 (the "Commodity Index Disclosure Annex"), published by JPMorgan Chase Bank, National Association. NOTHING IN THIS SUPPLEMENT AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions in this Disclosure Supplement of the operation of Commodity Index Derivative Transactions (as defined below) and the consequences of various events are in all cases subject to the actual terms of a Commodity Index Derivative Transaction executed between you and us and its governing documentation.

When we refer to a "Commodity Index Derivative Transaction", we are referring to Transactions in which the underlying(s) is/are an index or indices that reference physical commodities or contracts for the future delivery of physical commodities. The terms of a Commodity Index Derivative Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Commodity Index Derivative Transaction and its governing documentation. Before entering into a Commodity Index Derivative Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under the Commodity Index Derivative Transaction, its value and its appropriateness for your particular objectives.

To the extent you enter into a Commodity Index Derivative Transaction that references a Bloomberg Commodity Index, in whole or in part, or another index that references a Bloomberg Commodity Index, as one of its constituents, you should carefully review the disclosure set forth herein. This Disclosure Supplement, together with the Index Rules (as defined below), the documents governing your Commodity Index Derivative Transaction, the disclosure annexes referenced above and any other disclosure delivered by us to you related to your specific Commodity Index Derivative Transaction, constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Commodity Index Derivative Transaction. You should carefully consider all of these documents prior to entering into a Commodity Index Derivative Transaction.

General

JPMorgan has derived all information contained in herein regarding the Bloomberg Commodity Index^{SM}, its single-commodity sub-indices or the forward-month version of Bloomberg Commodity Index^{SM} or its single-commodity sub-indices (each a "Bloomberg Commodity Index" and collectively, the "Bloomberg Commodity Indices"), including, without limitation, their make-up, methods of calculation and changes in their components from (i) publicly available sources and (ii) a summary of "Index Methodology – The Bloomberg Commodity Index Family" dated January 2016, available at http://www.bloombergindices.com/content/uploads/sites/2/2015/12/BCOM-Methodology-January-2016_FINAL.Updated.pdf (a document that is not incorporated herein by reference, may be considered proprietary to Bloomberg Finance L.P. and its affiliates (collectively, "Bloomberg") and is available to those persons who enter into a license agreement with Bloomberg, available via the Bloomberg Indexes website). JPMorgan makes no warranties as to the accuracy or completeness of such sourses and neither the Index Methodology – The Bloomberg Commodity Index Family nor the Bloomberg Indexes website is incorporated herein by reference.

Such information reflects the policies of, and is subject to change by, Bloomberg. JPMorgan has not independently verified this information. Counterparties to a Commodity Index Derivative Transaction should make their own investigation into the Bloomberg Commodity Indices and Bloomberg. Bloomberg is not involved in any Commodity Index Derivative Transaction described herein in any way and has no obligation to consider the interests of the parties to a Commodity Index Derivative Transaction. Bloomberg has no obligation to continue to publish the Bloomberg Commodity Indices, and may discontinue publication of the Bloomberg Commodity Indices at any time in their sole discretion. Information contained in the Bloomberg Indexes website is not incorporated by reference in, and should not be considered a part of, the documentation related to a Commodity Index Derivative Transaction.

On July 1, 2014, Bloomberg became responsible for the governance, calculation, distribution and licensing of the Bloomberg Commodity Indices (formerly known as the Dow Jones-UBS Commodity Index^{SM}). The Dow Jones-UBS Commodity Index^{SM} was renamed to the Bloomberg Commodity Index^{SM} and the ticker changed from "DJUBS" to "BCOM." UBS has maintained its ownership, but will have no role in any aspect of index governance or calculation. Currently, Bloomberg does not expect to make any material alteration to the calculation methodology of the Bloomberg Commodity Indices.

Overview

The Bloomberg Commodity Index^{SM} was introduced in July of 1998 to provide a unique, diversified, economically rational and liquid benchmark for commodities as an asset class. The Bloomberg Commodity Index^{SM} currently is composed of the prices of twenty two exchange-traded futures contracts on physical commodities. A futures contract is a bilateral agreement providing for the purchase and sale of a specified type and quantity of a commodity or financial instrument during a stated delivery month for a fixed price. The commodities included in the Bloomberg Commodity Index^{SM} for 2015 and 2014 are as follows: aluminum, coffee, copper, corn, cotton, crude oil (WTI and Brent), gold, heating oil, lean hogs, live cattle, natural gas, nickel, silver, soybeans, soybean meal, soybean oil, sugar, unleaded gasoline, wheat (Soft and Hard Red Winter) and zinc. The Bloomberg Commodity Index^{SM} tracks futures contracts that trade on the Chicago Board of Trade ("CBOT"), New York Board of Trade ("NYBOT"), Commodities Exchange division of the New York Mercantile Exchange ("COMEX"), New York Mercantile Exchange ("NYMEX"), the Kansas City Board of Trade ("KCBOT"), the London Metals Exchange ("LME") and ICE Futures Europe.

The Bloomberg Commodity Index^{SM} is a proprietary index that AIG International, Inc. developed and that Bloomberg calculates. The methodology for determining the composition and weighting of the Bloomberg Commodity Index^{SM} and for calculating its value is subject to modification by Bloomberg at any time.

The Bloomberg Commodity Index^{SM} is composed of exchange-traded futures contracts on physical commodities and is designed to be a highly liquid and diversified benchmark for commodities as an asset class. Its component weightings are determined primarily based on liquidity data, which is the relative amount of trading activity of a particular commodity. The Bloomberg Commodity Index^{SM} is published by

Bloomberg L.P. under the ticker symbols "BCOM" for the excess return version and "BCOMTR" for the total return version.

The single-commodity sub-indices of the Bloomberg Commodity Index℠ follow the methodology of the Bloomberg Commodity Index℠, except that the calculation of each single-commodity sub-index utilizes the prices of the relevant futures contracts (listed under "— Designated Contracts for Each Commodity") and the relevant Commodity Index Multiplier (determined as described under "— Commodity Index Multipliers"). The single-commodity sub-indices of the Bloomberg Commodity Index℠ are published by Bloomberg L.P.

Bloomberg also publishes forward-month versions of the Bloomberg Commodity Index℠ and its single-commodity sub-indices that trade longer-dated commodity futures contracts. The Bloomberg Commodity Index 3 Month Forward℠ follows the methodology of the Bloomberg Commodity Index℠, except that the futures contracts used for calculating the Bloomberg Commodity Index 3 Month Forward℠ are advanced, as compared to the Bloomberg Commodity Index℠, such that the delivery months for the reference contracts are later than those of the corresponding reference contracts used for the Bloomberg Commodity Index℠. The Bloomberg Commodity Index 3 Month Forward℠ is published by Bloomberg L.P. under the ticker symbols "BCOMF3" for the excess return version and "BCOMF3T" for the total return version.

The forward-month single-commodity sub-indices of the Bloomberg Commodity Index℠ follow the methodology of the Bloomberg Commodity Index℠, except that the calculation of each forward-month single-commodity sub-index utilizes the prices of the relevant futures contracts (as listed under "— Designated Contracts for Each Commodity") and the relevant Commodity Index Multiplier (determined as described under "— Commodity Index Multipliers"). In addition, the futures contracts used for calculating the forward-month single-commodity sub-indices are advanced, as compared to the futures contracts included in the Bloomberg Commodity Index℠, such that the delivery months for the reference contracts are later than those of the corresponding reference contracts used for the single-commodity sub-indices. The forward-month single-commodity sub-indices of the Bloomberg Commodity Index℠ are published by Bloomberg L.P.

Bloomberg publishes both a total return version and excess return version of each of the Bloomberg Commodity Indices. The total return version of each Bloomberg Commodity Index reflects the returns on a fully collateralized investment in the excess return version of such Bloomberg Commodity Index. Accordingly, the total return version of each Bloomberg Commodity Index combines the returns of the relevant excess return version with returns on cash collateral invested in Treasury Bills. The cash collateral returns are calculated using the most recent weekly auction high rate for 13 week (3 Month) U.S. Treasury Bills, as reported on the website www.publicdebt.treas.gov/AI/OFBills under the column heading "Discount Rate %," published by the Bureau of the Public Debt of the U.S. Treasury (or any successor source). Information contained in the Bureau of the Public Debt of the U.S. Treasury website is not incorporated by reference in, and should not be considered a part of, the documentation for a Commodity Index Derivative Transaction. Weekly auction high rates are generally published once each week on Monday. The Commodity Index Derivative Transaction may reference the excess return or the total return version of the Bloomberg Commodity Indices.

Bloomberg and its affiliates actively trade futures contracts and options on futures contracts on the commodities that underlie the Bloomberg Commodity Index℠, as well as commodities, including commodities included in the Bloomberg Commodity Index℠.

The Bloomberg Commodity Index Oversight Committee and Index Advisory Committees

Bloomberg has established a two-tier oversight structure composed of the Bloomberg Commodity Index Oversight Committee (the "Oversight Committee") and the Bloomberg Commodity Index Advisory

Committee (the "Advisory Committee"). The Oversight Committee consists of senior representatives from various Bloomberg business units, and will discuss, review and challenge all aspects of the benchmark process, given any advice and recommendations of the Advisory Committee. The Advisory Committee will convene to provide Bloomberg with guidance and feedback from the investment community on index products and processes. Both the Oversight and Advisory Committees meet annually to consider any changes to be made to the Bloomberg Commodity Index℠ for the coming year. These committees may also meet at such other times as may be necessary for purposes of their respective responsibilities in connection with the oversight of the Bloomberg Commodity Index℠.

Four Main Principles Guiding the Creation of the Bloomberg Commodity Index℠

The Bloomberg Commodity Index℠ was created using the following four main principles:

- ECONOMIC SIGNIFICANCE. A commodity index should fairly represent the importance of a diversified group of commodities to the world economy. To achieve a fair representation, the Bloomberg Commodity Index℠ uses both liquidity data and dollar-weighted production data in determining the relative quantities of included commodities. The Bloomberg Commodity Index℠ primarily relies on liquidity data, or the relative amount of trading activity of a particular commodity, as an important indicator of the value placed on that commodity by financial and physical market participants. The Bloomberg Commodity Index℠ also relies on production data as a useful measure of the importance of a commodity to the world economy. Production data alone, however, may underestimate the economic significance of storable commodities (*e.g.*, gold) relative to non-storable commodities (*e.g.*, live cattle). Production data alone also may underestimate the investment value that financial market participants place on certain commodities, and/or the amount of commercial activity that is centered around various commodities. Accordingly, production statistics alone do not necessarily provide as accurate a blueprint of economic importance as the markets themselves. The Bloomberg Commodity Index℠ thus relies on data that is both endogenous to the futures market (liquidity) and exogenous to the futures market (production) in determining relative weightings.

- DIVERSIFICATION. A second major goal of the Bloomberg Commodity Index℠ is to provide diversified exposure to commodities as an asset class. Disproportionate weighting of any particular commodity or sector increases volatility and negates the concept of a broad-based commodity index. Instead of diversified commodities exposure, the investor is unduly subjected to micro-economic shocks in one commodity or sector. As described further below, diversification rules have been established and are applied annually. Additionally, the Bloomberg Commodity Index℠ is re-balanced annually on a price-percentage basis in order to maintain diversified commodities exposure over time.

- CONTINUITY. The third goal of the Bloomberg Commodity Index℠ is to be responsive to the changing nature of commodity markets in a manner that does not completely reshape the character of the Bloomberg Commodity Index℠ from year to year. The Bloomberg Commodity Index℠ is intended to provide a stable benchmark so that end-users may be reasonably confident that historical performance data (including such diverse measures as correlation, spot yield, roll yield and volatility) is based on a structure that bears some resemblance to both the current and future composition of the Bloomberg Commodity Index℠.

- LIQUIDITY. Another goal of the Bloomberg Commodity Index℠ is to provide a highly liquid index. The explicit inclusion of liquidity as a weighting factor helps to ensure that the Bloomberg

Commodity Index℠ can accommodate substantial investment flows. The liquidity of an index affects transaction costs associated with current investments. It also may affect the reliability of historical price performance data.

These four principles represent goals of the Bloomberg Commodity Index℠ and its creators, and there can be no assurance that these goals will be reached by Bloomberg.

Composition of the Bloomberg Commodity Index℠ — Commodities Available for Inclusion

A number of commodities have been selected that are believed to be both sufficiently significant to the world economy to merit consideration for inclusion in the Bloomberg Commodity Index℠ and tradeable through a qualifying related futures contract. With the exception of several metals contracts (aluminum, lead, tin, nickel and zinc) that trade on the LME, each of the potential commodities is currently the subject of at least one futures contract that trades on a U.S. exchange.

As of the date of this Disclosure Supplement, the 26 commodities available for inclusion in the Bloomberg Commodity Index℠ were aluminum, cocoa, coffee, copper, corn, cotton, crude oil (WTI and Brent), gold, heating oil, lead, lean hogs, live cattle, natural gas, nickel, platinum, silver, soybean meal, soybean oil, soybeans, sugar, tin, unleaded gasoline, wheat (soft (Chicago) and hard red winter (Kansas City)) and zinc.

The 22 Bloomberg Commodities for 2016 are as follows: aluminum, coffee, copper, corn, cotton, crude oil (WTI and Brent), gold, heating oil (ULS diesel), lean hogs, live cattle, natural gas, nickel, silver, soybean meal, soybean oil, soybeans, sugar, unleaded gasoline, wheat (soft and hard red winter) and zinc.

Designated Contracts for Each Commodity

One or more futures contracts known as a "Designated Contract" is selected by Bloomberg for each commodity available for inclusion in the Bloomberg Commodity Index℠. Historically, through and including the composition of the Bloomberg Commodity Index℠ for 2016, Bloomberg has chosen for each Commodity one Designated Contract that is traded in North America and denominated in U.S. dollars (with the exception of several LME contracts, which are traded in London, and with the exception of crude oil, for which two Designated Contracts have been selected starting in 2012, and the agricultural component, for which two Designated Contracts that are traded in North America have been selected starting in 2013 (hard red winter wheat (Kansas wheat) and soybean meal)).

The termination or replacement of a futures contract on an established exchange occurs infrequently; if a Designated Contract were to be terminated or replaced, a comparable futures contract, if available, would be selected to replace that Designated Contract. The Supervisory Committee may, however, terminate, replace or otherwise change a Designated Contract, or make other changes to the Bloomberg Commodity Index℠, pursuant to special meetings.

The Designated Contracts for the commodities underlying the 2015 Bloomberg Commodity Index are set forth below.

Bloomberg Commodity Index℠ Breakdown by Commodity

Commodity	Designated Contract	Exchange	Units	Price quote

Commodity	Designated Contract	Exchange	Units	Price quote
Aluminum	High Grade Primary Aluminum	LME	25 metric tons	USD/metric ton
Coffee	Coffee “C”	NYBOT*	37,500 lbs	U.S. cents/pound
Copper**	Copper	COMEX***	25,000 lbs	U.S. cents/pound
Corn	Corn	CBOT	5,000 bushels	U.S. cents/bushel
Cotton	Cotton	NYBOT	50,000 lbs	U.S. cents/pound
Crude (WTI)	Light, Sweet Crude Oil	NYMEX	1,000 barrels	USD/barrel
Crude (Brent)	Brent Crude Oil	ICE Futures Europe	1,000 barrels	USD/barrel
Gold	Gold	COMEX	100 troy oz.	USD/troy oz.
Heating Oil	Heating Oil	NYMEX	42,000 gallons	U.S. cents/gallon
Lean Hogs	Lean Hogs	CME^	40,000 lbs	U.S. cents/pound
Live Cattle	Live Cattle	CME	40,000 lbs	U.S. cents/pound
Natural Gas	Henry Hub Natural Gas	NYMEX	10,000 mmbtu	USD/mmbtu
Nickel	Primary Nickel	LME	6 metric tons	USD/metric ton
Silver	Silver	COMEX	5,000 troy oz.	U.S. cents/troy oz.
Soybeans	Soybeans	CBOT	5,000 bushels	U.S. cents/bushel
Soybean Meal	Soybean Meal	CBOT	100 short tons	USD/short ton
Soybean Oil	Soybean Oil	CBOT	60,000 lbs	U.S. cents/pound
Sugar	World Sugar No. 11	NYBOT	112,000 lbs	U.S. cents/pound
Unleaded Gasoline (RBOB)	Reformulated Gasoline Blendstock for Oxygen Blending†	NYMEX	42,000 gal	U.S. cents/gallon
Wheat (Chicago)	Soft Wheat	CBOT	5,000 bushels	U.S. cents/bushel
Wheat (Kansas)	Hard Red Winter Wheat	KCBOT	5,000 bushels	U.S. cents/ bushel
Zinc	Special High Grade Zinc	LME	25 metric tons	USD/metric ton

* The New York Board of Trade (“NYBOT”) located in New York City.

** The Bloomberg Commodity Index^{SM} uses the High Grade Copper Contract traded on the COMEX division of the New York Mercantile Exchange for copper contract prices and LME volume data in determining the weighting for the Bloomberg Commodity Index^{SM}.

*** The COMEX division of the New York Mercantile Exchange (“COMEX”) located in New York City.

^ The Chicago Mercantile Exchange (“CME”) located in Chicago, Illinois.

† Represents a replacement of the New York Harbor Unleaded Gasoline contract. This replacement occurred during the regularly scheduled roll of futures contracts comprising the Bloomberg Commodity Index^{SM} in April 2006.

In addition to the commodities set forth in the above table, cocoa, lead, platinum, tin, gas oil, orange juice and feeder cattle also are considered annually for inclusion in the Bloomberg Commodity Index^{SM}.

Commodity Groups

For purposes of applying the diversification rules discussed above and below, the commodities available for inclusion in the Bloomberg Commodity Index^{SM} are assigned to Commodity Groups. The Commodity Groups, and the commodities currently included in each Commodity Group, are as follows:

Commodity Group:	Commodities:	Commodity Group:	Commodities:
Energy	Crude Oil (WTI and Brent) Heating Oil Natural Gas Unleaded Gasoline (RBOB)	Livestock	Lean Hogs Live Cattle
Precious Metals	Gold Silver Platinum	Grains	Corn Soybeans Soybean Meal Soybean Oil Wheat (Chicago and Kansas)
Industrial Metals	Aluminum Copper Lead Nickel Tin Zinc	Softs	Cocoa Coffee Cotton Sugar

Bloomberg Commodity Index^{SM} Breakdown by Commodity Group

The Commodity Group Breakdown set forth below is based on the weightings and composition of the Bloomberg Commodity Index^{SM} set forth under “The Bloomberg Commodity Index^{SM} 2015 Commodity Index Percentages” below.

Energy	31.03%
Precious Metals	15.59 %
Industrial Metals	17.11%
Livestock	5.63 %
Grains	23.22%
Softs	7.41%

Annual Reweightings and Rebalancings of The Bloomberg Commodity Index[SM]

The Bloomberg Commodity Index[SM] is reweighted and rebalanced each year in January on a price-percentage basis. The annual weightings for the Bloomberg Commodity Index[SM] are determined each year in the third or fourth quarter by Bloomberg under the supervision of the Oversight Committee following advice from the Advisory Committee and are published as promptly as practicable following the calculation. The annual weightings for the next calendar year are implemented the following January.

For example, the composition of the Bloomberg Commodity Index[SM] for 2016 was approved by Bloomberg in October of 2015 and published on October 29, 2015. The January 2016 reweighting and rebalancing was based on the following percentages:

The Bloomberg Commodity Index[SM] 2015 Commodity Index Percentages

Commodity		Weighting
Crude Oil		15.000000%
WTI Crude Oil:	7.4697630%	
Brent Crude Oil:	7.5302370%	
Gold		11.3798610%
Natural Gas		8.4488420%
Copper		7.6272480%
Corn		7.3587030%
Soybeans		5.7038300%
Aluminum		4.5987080%
Wheat		4.4799740%
Chicago:	3.3268340%	
Kansas:	1.1531400%	
Silver		4.2131830%
Sugar		3.6272510%

Commodity	Weighting
ULS Diesel (Heating Oil)*	3.8290390%
Unleaded Gasoline	3.7478780%
Live Cattle	3.5666190%
Soybean Oil	2.8375480%
Soybean Meal	2.8446630%
Zinc	2.5276320%
Coffee	2.2943230%
Nickel	2.3593750%
Lean Hogs	2.0621330%
Cotton	1.4931910%

*CME's heating oil contract on NYMEX was renamed ultra-low-sulfur-diesel ("ULS diesel") futures after the April 2013 contract.

Information concerning the Bloomberg Commodity Index^{SM}, including weightings and composition, may be obtained at the Bloomberg web site at www.bloombergindexes.com/bloomberg-commodity-index-family. Information contained in the Bloomberg website is not incorporated by reference in, and should not be considered part of, this Disclosure Supplement or the documentation for the Commodity Index Derivative Transaction.

Determination of Relative Weightings

The relative weightings of the commodities which will be included in the Bloomberg Commodity Index^{SM} (the "Bloomberg Commodities") are determined annually according to both liquidity and dollar-adjusted production data in 2/3 and 1/3 shares, respectively. Each year, for each Designated Contract selected as a reference contract for a commodity designated for potential inclusion in the Bloomberg Commodity Index^{SM}, liquidity is measured by the Commodity Liquidity Percentage ("CLP") and production by the Commodity Production Percentage ("CPP"). The CLP for each Designated Contract is determined by taking a five-year average of the product of trading volume and the historical dollar value of that Designated Contract, and dividing the result by the sum of such products for all Designated Contracts. The CPP is determined for each commodity by taking a five-year average of annual world production figures, adjusted by the historical U.S. dollar value of the applicable Designated Contract, and dividing the result by the sum of such production figures for all the commodities that were designated for potential inclusion in the Bloomberg Commodity Index^{SM}. The CLP and the CPP are then combined (using a ratio of 2:1) to establish the Commodity Index Percentage ("CIP") for each commodity. This CIP is then adjusted in accordance with certain diversification rules in order to determine the Bloomberg Commodities and their respective percentage weights.

Diversification Rules

The Bloomberg Commodity Index^{SM} is designed to provide diversified exposure to commodities as an asset class. To ensure that no single commodity or commodity sector dominates the Bloomberg Commodity

Index^{SM}, the following diversification rules are applied to the annual reweighting and rebalancing of the Bloomberg Commodity Index^{SM} as of January of each year:

- No single commodity (*e.g.*, natural gas or silver) may constitute more than 15% of the Bloomberg Commodity Index^{SM}.
- No single commodity, together with its derivatives (*e.g.*, crude oil, together with heating oil and unleaded gasoline), may constitute more than 25% of the Bloomberg Commodity Index^{SM}.
- No related group of commodities designated as a "Commodity Group" (*e.g.*, energy, precious metals, livestock or grains) may constitute more than 33% of the Bloomberg Commodity Index^{SM}.
- No single commodity included in the Bloomberg Commodity Index^{SM} may constitute less than 2% of the Bloomberg Commodity Index^{SM}, as liquidity allows.

Following the annual reweighting and rebalancing of the Bloomberg Commodity Index^{SM} in January, the percentage of any Bloomberg Commodity or Commodity Group at any time prior to the next reweighting or rebalancing will fluctuate and may exceed or be less than the percentages established in January.

Commodity Index Multipliers

Following application of the diversification rules discussed above, CIPs are incorporated into the Bloomberg Commodity Index^{SM} by calculating the new unit weights for each Designated Contract. Near the beginning of each new calendar year, the CIPs, along with the settlement prices determined on that date for Designated Contracts included in the Bloomberg Commodity Index^{SM}, are used to determine a Commodity Index Multiplier ("CIM") for each Designated Contract. This CIM is used to achieve the percentage weightings of the Designated Contracts, in U.S. dollar terms, indicated by their respective CIPs. After the CIMs are calculated, they remain fixed throughout the year. As a result, the observed price percentage of each Designated Contract will float throughout the year, until the CIMs are reset the following year based on new CIPs.

Calculations

The price return version of the Bloomberg Commodity Index^{SM} is calculated by Bloomberg, by applying the impact of the changes to the futures prices of commodities included in the Bloomberg Commodity Index^{SM} (based on their relative weightings). Once the CIMs are determined as discussed above, the calculation of the price return version of the Bloomberg Commodity Index^{SM} is a mathematical process whereby the CIMs for the Bloomberg Commodities are multiplied by the prices in U.S. dollars for the applicable Designated Contracts. These products are then summed. The percentage change in this sum is then applied to the prior Bloomberg Commodity Index^{SM} price return level to calculate the new Bloomberg Commodity Index^{SM} price return level.

The total return version of the Bloomberg Commodity Index^{SM} is calculated by Bloomberg, by applying the impact of the changes in the level of the price return version of the Bloomberg Commodity Index^{SM} and adding interest that could be earned on funds committed to the trading of the underlying futures contracts. Once the level of the price return version of the Bloomberg Commodity Index^{SM} is determined as discussed above, the daily return on a 13 week (3-month) T-bill is added to the percentage change in the price return version of the Bloomberg Commodity Index^{SM} (as compared with the prior Bloomberg Commodity Index^{SM} price return level) to obtain the total return. The total return is then applied to the prior Bloomberg Commodity Index^{SM} total return level to calculate the new Bloomberg Commodity Index^{SM} total return level.

Dissemination and Publication

Bloomberg disseminates the Bloomberg Commodity Index^{SM} level approximately every fifteen (15) seconds (assuming the Bloomberg Commodity Index^{SM} level has changed within such fifteen-second interval) from 8:00 a.m. to 3:30 p.m. (New York time), and publishes the final Bloomberg Commodity Index^{SM} level for each BCOM Business Day at approximately 4:00 p.m. (New York time) on each such day. Bloomberg Commodity Index^{SM} levels can also be obtained from the official website of Bloomberg and are also published in *The Wall Street Journal*.

A "BCOM Business Day" is a day on which the sum of the Commodity Index Percentages (as defined below in "Annual Reweightings and Rebalancings of the Bloomberg Commodity Index^{SM}") for the Bloomberg Commodities that are open for trading is greater than 50%. For example, based on the weighting of the Bloomberg Commodities for 2014, if the CBOT, the NYMEX and the LME are each closed for trading on the same day, a BCOM Business Day will not exist.

The Bloomberg Commodity Index^{SM} Is a Rolling Index

The Bloomberg Commodity Index^{SM} is composed of futures contracts on physical commodities. Unlike equities, which typically entitle the holder to a continuing stake in a corporation, commodity futures contracts normally specify a certain date for the delivery of the underlying commodity. In order to avoid delivering the underlying physical commodities and to maintain exposure to the underlying physical commodities, periodically futures contracts on physical commodities specifying delivery on a nearby date must be sold and futures contracts on physical commodities that have not yet reached the delivery period must be purchased. The rollover for each contract occurs over a period of five DJ-UBS Business Days each month according to a pre-determined schedule. This process is known as "rolling" a futures position. The Bloomberg Commodity Index^{SM} is a "rolling index."

Bloomberg Commodity Index^{SM} Calculation Disruption Events

From time to time, disruptions can occur in trading futures contracts on various commodity exchanges. The daily calculation of the Bloomberg Commodity Index^{SM} will be adjusted in the event that Bloomberg determines that any of the following index calculation disruption events exists:

(a) the termination or suspension of, or material limitation or disruption in the trading of any futures contract used in the calculation of the Bloomberg Commodity Index^{SM} on that day;

(b) the settlement price of any futures contract used in the calculation of the Bloomberg Commodity Index^{SM} reflects the maximum permitted price change from the previous day's settlement price;

(c) the failure of an exchange to publish official settlement prices for any futures contract used in the calculation of the Bloomberg Commodity Index^{SM}; or

(d) with respect to any futures contract used in the calculation of the Bloomberg Commodity Index^{SM} that trades on the LME, a business day on which the LME is not open for trading.

License Agreement

The Bloomberg Commodity Indices are joint products of UBS AG, UBS Securities LLC ("UBS") and Bloomberg, and have been licensed for use in connection with certain products, including Commodity Index Derivative Transactions. "Bloomberg," "Bloomberg Commodity Index^{SM}," and "BCOM" are service marks of

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The Commodity Index Derivative Transaction is not sponsored, endorsed, sold or promoted by UBS, Bloomberg or any of their subsidiaries or affiliates. None of UBS, Bloomberg or any of their subsidiaries or affiliates makes any representation or warranty, express or implied, to the counterparties to the Commodity Index Derivative Transaction or any member of the public regarding the advisability of investing in securities or commodities generally or the Commodity Index Derivative Transaction particularly. The only relationship of UBS, Bloomberg or any of their subsidiaries or affiliates to the counterparties to a Commodity Index Derivative Transaction in connection with the Commodity Index Derivative Transaction is the licensing of certain trademarks, trade names and service marks and of the Bloomberg Commodity Indices, which are determined, composed and calculated by Bloomberg in conjunction with UBS without regard to the Commodity Index Derivative Transaction. None of UBS, Bloomberg or any of their affiliates have no obligation to take the needs of the counterparties to the Commodity Index Derivative Transaction into consideration in determining, composing or calculating the Bloomberg Commodity Indices. None of UBS, Bloomberg or any of their respective subsidiaries or affiliates is responsible for or has participated in the determination of the timing of, prices at, or notional amount of the Commodity Index Derivative Transaction or in the determination or calculation of the equation which the Commodity Index Derivative Transaction references. None of UBS, Bloomberg or any of their subsidiaries or affiliates shall have any obligation or liability, including, without limitation, to the counterparties of the Commodity Index Derivative Transaction, in connection with the administration, marketing or trading of the Commodity Index Derivative Transaction. Notwithstanding the foregoing, UBS, Bloomberg and their respective subsidiaries and affiliates may independently issue and/or sponsor financial products unrelated to the Commodity Index Derivative Transaction currently being entered into, but which may be similar to and competitive with the Commodity Index Derivative Transaction. In addition, UBS, Bloomberg and their subsidiaries and affiliates actively trade commodities, commodity indices and commodity futures (including the Bloomberg Commodity Indices), as well as Commodity Index Derivative Transactions, options and derivatives which are linked to the performance of such commodities, commodity indices and commodity futures. It is possible that this trading activity will affect the value of the Bloomberg Commodity Indices and the Commodity Index Derivative Transaction.

The Commodity Index Derivative Transaction confirmation relates only to the Commodity Index Derivative Transaction and does not relate to the exchange-traded physical commodities underlying any of the Bloomberg Commodity Index^{SM} components. Counterparties to the Commodity Index Derivative Transaction should not conclude that the inclusion of a futures contract in the Bloomberg Commodity Index^{SM} is any form of investment recommendation of the futures contract or the underlying exchange-traded physical commodity by UBS, Bloomberg or any of their subsidiaries or affiliates. The information herein regarding the Bloomberg Commodity Index^{SM} components has been derived solely from publicly available documents. None of UBS, Bloomberg or any of their subsidiaries or affiliates has made any due diligence inquiries with respect to the Bloomberg Commodity Index^{SM} components in connection with the Commodity Index Derivative Transaction. None of UBS, Bloomberg or any of their subsidiaries or affiliates makes any representation that these publicly available documents or any other publicly available information regarding the Bloomberg Commodity Index^{SM} components, including without limitation a description of factors that affect the prices of such components, are accurate or complete.

NONE OF UBS, BLOOMBERG OR ANY OF THEIR SUBSIDIARIES OR AFFILIATES GUARANTEES THE ACCURACY AND/OR THE COMPLETENESS OF THE BLOOMBERG COMMODITY INDICES OR ANY DATA RELATED THERETO AND NONE OF UBS, BLOOMBERG OR ANY OF THEIR SUBSIDIARIES OR AFFILIATES SHALL HAVE ANY LIABILITY FOR ANY ERRORS, OMISSIONS OR INTERRUPTIONS THEREIN. NONE OF UBS,

BLOOMBERG OR ANY OF THEIR SUBSIDIARIES OR AFFILIATES MAKES ANY WARRANTY, EXPRESS OR IMPLIED, AS TO RESULTS TO BE OBTAINED BY THE COUNTERPARTIES TO THE SWAP, OR ANY OTHER PERSON OR ENTITY FROM THE USE OF THE BLOOMBERG COMMODITY INDICES OR ANY DATA RELATED THERETO. NONE OF UBS, BLOOMBERG OR ANY OF THEIR SUBSIDIARIES OR AFFILIATES MAKES ANY EXPRESS OR IMPLIED WARRANTIES AND EXPRESSLY DISCLAIMS ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE WITH RESPECT TO THE BLOOMBERG COMMODITY INDICES OR ANY DATA RELATED THERETO. WITHOUT LIMITING ANY OF THE FOREGOING, IN NO EVENT SHALL UBS, BLOOMBERG OR ANY OF THEIR SUBSIDIARIES OR AFFILIATES HAVE ANY LIABILITY FOR ANY LOST PROFITS OR INDIRECT, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSSES, EVEN IF NOTIFIED OF THE POSSIBILITY THEREOF. THERE ARE NO THIRD PARTY BENEFICIARIES OF ANY AGREEMENTS OR ARRANGEMENTS AMONG UBS, BLOOMBERG AND JPMORGAN CHASE & CO. AND ITS AFFILIATES, OTHER THAN UBS AND THE LICENSORS OF BLOOMBERG.

The Commodity Futures Markets

Futures contracts on physical commodities are traded on regulated futures exchanges, in the over-the-counter market and on various types of physical and electronic trading facilities and markets. As of the date of this Disclosure Supplement, all of the contracts included in the Bloomberg Commodity Index are exchange-traded futures contracts. An exchange-traded futures contract is a bilateral agreement providing for the purchase and sale of a specified type and quantity of a commodity or financial instrument during a stated delivery month for a fixed price. A futures contract on an index of commodities typically provides for the payment and receipt of a cash settlement based on the value of such commodities. A futures contract provides for a specified settlement month in which the commodity or financial instrument is to be delivered by the seller (whose position is described as “short”) and acquired by the purchaser (whose position is described as “long”) or in which the cash settlement amount is to be made.

There is no purchase price paid or received on the purchase or sale of a futures contract. Instead, an amount of cash or cash equivalents must be deposited with the broker as “initial margin.” This amount varies based on the requirements imposed by the exchange clearing houses, but may be as low as 5% or less of the value of the contract. This margin deposit provides collateral for the obligations of the parties to the futures contract.

By depositing margin in the most advantageous form (which may vary depending on the exchange, clearing house or broker involved), a market participant may be able to earn interest on its margin funds, thereby increasing the potential total return that may be realized from an investment in futures contracts. The market participant normally makes to, and receives from, the broker subsequent payments on a daily basis as the price of the futures contract fluctuates. These payments are called “variation margin” and make the existing positions in the futures contract more or less valuable, a process known as “marking to market.”

Futures contracts are traded on organized exchanges, known as “contract markets” in the United States, through the facilities of a centralized clearing house and a brokerage firm which is a member of the clearing house. The clearing house guarantees the performance of each clearing member which is a party to the futures contract by, in effect, taking the opposite side of the transaction. At any time prior to the expiration of a futures contract, subject to the availability of a liquid secondary market, a trader may elect to close out its position by taking an opposite position on the exchange on which the trader obtained the position. This operates to terminate the position and fix the trader’s profit or loss.

Unlike equity securities, futures contracts, by their terms, have stated expirations at a specified point in time prior to expiration. At a specific point in time prior to expiration, trading in a futures contract for the current delivery month will cease. As a result, a market participant wishing to maintain its exposure to a futures contract on a particular commodity or financial instrument with the nearest expiration must close out its position in the expiring contract and establish a new position in the contract for the next delivery month, a process referred to as "rolling." For example, a market participant with a long position in a futures contract expiring in November who wishes to maintain a position in the nearest delivery month will, as the November contract nears expiration, sell the November contract, which serves to close out the existing long position, and buy a futures contract expiring in December. This will "roll" the November position into a December position, and, when the November contract expires, the market participant will still have a long position in the nearest delivery month.

Futures exchanges and clearing houses in the United States are subject to regulation by the Commodity Futures Trading Commission. Exchanges may adopt rules and take other actions that affect trading, including imposing speculative position limits, maximum price fluctuations and trading halts and suspensions and requiring liquidation of contracts in certain circumstances.

Futures markets outside the United States are generally subject to regulation by comparable regulatory authorities. However, the structure and nature of trading on non-U.S. exchanges may differ from the foregoing description. From its inception to the present, the Bloomberg Commodity Indices have been composed exclusively of futures contracts traded on regulated exchanges.

RISK FACTORS

The following risk factors relate solely to Bloomberg Commodity Indices and supplements the other risk factors set forth in the accompanying disclosures related to any Commodity Index Derivatives Transaction between you and us. These risk factors should be read together with the risk factors set forth in the General Disclosure Statement, the Commodity Disclosure Annex, the Commodity Index Disclosure Annex and any other disclosure annex. ***You should carefully review these risk factors (including the risk factors relating to potential conflicts of interest) prior to making your investment decision to enter into a Commodity Index Derivatives Transaction.***

JPMorgan Chase & Co. ("JPMorgan") and JPMorgan's affiliates have no affiliation with UBS Securities LLC ("UBS") and are not responsible for their public disclosure of information.

JPMorgan and JPMorgan's affiliates are not affiliated with UBS or Bloomberg in any way (except for arrangements discussed herein) and have no ability to control UBS or Bloomberg, including any errors in or discontinuation of disclosure regarding its methods or policies relating to the calculation of the Bloomberg Commodity Indices (as defined herein). Bloomberg is under no obligation to continue to calculate any such Bloomberg Commodity Indices nor are they required to calculate any successor index. If Bloomberg discontinues or suspends the calculation of the respective index, it may become difficult to determine the market value of Commodity Index Derivative Transaction or the amount payable at any time.

Index calculation disruption events may require an adjustment to the calculation of an Index.

At any time during the term of the Commodity Index Derivative Transaction, the daily calculation of any of the Bloomberg Commodity Indices may be adjusted in the event that UBS and Bloomberg, the sponsors of the Bloomberg Commodity Indices, determines that any of the following Index calculation disruption events exists: the termination or suspension of, or material limitation or disruption in the trading of any futures contract used in the calculation of any such index on that day; the settlement price of any futures contract used in the calculation of any such index reflects the maximum permitted price change from the previous day's settlement price; or the failure of an exchange to publish official settlement prices for any futures contract used in the calculation of any such index; or, with respect to any futures contract used in the calculation of any of the Bloomberg Commodity Indices that trades on the LME, a business day on which the LME is not open for trading. Any such Index calculation disruption events may have an adverse impact on the value of any such index or the manner in which they are calculated and, therefore, the value of your Commodity Index Derivative Transaction.

Bloomberg may be required to replace a contract underlying a Bloomberg Commodity Index, if the existing futures contract is terminated or replaced.

A futures contract known as a "Designated Contract" has been selected as the reference contract for the underlying physical commodity included in each Bloomberg Commodity Index. Data concerning this Designated Contract will be used to calculate each Bloomberg Commodity Index. The termination or replacement of a futures contract on an established exchange occurs infrequently; however, if one or more Designated Contracts were to be terminated or replaced by an exchange, a comparable futures contract would be selected by Bloomberg, as the case may be, if available, to replace each such Designated Contract. The termination or replacement of any Designated Contract may have an adverse impact on the value of the individual level of any Bloomberg Commodity Index. Suspension or disruptions of market trading in the commodity and related futures markets may adversely affect the value of the Commodity Index Derivative Transaction.

If the Commodity Index Derivative Transaction is linked in whole or in part to a Bloomberg Commodity Index, you may in the future have exposure to contracts that are not traded on regulated futures exchanges.

At present, the Bloomberg Commodity Indices are composed exclusively of regulated futures contracts; however, the Bloomberg Commodity Indices may in the future include over-the-counter contracts (such as swaps and forward contracts) traded on trading facilities that are subject to lesser degrees of regulation or, in some cases, no substantive regulation. As a result, trading in those contracts, and the manner in which prices and volumes are reported by the relevant trading facilities, may not be subject to the same provisions of, and the protections afforded by, the Commodity Exchange Act, as amended, or other applicable statutes and related regulations that govern trading on regulated futures exchanges. In addition, many electronic trading facilities have only recently initiated trading and do not have significant trading histories. As a result, the trading of contracts on those facilities and the inclusion of those contracts in a Bloomberg Commodity Index may expose you to certain risks not presented by most exchange-traded futures contracts, including risks related to the liquidity and price histories of the relevant contracts.

If the Commodity Index Derivative Transaction is linked in whole or in part to a Bloomberg Commodity Index, risks associated with that Bloomberg Commodity Index may adversely affect the valuation of the Commodity Index Derivative Transaction.

Because the Bloomberg Commodity Indices℠ reflect the return on exchange-traded futures contracts on twenty different physical commodities and because the single-commodity sub-indices and the forward-month single-commodity sub-indices of Bloomberg Commodity Index℠ each reflect the return on exchange-traded futures contract on a single physical commodity, the Index will be less diversified than other funds or investment portfolios investing in a broader range of products and, therefore, could experience greater volatility. Additionally, the annual composition of the Bloomberg Commodity Indices will be calculated in reliance upon historical price, liquidity and production data that are subject to potential errors in data sources or errors that may affect the weighting of components of the Bloomberg Commodity Indices. Any discrepancies that require revision are not applied retroactively but will be reflected in the weighting calculations of the Bloomberg Commodity Indices for the following year. However, Bloomberg may not discover every discrepancy. Furthermore, the annual weightings for the Bloomberg Commodity Indices are determined each year in the third or fourth quarter and announced as promptly as practicable following the calculation by Bloomberg under the supervision of the Bloomberg Commodity Oversight Committee and Index Advisory Committee, which have a significant degree of discretion in exercising supervisory duties with respect to the Bloomberg Commodity Indices and have no obligation to take the needs of any parties to transactions involving the Bloomberg Commodity Indices into consideration when reweighting or making any other changes to the Bloomberg Commodity Indices. Finally, subject to the minimum/maximum diversification limits described in "The Bloomberg Commodity Indices — Diversification Rules," the commodities underlying the exchange-traded futures contracts included in the Bloomberg Commodity Index℠ from time to time are concentrated in a limited number of sectors, particularly energy and agriculture, and the single-commodity sub-indices and the forward-month single-commodity sub-indices of Bloomberg Commodity Index℠ are each limited to a single commodity. An investment in a Commodity Index Derivative Transaction may therefore carry risks similar to a concentrated securities investment in a limited number of industries or sectors or in a single commodity.

If the Commodity Index Derivative Transaction is linked in whole or in part to a Bloomberg Commodity Index, trading and other transactions by Bloomberg and its affiliates in the futures contracts constituting the Bloomberg Commodity Indices and the underlying commodities may affect the level of the Bloomberg Commodity Indices.

Bloomberg and its affiliates actively trade futures contracts and options on futures contracts on the commodities underlying the Bloomberg Commodity Indices. Bloomberg and its affiliates also actively enter into or trade market securities, swaps, options, derivatives, and related instruments that are linked to the performance of the Bloomberg Commodity Indices, the futures contracts underlying the Bloomberg Commodity Indices or the commodities underlying these futures contracts. Certain of Bloomberg's affiliates may underwrite or issue other securities or financial instruments indexed to the Bloomberg Commodity Indices and related indices, and UBS and Bloomberg and certain of their affiliates may license the Bloomberg Commodity Indices for publication or for use by unaffiliated third parties.

These activities could present conflicts of interest and could affect the levels of the Bloomberg Commodity Indices. For instance, a market maker in a financial instrument linked to the performance of a Bloomberg Commodity Index may expect to hedge some or all of its position in that financial instrument. Purchase (or selling) activity in the underlying components of a Bloomberg Commodity Index in order to hedge the market maker's position in the financial instrument may affect the market price of the futures contracts included in that Bloomberg Commodity Index, which in turn may affect the level of that Bloomberg Commodity Index and the value of the associated Commodity Index Derivative Transaction. With respect to any of the activities described above, none of UBS, Bloomberg or their respective affiliates has any obligation to take the needs of any counterparties to a Commodity Index Derivative Transaction into consideration at any time.

Disclosure Supplement B for the S&P GSCI Indices
(dated April 22, 2016)

This Disclosure Supplement for the S&P GSCI Indices, dated April 22, 2016 (the "Disclosure Supplement"), supplements and should be read in conjunction with the General Disclosure Statement ("General Disclosure Statement") and the Disclosure Annex for Commodity Derivatives (the "Commodities Disclosure Annex"), each dated April 26, 2013, published by the International Swaps & Derivatives Association Inc. ("ISDA") and the Disclosure Annex For Commodity Index Derivative Transactions, dated April 22, 2016 (the "Commodity Index Disclosure Annex"), published by JPMorgan Chase Bank, National Association. NOTHING IN THIS SUPPLEMENT AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions in this Disclosure Supplement of the operation of Commodity Index Derivative Transactions (as defined below) and the consequences of various events are in all cases subject to the actual terms of a Commodity Index Derivative Transaction executed between you and us and its governing documentation.

When we refer to a "Commodity Index Derivative Transaction", we are referring to Transactions in which the underlying(s) is/are an index/indices that reference(s) physical commodities or contracts for the future delivery of physical commodities. The terms of a Commodity Index Derivative Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Commodity Index Derivative Transaction and its governing documentation. Before entering into a Commodity Index Derivative Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under the Commodity Index Derivative Transaction, its value and its appropriateness for your particular objectives.

To the extent you enter into a Commodity Index Derivative Transaction that references a S&P GSCI Index, in whole or in part, or another index that references a S&P GSCI Index, as one of its constituents, you should carefully review the disclosure set forth herein. This Disclosure Supplement, together with the rules for a particular index ("Index Rules"), the documents governing your Commodity Index Derivative Transaction, the disclosure annexes referenced above and any other disclosure delivered by us to you related to your specific Commodity Index Derivative Transaction, constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Commodity Index Derivative Transaction. You should carefully consider all of these documents prior to entering into a Commodity Index Derivative Transaction.

General

JPMorgan has derived all information contained herein regarding the S&P GSCI Indices (as defined below), including, without limitation, their make-up, method of calculation and changes in their components, from publicly available information. Such information reflects the policies of, and is subject to change by, S&P Dow Jones Indices LLC ("SPDJI"), the publisher of the S&P GSCI Indices. JPMorgan makes no representation or warranty as to the accuracy or completeness of such information. The S&P GSCI Indices are determined, composed and calculated by SPDJI, without regard to any Commodity Index Derivative Transaction. The S&P GSCI Indices were formerly calculated by Standard & Poor's Financial Services LLC, who acquired the rights to the S&P GSCI™ from Goldman, Sachs & Co. in 2007. Goldman, Sachs & Co. established and began calculating the S&P GSCI™ in May 1991. The former name of the S&P GSCI™ was the Goldman Sachs Commodity Index, or GSCI®. SPDJI has no obligation to continue to publish, and may discontinue publication of, any S&P GSCI Index.

In July 2012, The McGraw-Hill Companies, Inc. ("McGraw-Hill"), the owner of the S&P Indices business, and CME Group Inc. ("CME Group"), the 90% owner of the CME Group and Dow Jones & Company, Inc. joint venture that owns the Dow Jones Indexes business, formed a new joint venture, S&P Dow Jones Indices LLC, which owns the S&P Indices business and the Dow Jones Indexes business, including the S&P GSCI Indices.

A Commodity Index Derivative Transaction may reference the performance of the S&P GSCI™ Index ("S&P GSCI™"), the S&P GSCI™ Light Energy Index or certain of the S&P GSCI™'s commodity sector sub-indices: the S&P GSCI™ Agriculture Index, the S&P GSCI™ Energy Index, the S&P GSCI™ Industrial Metals Index, the S&P GSCI™ Livestock Index and the S&P GSCI™ Precious Metals Index (each a "S&P GSCI Sector Index," and together, the "S&P GSCI Sector Indices"), or the S&P GSCI™'s single commodity sub-indices (each a "S&P GSCI Single Component Index," and collectively, the "S&P GSCI Single Component Indices"). The S&P GSCI Single Component Indices and S&P GSCI Sector Indices are herein collectively referred to as the "S&P GSCI Component Indices," and together with the S&P GSCI™ and the S&P GSCI™ Light Energy Index, the "S&P GSCI Indices," and each, a "S&P GSCI Index."

SPDJI publishes excess return and total return versions of each of the S&P GSCI Indices. The excess return versions of the S&P GSCI Indices is based on price levels of the futures contracts included in such S&P GSCI Index as well as the discount or premium obtained by "rolling" hypothetical positions in such contracts forward as they approach delivery. The total return versions of the S&P GSCI Indices incorporate the returns of the excess return versions, except that the total return versions also reflect interest earned on hypothetical, fully collateralized contract positions on the included commodities.

The S&P GSCI™ is an index on a world production-weighted basket of principal non-financial commodities (*i.e.*, physical commodities) that satisfy specified criteria. The S&P GSCI™ is designed to be a measure of the performance over time of the markets for these commodities. The only commodities represented in the S&P GSCI™ are those physical commodities on which active and liquid contracts are traded on trading facilities in major industrialized countries. The commodities included in the S&P GSCI™ are weighted, on a production basis, to reflect the relative significance (in the view of S&P, as described below) of such commodities to the world economy. The fluctuations in the value of the S&P GSCI™ are intended generally to correlate with changes in the prices of such physical commodities in global markets. The S&P GSCI™ has been normalized such that its hypothetical level on January 2, 1970 was 100. Futures contracts on the S&P GSCI™, and options on those futures contracts, are currently listed for trading on the Chicago Mercantile Exchange.

The S&P GSCI™ Light Energy Index is composed of the same commodity futures contracts as the S&P GSCI™ but with those weights for contracts in the energy sector having been divided by 4. Because the weights of energy-related S&P GSCI™ commodities are reduced in the S&P Light Energy Index relative to the S&P GSCI™, the relative weights of the remaining S&P GSCI™ commodities are necessarily increased. As a result, although the S&P Light Energy Index contains all of the S&P GSCI™ commodities that are included in the S&P GSCI™, they are not world-production weighted in the same manner as the S&P GSCI™ and may not serve as a benchmark for changes in inflation or other economic factors. In particular, because of the significance of energy-related commodities to the world economy, a significant reduction in the weights of these commodities in the S&P GSCI™ Light Energy Index will substantially limit the effect of changes in energy prices on the S&P GSCI™ Light Energy Index. Increases in the prices of energy commodities, therefore, will not increase the level of the S&P GSCI™ Light Energy Index to the same extent as the S&P GSCI™.

The S&P GSCI™ Agriculture Index is a world production-weighted index of certain agricultural commodities in the world economy, including Wheat, Kansas Wheat, Corn, Soybeans, Cotton, Sugar, Coffee and Cocoa. The S&P GSCI™ Energy Index is a world production-weighted index of certain energy commodities in the world economy, including Crude Oil, Brent Crude Oil, RBOB Gasoline, Heating Oil, Gasoil and Natural Gas. The S&P GSCI™ Industrial Metals Index is a world production-weighted index of certain industrial metals commodities in the world economy, including High Grade Primary Aluminum, Copper, Standard Lead, Primary Nickel and Special High Grade Zinc. The S&P GSCI™ Livestock Index is a world production-weighted index of certain livestock commodities in the world economy, including live cattle, feeder cattle and lean hogs. The S&P GSCI™ Precious Metals Index is a world production-weighted index consisting of two precious metals commodities in the world economy: Gold and Silver.

Set forth below is a summary of the methodology used to calculate the S&P GSCI Indices. Since the S&P GSCI™ is the parent index of the S&P GSCI Component Indices, the methodology for compiling the S&P GSCI™ relates as well to the methodology of compiling the S&P GSCI Component Indices. Each of the S&P GSCI Component Indices reflecting portions of the S&P GSCI™ is calculated in the same manner as the S&P GSCI™, except that (i) the daily contract reference price, CPWs and roll weights (each as discussed below) used in performing such calculations are limited to those of the commodities included in the relevant S&P GSCI Component Index and (ii) each S&P GSCI Component Index has a separate normalizing constant (discussed below). The methodology for determining the composition and weighting of the S&P GSCI™ and for calculating its value is subject to modification in a manner consistent with the purposes of the S&P GSCI™, as described below. SPDJI makes the official calculations of the S&P GSCI Indices.

The Index Committee and the Index Advisory Panel

SPDJI has established an index committee (the "Index Committee") to oversee the daily management and operations of the S&P GSCI™, and is responsible for all analytical methods and calculation of the S&P GSCI Indices. The Index Committee consists of full-time professional members of SPDJI staff. At each meeting, the Index Committee reviews any issues that may affect index constituents, statistics comparing the composition of the indices to the market, commodities that are being considered as candidates for an addition to an index and any significant market events. In addition, the Index Committee may revise index policy covering rules for selecting commodities or other matters.

SPDJI considers information about changes to its indices and related matters to be potentially market-moving and material. Therefore, all Index Committee discussions are confidential.

SPDJI has established an index advisory panel (the "Advisory Panel") to assist it in connection with the operation of the S&P GSCI™. The Advisory Panel meets on an annual basis and at other times at the request of the Index Committee. The principal purpose of the Advisory Panel is to advise SPDJI with respect to, among other things, the calculation of the S&P GSCI™, the effectiveness of the S&P GSCI™ as a measure of commodity futures market performance and the need for changes in the composition or in the methodology of the S&P GSCI™. The Advisory Panel acts solely in an advisory and consultative capacity; the Index Committee makes all decisions with respect to the composition, calculation and operation of the S&P GSCI™.

Composition of the S&P GSCI™

In order to be included in the S&P GSCI™, a contract must satisfy the following eligibility criteria:

- the contract must be in respect of a physical commodity and not a financial commodity;

- the contract must have a specified expiration or term or provide in some other manner for delivery or settlement at a specified time, or within a specified period, in the future;

- the contract must, at any given point in time, be available for trading at least five months prior to its expiration or such other date or time period specified for delivery or settlement;

- the contract must be traded on an exchange, facility or other platform (referred to as a “trading facility”) that allows market participants to execute spread transactions, through a single order entry, between the pairs of contract expirations included in the S&P GSCI™ that, at any given point in time, will be involved in the rolls to be effected in the next three roll periods (defined below);

- the contract must be denominated in U.S. dollars; and

- the contract must be traded on or through a trading facility that has its principal place of business or operations in a country that is a member of the Organization for Economic Cooperation and Development and that:

    - makes price quotations generally available to its members or participants (and to SPDJI) in a manner and with a frequency that is sufficient to provide reasonably reliable indications of the level of the relevant market at any given point in time;

    - makes reliable trading volume information available to SPDJI with at least the frequency required by SPDJI to make the monthly determinations;

    - accepts bids and offers from multiple participants or price providers; and

    - is accessible by a sufficiently broad range of participants.

The price of the relevant contract that is used as a reference or benchmark by market participants (referred to as the “daily contract reference price”) generally must have been available on a continuous basis for at least two years prior to the proposed date of inclusion in the S&P GSCI™ . In appropriate circumstances, SPDJI may determine that a shorter time period is sufficient or that historical daily contract reference prices for such contract may be derived from daily contract reference prices for a similar or related contract. The daily contract reference price may be (but is not required to be) the price (a) used by the relevant trading facility or clearing facility to determine the margin obligations (if any) of its members or participants or margining transactions or for other purposes or (b) referred to generally as the reference, closing or settlement price of the relevant contract.

At and after the time a contract is included in the S&P GSCI™, the daily contract reference price for such contract must be published between 10:00 a.m. and 4:00 p.m., New York City time, on each business day relating to such contract by the trading facility on or through which it is traded and must generally be available to all members of, or participants in, such facility (and to SPDJI) on the same day from the trading facility or through a recognized third-party data vendor. Such publication must include, at all times, daily contract reference prices for at least one expiration or settlement date that is five months or more from the date the determination is made, as well as for all expiration or settlement dates during such five-month period.

For a contract to be eligible for inclusion in the S&P GSCI™, volume data with respect to such contract must be available for at least the three months immediately preceding the date on which the determination is made. The following eligibility criteria apply:

- In order to be added to the S&P GSCI™, a contract that is not included in the S&P GSCI™ at the time of determination and that is based on a commodity that is not represented in the S&P GSCI™ at such time must have an annualized total dollar value traded over the relevant period of at least U.S. $15 billion. The total dollar value traded is the dollar value of the total quantity of the commodity underlying transactions in the relevant contract over the period for which the calculation is made, based on the average of the daily contract reference prices on the last day of each month during the period.

- In order to continue to be included in the S&P GSCI™, a contract that is already included in the S&P GSCI™ at the time of determination and that is the only contract on the relevant commodity included in the S&P GSCI™ must have an annualized total dollar value traded of at least U.S. $5 billion over the relevant period and of at least U.S. $10 billion during at least one of the three most recent annual periods used in making the determination.

- In order to be added to the S&P GSCI™, a contract that is not included in the S&P GSCI™ at the time of determination and that is based on a commodity on which there are one or more contracts already included in the S&P GSCI™ at such time must have an annualized total dollar value traded over the relevant period of at least U.S. $30 billion.

- In order to continue to be included in the S&P GSCI™, a contract that is already included in the S&P GSCI™ at the time of determination and that is based on a commodity on which there are one or more contracts already included in the S&P GSCI™ at such time must have an annualized total dollar value traded, over the relevant period of at least U.S. $10 billion over the relevant period and of at least U.S. $20 billion during at least one of the three most recent annual periods used in making the determination.

In addition to the volume requirements described above, a contract must have a minimum reference percentage dollar weight:

- In order to continue to be included in the S&P GSCI™, a contract that is already included in the S&P GSCI™ at the time of determination must have a reference percentage dollar weight of at least 0.10%. The reference percentage dollar weight of a contract is determined by multiplying the CPW (defined below) of a contract by the average of its daily contract reference prices on the last day of each month during the relevant period. These amounts are summed for all contracts included in the S&P GSCI™ and each contract's percentage of the total is then determined.

- In order to be added to the S&P GSCI™, a contract that is not included in the S&P GSCI™ at the time of determination must have a reference percentage dollar weight of at least 1.00% at the time of determination.

In the event that two or more contracts on the same commodity satisfy the eligibility criteria, such contracts are included in the S&P GSCI™ in the order of their respective total quantity traded during the relevant period (determined as the total quantity of the commodity underlying transactions in the relevant contract), with the contract having the highest total quantity traded being included first. No further contracts are included if such inclusion results in the portion of the S&P GSCI™ attributable to such commodity exceeding a particular level.

If under the procedure set forth in the preceding paragraph, additional contracts could be included with respect to several commodities at the same time, the procedure is first applied to the commodity that has the smallest portion of the S&P GSCI™ attributable to it at the time of determination. Subject to the other eligibility criteria, the contract with the highest total quantity traded on such commodity is included. Before any additional contracts on any commodity are included, the portion of the S&P GSCI™ attributable to all commodities is recalculated. The selection procedure described above is then repeated with respect to the contracts on the commodity that then has the smallest portion of the S&P GSCI™ attributable to it.

The contracts currently included in the S&P GSCI™ are all futures contracts traded on the New York Mercantile Exchange, Inc. ("NYMEX"), ICE Futures Europe ("ICE-Europe"), ICE Futures U.S. ("ICE-US"), the Chicago Mercantile Exchange ("CME"), the Chicago Board of Trade ("CBOT"), the Kansas City Board of Trade ("KBT"), the Commodities Exchange Inc. ("CMX") and the London Metal Exchange ("LME").

The quantity of each of the contracts included in the S&P GSCI™ is determined on the basis of a five-year average (referred to as the "world production average") of the production quantity of the underlying commodity from sources determined by SPDJI to be reasonably accurate and reliable, such as the United Nations Industrial Commodity Statistics Yearbook. However, if a commodity is primarily a regional commodity, based on its production, use, pricing, transportation or other factors, SPDJI may calculate the weight of such commodity based on regional, rather than world, production data. At present, natural gas is the only commodity the weight of which is calculated on the basis of regional production data, with the relevant region being North America.

The five-year moving average is updated annually for each commodity included in the S&P GSCI™, based on the most recent five-year period (ending approximately two years prior to the date of calculation and moving backwards) for which complete data for all commodities is available. The contract production weights (the "CPWs") used in calculating the S&P GSCI™ are derived from world or regional production averages, as applicable, of the relevant commodities, and are calculated based on the total quantity traded for the relevant contract and the world or regional production average, as applicable, of the underlying commodity. However, if the volume of trading in the relevant contract, as a multiple of the production levels of the commodity, is below specified thresholds, the CPW of the contract is reduced until the threshold is satisfied. This is designed to ensure that trading in each such contract is sufficiently liquid relative to the production of the commodity.

In addition, SPDJI performs this calculation on a monthly basis and, if the multiple of any contract is below the prescribed threshold, the composition of the S&P GSCI™ is reevaluated, based on the criteria and weighting procedure described above. This procedure is undertaken to allow the S&P GSCI™ to shift from contracts that have lost substantial liquidity into more liquid contracts, during the course of a given year. As a result, it is possible that the composition or weighting of the S&P GSCI™ will change on one or more of these monthly evaluation dates. In addition, regardless of whether any changes have occurred during the year, SPDJI reevaluates the composition of the S&P GSCI™ at the conclusion of each year, based on the above criteria. Other commodities that satisfy such criteria, if any, will be added to the S&P GSCI™. Commodities included in the S&P GSCI™ that no longer satisfy such criteria, if any, will be deleted.

SPDJI also determines whether modifications in the selection criteria or the methodology for determining the composition and weights of and for calculating the S&P GSCI™ are necessary or appropriate in order to assure that the S&P GSCI™ represents a measure of commodity market performance. SPDJI has the discretion to make any such modifications.

The Contracts for the 2015 S&P GSCI™ Commodities are set forth below.

S&P GSCI™ Breakdown by Commodity

Commodity	Exchange	Units
Chicago Wheat	CBT	bu
Kansas Wheat	KBT	bu
Corn	CBT	bu
Soybeans	CBT	bu
Coffee	ICE - US	lbs
Sugar #11	ICE - US	lbs
Cocoa	ICE - US	MT
Cotton #2	ICE - US	lbs
Lean Hogs	CME	lbs
Live Cattle	CME	lbs
Feeder Cattle	CME	lbs
Crude Oil	NYM / ICE	bbl
Heating Oil	NYM	gal
RBOB Gasoline	NYM	gal
Brent Crude Oil	ICE - UK	bbl
Gas Oil	ICE - UK	MT
Natural Gas	NYM / ICE	MMBtu
Aluminum	LME	MT
Copper	LME	MT
Lead	LME	MT
Nickel	LME	MT
Zinc	LME	MT
Gold	CMX	oz
Silver	CMX	oz

Commodity Groups

For purposes of applying the diversification rules discussed above and below, the commodities available for inclusion in the S&P GSCI™ are assigned to Commodity Groups. The Commodity Groups, and the commodities currently included in each Commodity Group, are as follows:

Commodity Group:	Commodities:	Commodity Group:	Commodities:
Energy	Crude Oil (and supporting contracts) and Natural Gas	Livestock	Lean Hogs Live Cattle Feeder Cattle

Commodity Group:	Commodities:	Commodity Group:	Commodities:
Non- Energy	(All commodities not included in Energy Sub-Index)		
Petroleum	Crude Oil (and supporting contracts)	Industrial Metals	Aluminum Copper Lead Nickel Zinc
Agriculture	Wheat (Chi. & Kan.) Corn Soybeans Coffee Sugar Cocoa Cotton	Precious Metals	Gold Silver

S&P GSCI™ Breakdown by Commodity Group

The 2016 Commodity Group Breakdown set forth below is based on the weightings and composition of the S&P GSCI™ announced by the S&P GSCI Advisory Panel on October 1, 2015.

Energy	63.05%
Non-Energy	36.95%
Agriculture	15.76
Livestock	8.64%
Industrial Metals	8.91%
Precious Metals	3.65%

Contract Expirations

Because the S&P GSCI™ comprises actively traded contracts with scheduled expirations, it can only be calculated by reference to the prices of contracts for specified expiration, delivery or settlement periods, referred to as "contract expirations." The contract expirations included in the S&P GSCI™ for each commodity during a given year are designated by SPDJI, *provided* that each such contract must be an "active contract." An "active contract" for this purpose is a liquid, actively traded contract expiration, as defined or identified by the relevant trading facility or, if no such definition or identification is provided by the relevant trading facility, as defined by standard custom and practice in the industry.

If a trading facility deletes one or more contract expirations, the S&P GSCI™ will be calculated during the remainder of the year in which such deletion occurs based on the remaining contract expirations designated by SPDJI. If a trading facility ceases trading in all contract expirations relating to a particular contract, SPDJI may designate an eligible replacement contract on the commodity. To the extent practicable, the replacement will be in effect during the next monthly review of the composition of the S&P GSCI™. If that timing is not practicable, SPDJI will determine the date of the replacement and will consider a number of factors, including the differences between the existing contract and the replacement contract specifications and contract expirations.

Value of the S&P GSCI™

The value of the S&P GSCI™ on any given day is equal to the total dollar weight of the S&P GSCI™ divided by a normalizing constant that assures the continuity of the S&P GSCI™ over time. The total dollar weight of the S&P GSCI™ is the sum of the dollar weight of each of the underlying commodities.

The dollar weight of each such commodity on any given day is equal to:

- the "daily contract reference price" (discussed below),
- multiplied by the appropriate CPWs, and
- during a roll period, the appropriate "roll weights" (discussed below).

The daily contract reference price used in calculating the dollar weight of each commodity on any given day is the most recent daily contract reference price made available by the relevant trading facility, except that the daily contract reference price for the most recent prior day will be used if the exchange is closed or otherwise fails to publish a daily contract reference price on that day. In addition, if the trading facility fails to make a daily contract reference price available or publishes a daily contract reference price that, in the reasonable judgment of SPDJI, reflects manifest error, the relevant calculation will be delayed until the price is made available or corrected; *provided* that, if the price is not made available or corrected by 4:00 p.m., New York City time, SPDJI may, if it deems such action to be appropriate under the circumstances, determine the appropriate daily contract reference price for the applicable futures contract in its reasonable judgment for purposes of the relevant S&P GSCI™ calculation.

The "roll weight" of each commodity reflects the fact that the positions in contracts must be liquidated or rolled forward into more distant contract expirations as they approach expiration. If actual positions in the relevant markets were rolled forward, the roll would likely need to take place over a period of days. Since the S&P GSCI™ is designed to replicate the performance of actual investments in the underlying contracts, the rolling process incorporated in the S&P GSCI™ also takes place over a period of days at the beginning of each month (referred to as the "roll period"). On each day of the roll period, the "roll weights" of the first nearby contract expiration on a particular commodity and the more distant contract expiration into which it is rolled are adjusted, so that the hypothetical position in the contract on the commodity that is included in the S&P GSCI™ is gradually shifted from the first nearby contract expiration to the more distant contract expiration.

If on any day during a roll period any of the following conditions exists, the portion of the roll that would have taken place on that day is deferred until the next day on which such conditions do not exist:

- no daily contract reference price is available for a given contract expiration;

- any such price represents the maximum or minimum price for such contract month, based on exchange price limits (referred to as a "Limit Price");

- the daily contract reference price published by the relevant trading facility reflects manifest error, or such price is not published by 4:00 p.m., New York City time. In that event, SPDJI may, but is not required to, determine a daily contract reference price and complete the relevant portion of the roll based on such price; *provided*, that, if the trading facility publishes a price before the opening of trading on the next day, SPDJI will revise the portion of the roll accordingly; or

- trading in the relevant contract terminates prior to its scheduled closing time.

If any of these conditions exist throughout the roll period, the roll with respect to the affected contract will be effected in its entirety on the next day on which such conditions no longer exist.

Contract Daily Return

The contract daily return on any given day is equal to the sum, for each of the commodities included in the S&P GSCI™, of the applicable daily contract reference price on the relevant contract multiplied by the appropriate CPW and the appropriate "roll weight," divided by the total dollar weight of the S&P GSCI™ on the preceding day, minus one.

Calculation of the S&P GSCI Indices

Excess return S&P GSCI Indices

The value of any excess return version of a S&P GSCI Index on any day on which the S&P GSCI™ is calculated (an "S&P GSCI™ Business Day") is equal to the product of:

- the value of the applicable S&P GSCI Index on the immediately preceding S&P GSCI™ Business Day; and

- one plus the contract daily return of the applicable S&P GSCI Index on the S&P GSCI™ Business Day on which the calculation is made.

Total Return S&P GSCI Indices

The value of any total return version of a S&P GSCI Index on any S&P GSCI™ Business Day reflects the value of an investment in the excess return version of that S&P GSCI Index together with a Treasury bill return and is equal to the product of:

- the value of the applicable S&P GSCI Index on the immediately preceding S&P GSCI™ Business Day;

- one plus the sum of the contract daily return and the Treasury Bill return on the S&P GSCI™ Business Day on which the calculation is made; and

- one plus the Treasury Bill return for each non-S&P GSCI™ Business Day since the immediately preceding S&P GSCI™ Business Day.

The Treasury Bill return is the return on a hypothetical investment in the applicable S&P GSCI Index at a rate equal to the interest rate on a specified U.S. Treasury Bill.

Information

All information contained herein relating to the S&P GSCI™ and each of the S&P GSCI Indices, including their make-up, method of calculation, changes in their components and historical performance, has been derived from publicly available information, without independent verification.

The information contained herein with respect to each of the S&P GSCI Indices and the S&P GSCI™ reflects the policies of, and is subject to change by, SPDJI.

Current information regarding the market values of the S&P GSCI Indices is available from SPDJI and from numerous public information sources. JPMorgan make no representation that the publicly available information about the S&P GSCI Indices is accurate or complete.

License Agreement with S&P Dow Jones Indices LLC

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The Commodity Index Derivative Transactions are not sponsored, endorsed, sold or promoted by SPDJI or its third party licensors. Neither SPDJI nor its third party licensors makes any representation or warranty, express or implied, to the counterparties to Commodity Index Derivative Transactions or any member of the public regarding the advisability of investing in securities generally or the Commodity Index Derivative Transactions particularly or the ability of the S&P GSCI Indices to track general stock market performance. SPDJI and its third party licensor's only relationship to JPMorgan Chase & Co. is the licensing of certain trademarks and trade names of SPDJI and the third party licensors and of the S&P GSCI Indices which are determined, composed and calculated by SPDJI or its third party licensors without regard to JPMorgan Chase & Co. or the Commodity Index Derivative Transactions. SPDJI and its third party licensors have no obligation to take the needs of JPMorgan Chase & Co. or the counterparties to the Commodity Index Derivative Transactions into consideration in determining, composing or calculating the S&P GSCI Indices. Neither SPDJI nor its third party licensors is responsible for and has not participated in the determination of the timing of, prices at, or the notional amount of the Commodity Index Derivative Transactions or in the determination or calculation of the equation which the Commodity Index Derivative Transactions reference. SPDJI has no obligation or liability in connection with the administration, marketing or trading of the Commodity Index Derivative Transactions.

NEITHER SPDJI, ITS AFFILIATES NOR THEIR THIRD PARTY LICENSORS GUARANTEE THE ADEQUACY, ACCURACY, TIMELINESS OR COMPLETENESS OF THE S&P GSCI INDICES OR ANY DATA INCLUDED THEREIN OR ANY COMMUNICATIONS, INCLUDING BUT NOT LIMITED TO, ORAL OR WRITTEN COMMUNICATIONS (INCLUDING ELECTRONIC COMMUNICATIONS) WITH RESPECT THERETO. SPDJI, ITS AFFILIATES AND THEIR THIRD PARTY LICENSORS SHALL NOT BE SUBJECT TO ANY DAMAGES OR LIABILITY FOR ANY ERRORS, OMISSIONS OR DELAYS THEREIN. SPDJI MAKES NO EXPRESS OR IMPLIED WARRANTIES, AND EXPRESSLY DISCLAIMS ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE WITH RESPECT TO THE MARKS, THE S&P GSCI INDICES OR ANY DATA INCLUDED THEREIN. WITHOUT LIMITING ANY OF THE FOREGOING, IN NO EVENT WHATSOEVER SHALL SPDJI, ITS AFFILIATES OR THEIR THIRD PARTY LICENSORS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, TRADING LOSSES, LOST TIME OR GOODWILL, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER IN CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE.

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The Commodity Futures Markets

Futures contracts on physical commodities are traded on regulated futures exchanges, in the over-the-counter market and on various types of physical and electronic trading facilities and markets. As of the date of this Disclosure Supplement, all of the contracts included in the S&P GSCI Indices are exchange-traded futures contracts. An exchange-traded futures contract is a bilateral agreement providing for the purchase and sale of a specified type and quantity of a commodity or financial instrument during a stated delivery month for a fixed price. A futures contract on an index of commodities typically provides for the payment and receipt of a cash settlement based on the value of such commodities. A futures contract provides for a specified settlement month in which the commodity or financial instrument is to be delivered by the seller (whose position is described as "short") and acquired by the purchaser (whose position is described as "long") or in which the cash settlement amount is to be made.

There is no purchase price paid or received on the purchase or sale of a futures contract. Instead, an amount of cash or cash equivalents must be deposited with the broker as "initial margin." This amount varies based on the requirements imposed by the exchange clearing houses, but may be as low as 5% or less of the value of the contract. This margin deposit provides collateral for the obligations of the parties to the futures contract.

By depositing margin in the most advantageous form (which may vary depending on the exchange, clearing house or broker involved), a market participant may be able to earn interest on its margin funds, thereby increasing the potential total return that may be realized from an investment in futures contracts. The market participant normally makes to, and receives from, the broker subsequent payments on a daily basis as the price of the futures contract fluctuates. These payments are called "variation margin" and make the existing positions in the futures contract more or less valuable, a process known as "marking to market."

Futures contracts are traded on organized exchanges, known as "contract markets" in the United States, through the facilities of a centralized clearing house and a brokerage firm which is a member of the clearing house. The clearing house guarantees the performance of each clearing member which is a party to the futures contract by, in effect, taking the opposite side of the transaction. At any time prior to the expiration of a futures contract, subject to the availability of a liquid secondary market, a trader may elect to close out its position by taking an opposite position on the exchange on which the trader obtained the position. This operates to terminate the position and fix the trader's profit or loss.

Unlike equity securities, futures contracts, by their terms, have stated expirations at a specified point in time prior to expiration. At a specific point in time prior to expiration, trading in a futures contract for the current delivery month will cease. As a result, a market participant wishing to maintain its exposure to a futures contract on a particular commodity or financial instrument with the nearest expiration must close out its position in the expiring contract and establish a new position in the contract for the next delivery month, a process referred to as "rolling." For example, a market participant with a long position in a futures contract expiring in November who wishes to maintain a position in the nearest delivery month will, as the November contract nears expiration, sell the November contract, which serves to close out the existing long position, and buy a futures contract expiring in December. This will "roll" the November position into a December position, and, when the November contract expires, the market participant will still have a long position in the nearest delivery month.

Futures exchanges and clearing houses in the United States are subject to regulation by the Commodity Futures Trading Commission. Exchanges may adopt rules and take other actions that affect trading, including imposing speculative position limits, maximum price fluctuations and trading halts and suspensions and requiring liquidation of contracts in certain circumstances.

Futures markets outside the United States are generally subject to regulation by comparable regulatory authorities. However, the structure and nature of trading on non-U.S. exchanges may differ from the foregoing description. From its inception to the present, the S&P GSCI Indices have been composed exclusively of futures contracts traded on regulated exchanges.

RISK FACTORS RELATING TO THE S&P GSCI COMMODITY INDICES

The following risk factors relate solely to S&P GSCI Commodity Indices and supplements the other risk factors set forth in the accompanying disclosures related to any Commodity Index Derivatives Transaction between you and us. These risk factors should be read together with the risk factors set forth in the General Disclosure Statement, the Commodity Disclosure Annex, the Commodity Index Disclosure Annex and any other disclosure annex. ***You should carefully review these risk factors (including the risk factors relating to potential conflicts of interest) prior to making your investment decision to enter into a Commodity Index Derivatives Transaction.***

JPMorgan Chase & Co. and its affiliates (collectively, "JPMorgan") has no affiliation with S&P Dow Jones Indices LLC ("SPDJI") and are not responsible for their public disclosure of information.

JPMorgan and JPMorgan's affiliates are not affiliated with SPDJI in any way (except for arrangements discussed herein) and have no ability to control SPDJI, including any errors in or discontinuation of disclosure regarding its methods or policies relating to the calculation of the S&P GSCI Indices (as defined herein). SPDJI is not under any obligation to continue to calculate any such S&P GSCI Indices nor are they required to calculate any successor index. If SPDJI discontinues or suspends the calculation of the respective index, it may become difficult to determine the market value of Commodity Index Derivative Transaction or the amount payable at any time.

Index calculation disruption events may require an adjustment to the calculation of an Index.

At any time during the term of the Commodity Index Derivative Transaction, the daily calculation of any of the S&P GSCI Indices may be adjusted in the event that SPDJI, the publisher of the S&P GSCI Indices, determines that any of the following Index calculation disruption events exists: the termination or suspension of, or material limitation or disruption in the trading of any futures contract used in the calculation of any such index on that day; the settlement price of any futures contract used in the calculation of any such index reflects the maximum permitted price change from the previous day's settlement price; or the failure of an exchange to publish official settlement prices for any futures contract used in the calculation of any such index. Any such Index calculation disruption events may have an adverse impact on the value of any such index or the manner in which they are calculated and, therefore, the value of your Commodity Index Derivative Transaction.

SPDJI may be required to replace a contract underlying a S&P GSCI Index, if the existing futures contract is terminated or replaced.

A futures contract known as a "Designated Contract" has been selected as the reference contract for the underlying physical commodity included in each S&P GSCI Index. Data concerning this Designated Contract will be used to calculate each S&P GSCI Index. The termination or replacement of a futures contract on an established exchange occurs infrequently; however, if one or more Designated Contracts were to be terminated or replaced by an exchange, a comparable futures contract would be selected by the S&P GSCI Index Committee, as the case may be, if available, to replace each such Designated Contract. The termination or replacement of any Designated Contract may have an adverse impact on the value of the individual S&P GSCI Index. Suspension or disruptions of market trading in the commodity and related futures markets may adversely affect the value of the Commodity Index Derivative Transaction.

For a Commodity Index Derivative Transaction linked to one or more S&P GSCI Component Indices, any such index may be more volatile and susceptible to price fluctuations of commodities than a broader commodity index.

Each of the S&P GSCI Component Indices (as defined herein) may be more volatile and susceptible to price fluctuations than a broader commodity index, such as the S&P GSCI™. In contrast to the S&P GSCI™, which includes contracts on the principal physical commodities that are actively traded, each of the S&P GSCI Component Indices is composed of contracts covering only a single physical commodity or only physical commodities in a single sector. As a result, price volatility in the contracts included in the S&P GSCI™ will likely have a greater impact on each S&P GSCI Component Index than it would on the broader S&P GSCI™, and each S&P GSCI Component Index individually will be more susceptible to fluctuations and declines in value of the physical commodities included in that index. In addition, the S&P GSCI Component Indices may be less representative of the economy and commodity markets as a whole and might therefore not serve as a reliable benchmark for commodity market performance generally.

For a Commodity Index Derivative Transaction linked to a S&P GSCI Index, changes in the composition and valuation of the S&P GSCI™ may adversely affect the market value and/or any payment applicable to the Commodity Index Derivative Transaction.

The composition of the S&P GSCI Indices may change over time, as additional futures contracts satisfy the eligibility criteria of the S&P GSCI™ or futures contracts currently included in the S&P GSCI™ fail to satisfy such criteria. Those changes could impact the composition and valuation of the S&P GSCI Indices. The weighting factors applied to each commodity included in the S&P GSCI™ change annually, based on changes in commodity production statistics. In addition, SPDJI may modify the methodology for determining the composition and weighting of the S&P GSCI™ and for calculating their value in order to assure that the S&P GSCI™ represents a measure of the performance over time of the markets for the underlying commodities represented by the S&P GSCI™ and its sub-indices. A number of modifications to the methodology for determining the contracts to be included in each S&P GSCI Index, and for valuing each S&P GSCI Index, have been made in the past several years and further modifications may be made in the future. Such changes could adversely affect the market value and/or any payment applicable to the Commodity Index Derivative Transaction.

Disclosure Supplement C for the JPMorgan Commodity Curve Indices
(dated April 22, 2016)

This Disclosure Supplement for the JPMorgan Commodity Curve Indices, dated April 22, 2016 (the "Disclosure Supplement"), supplements and should be read in conjunction with the General Disclosure Statement ("General Disclosure Statement") and the Disclosure Annex for Commodity Derivatives (the "Commodities Disclosure Annex"), dated April 26, 2013 and April 26, 2013, respectively, published by the International Swaps & Derivatives Association Inc. ("ISDA") and the Disclosure Annex For Commodity Index Derivative Transactions, dated April 22, 2016 (the "Commodity Index Disclosure Annex"), published by JPMorgan Chase Bank, National Association. NOTHING IN THIS SUPPLEMENT AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions in this Disclosure Supplement of the operation of Commodity Index Derivative Transactions (as defined below) and the consequences of various events are in all cases subject to the actual terms of a Commodity Index Derivative Transaction executed between you and us and its governing documentation.

When we refer to a "Commodity Index Derivative Transaction", we are referring to Transactions in which the underlying(s) is/are an index/indices that reference(s) physical commodities or contracts for the future delivery of physical commodities. The terms of a Commodity Index Derivative Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Commodity Index Derivative Transaction and its governing documentation. Before entering into a Commodity Index Derivative Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under the Commodity Index Derivative Transaction, its value and its appropriateness for your particular objectives.

To the extent you enter into a Commodity Index Derivative Transaction that references a JPMCCI Index, in whole or in part, or another index that references a JPMCCI Index, as one of its constituents or components, you should carefully review the disclosure set forth herein. This Disclosure Supplement, together with the rules for a particular index ("Index Rules"), the documents governing your Commodity Index Derivative Transaction, the disclosure annexes referenced above and any other disclosure delivered by us to you related to your specific Commodity Index Derivative Transaction, constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Commodity Index Derivative Transaction. You should carefully consider all of these documents prior to entering into a Commodity Index Derivative Transaction.

General

The JPMorgan Commodity Curve Index (collectively, with its constituent single commodity indices, sector indices and aggregate index, "JPMCCI") is an index family that seeks to offer a diversified and representative approach to passive commodity investing. Unlike other commodity indices that focus exposure at a single maturity (traditionally, the front month contract or a single deferred contract), JPMCCI seeks to track exposure along the entire futures curve (*i.e.*, exposure to futures contracts with different maturities) for each commodity included in any JPMCCI Constituent Index, as defined below under "— JPMCCI Index Types") in proportion to their "open interest."

"Open interest," refers to the total number of outstanding futures contracts with respect to a particular commodity that are held by market participants. At any time, open interest refers to the total number of open futures contracts with respect to a particular physical commodity at any time and can be used to determine the approximate size of a particular commodity futures market, a segment of that market or the market for an individual commodity futures contract. Commodity futures are different from other investments, such as equities. Whereas an equity security represents an ownership interest in a particular company and theoretically may exist in perpetuity, a commodity futures contract is a financial contract that obligates a buyer to purchase a specific quantity of a commodity on a future date. On that future date, the contract is settled and terminated. Buyers and sellers enter into or "open" these contracts at different monthly maturities on different exchanges, and open interest is a measure of the size of the market in these existing contracts.

The "futures curve," is the hypothetical curve created by plotting contract prices for futures contracts of a particular commodity or a group of commodities along a vertical axis at different contract maturities along a horizontal axis. This "curve" is representative of commodity prices at different contract maturities and is typically upward sloping (*i.e.*, in contango) or downward sloping (*i.e.*, in backwardation).

JPMCCI uses open interest in the futures curve for certain commodities market traded on the New York Mercantile Exchange (the "NYMEX"), the Chicago Board of Trade (the "CBOT"), the London Metals Exchange ("LME"), the Kansas City Board of Trade ("KCBOT"), the Minneapolis Grain Exchange ("MGE"), the New York Board of Trade ("NYBOT"), IntercontinentalExchange, Inc. ("ICE"), Euronext.LIFFE ("LIFFE"), the Chicago Mercantile Exchange (the "CME") and COMEX to determine the inclusion and relative weights of the individual commodity futures contract included in JPMCCI. Each commodity's monthly contract compositions are determined by reference to the historical distribution of the open interest of contracts across the futures curve for the relevant calendar month in each of the preceding three years. Although positions will be evaluated for potential adjustments on a monthly basis, many contracts are referenced by JPMCCI for multiple months, and upon a rebalancing, deferred months move forward and weights are increased (or decreased) to reflect the historical monthly open interest in the futures curve.

In November of each calendar year, the Index Calculation Agent (as defined below) reviews the then-current Potential JPMCCI Exchange Commodities (as defined below), and, subject to the review of the JPMCCI Supervisory Committee (as defined below), determines and publishes the JPMCCI Exchange Commodities (as defined below) for the following calendar year on the JPMCCI Exchange Commodity Publication Date. "JPMCCI Exchange Commodity Publication Date" means, for each calendar year, a date determined by the Index Calculation Agent that occurs on or before the last Scheduled Index Valuation Date (as defined below) in November of each calendar year.

The following table sets forth the monthly contract weights and composition from January 2013 to June 2013 for the JPMCCI NYMEX Crude Oil Index, which is based on the historical open interest of the NYMEX and ICE WTI crude oil futures contracts. The information set forth in the following table was based on the historical information available to JPMS plc and was produced based on the rules governing JPMCCI. We make no representation or warranty as to the accuracy or completeness of the information obtained from JPMS plc. The hypothetical back-tested values of the specific contracts and percentage compositions referenced by JPMCCI in various months should not be taken as indication of the future percentage composition of this sub-index. No assurances can be given as to the future percentage composition of a JPMCCI Constituent Index. The following table is solely for informational purposes and should only be used to illustrate the manner in which futures contracts are referenced at deferred points of the futures curve and how weights are increased (or decreased) monthly based on the distribution of open interest along the futures curve.

Month	Contracts/Percentage Composition								
January 2013	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Dec-13	Dec-14	Dec-15	
	30.30%	11.27%	8.25%	11.99%	5.11%	18.63%	9.37%	5.08%	
February 2013	Apr-13	May-13	Jun-13	Jul-13	Dec-13	Jun-14	Dec-14	Dec-15	
	22.74%	14.28%	14.48%	7.04%	20.38%	4.75%	10.73%	5.59%	
March 2013	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Dec-13	Jun-14	Dec-14	Dec-15
	25.24%	16.01%	8.84%	4.30%	5.11%	19.14%	4.77%	10.91%	5.69%
April 2013	Jun-13	Jul-13	Aug-13	Sep-13	Dec-13	Jun-14	Dec-14	Dec-15	
	26.71%	15.30%	7.17%	7.18%	19.65%	5.49%	12.12%	6.38%	
May 2013	Jul-13	Aug-13	Sep-13	Oct-13	Dec-13	Jun-14	Dec-14	Dec-15	
	29.43%	10.38%	9.09%	4.78%	20.46%	6.29%	12.64%	6.93%	
June 2013	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Jun-14	Dec-14	Dec-15
	23.49%	13.59%	6.41%	5.05%	20.42%	4.78%	6.48%	12.42%	7.37%

As illustrated above, JPMCCI references contracts at deferred points on the futures curve, and each month as those deferred contracts move forward in time, weights are increased (or decreased) to obtain the desired weighting. For example, in January 2013, the JPMCCI NYMEX Crude Oil Index had a 11.3% exposure to the April 2013 NYMEX WTI futures contract, and in February 2013, that allocation was increased to 22.7%. In that example, the change in exposure to the April 2013 contract for February 2013 was 11.4%. As compared to other legacy commodity indices, in January 2013, 100% of their exposure would have been in the March 2013 contract, and upon rolling its hypothetical positions to February 2013, such other legacy indices would require to change their entire exposure from the March 2013 contract to the April 2013 contract.

JPMCCI is described as a "notional" or "synthetic" portfolio or basket because there is no actual portfolio of assets to which any person is entitled nor in which any person has any ownership interest.

Instead, JPMCCI identifies certain assets in the market, the performance of which will be used as a reference point for the purposes of calculating the value of JPMCCI.

JPMCCI Index Types

J.P. Morgan Securities plc ("JPMS plc"), an affiliate of JPMorgan Chase & Co., launched JPMCCI in November 2007. JPMCCI is currently calculated by an employee of JPMorgan Chase Bank, National Association, who works for the Global Index Research Group ("GIRG"). GIRG currently maintains and calculates thirty-six single commodity indices (each, a "JPMCCI Single Commodity Index"), seven sector indices (each, a "JPMCCI Sector Index"), an aggregate commodity index (the "JPMCCI Aggregate Index"), a variation of the JPMCCI Aggregate Index with a lesser weighting given to the energy sector components (the "JPMCCI Energy Light Index"), and indices corresponding to all of the above but excluding the front month futures contract (the "JPMCCI ex-Front Month Indices") (each, a "JPMCCI Constituent Index" and together, the "JPMCCI Constituent Indices").

JPMS plc is solely responsible for the development, and GIRG for the calculation and publication of JPMCCI. The performance of each JPMCCI Constituent Index is available in three different types of indices: a Price Index, an Excess Return Index and a Total Return Index:

The "Price Index" for each JPMCCI Constituent Index measures the aggregate price levels of the relevant commodity futures contract(s) of such JPMCCI Constituent Index;

The "Excess Return Index" for each JPMCCI Constituent Index measures the return from a hypothetical investment in the relevant commodity futures contract(s) of such JPMCCI Constituent Index, taking into account the effect of any monthly composition changes with respect to the relevant commodity(s) in each roll period; and

The "Total Return Index" for each JPMCCI Constituent Index measures the return from a fully collateralized hypothetical investment in the relevant commodity futures contract(s) of such JPMCCI Constituent Index, taking into account the monthly rolling of those contracts. (Section A.2 of the Index Rules)

The table below presents the constituents of JPMCCI, each in its respective the Price Index, Excess Return Index and Total Return Index variants along with the applicable Bloomberg ticker symbol. Currently, 90 constituent indices are in JPMCCI.

Constituent	**Price Index**	**Excess Return Index**	**Total Return Index**
Aggregate	JMCXPI	JMCXER	JMCXTR
Energy Light	JMCXELPI	JMCXELER	JMCXELTR
Energy	JMCXENPI	JMCXENER	JMCXENTR
Non-Energy	JMCXNEPI	JMCXNEER	JMCXNETR
Industrial Metals	JMCXIMPI	JMCXIMER	JMCXIMTR
Precious Metals	JMCXPMPI	JMCXPMER	JMCXPMTR
All Metals	JMCXMEPI	JMCXMEER	JMCXMETR
Agriculture	JMCXAGPI	JMCXAGER	JMCXAGTR

Livestock	JMCXLIPI	JMCXLIER	JMCXLITR
Crude Oil	JMCXCLPI	JMCXCLER	JMCXCLTR
Gasoline	JMCXXBPI	JMCXXBER	JMCXXBTR
Heating Oil	JMCXHOPI	JMCXHOER	JMCXHOTR
Natural Gas	JMCXNGPI	JMCXNGER	JMCXNGTR
Brent Crude	JMCXCOPI	JMCXCOER	JMCXCOTR
Gas Oil	JMCXQSPI	JMCXQSER	JMCXQSTR
Ethanol	JMCXDLPI	JMCXDLER	JMCXDLTR
Gold	JMCXGCPI	JMCXGCER	JMCXGCTR
Silver	JMCXSIPI	JMCXSIER	JMCXSITR
Palladium	JMCXPAPI	JMCXPAER	JMCXPATR
Platinum	JMCXPLPI	JMCXPLER	JMCXPLTR
Aluminum	JMCXLAPI	JMCXLAER	JMCXLATR
Copper (LME)	JMCXLPPI	JMCXLPER	JMCXLPTR
Lead	JMCXLLPI	JMCXLLER	JMCXLLTR
Nickel	JMCXLNPI	JMCXLNER	JMCXLNTR
Zinc	JMCXLXPI	JMCXLXER	JMCXLXTR
Tin	JMCXLTPI	JMCXLTER	JMCXLTTR
Copper (Comex)	JMCXHGPI	JMCXHGER	JMCXHGTR
Corn	JMCXCPI	JMCXCER	JMCXCTR
Soybeans	JMCXSPI	JMCXSER	JMCXSTR
Soybean Meal	JMCXSBPI	JMCXSMER	JMCXSMTR
Soybean Oil	JMCXBOPI	JMCXBOER	JMCXBOTR
Wheat	JMCXWPI	JMCXWER	JMCXWTR
Rough Rice	JMCXRRPI	JMCXRRER	JMCXRRTR
Winter Wheat	JMCXKWPI	JMCXKWER	JMCXKWTR
Spring Wheat	JMCXMWPI	JMCXMWER	JMCXMWTR

Cocoa	JMCXCCPI	JMCXCCER	JMCXCCTR
Coffee	JMCXKCPI	JMCXKCER	JMCXKCTR
Cotton	JMCXCTPI	JMCXCTER	JMCXCTTR
Orange Juice	JMCXJOPI	JMCXJOER	JMCXJOTR
Sugar	JMCXSBPI	JMCXSBER	JMCXSBTR
Robusta Coffee	JMCXCFPI	JMCXCFER	JMCXCFTR
White Sugar	JMCXQWPI	JMCXQWER	JMCXQWTR
Feeder Cattle	JMCXFCPI	JMCXFCTR	JMCXFCTR
Lean Hogs	JMCXLHPI	JMCXLHTR	JMCXLHTR
Live Cattle	JMCXLCPI	JMCXLCTR	JMCXLCTR
Ex-FM Aggregate	JMCXEXPI	JMCXEXER	JMCXEXTR
Ex-FM Energy Light	JMCXXELP	JMCXXELE	JMCXXELT
Ex-FM Energy	JMCXXENP	JMCXXENE	JMCXXENT
Ex-FM Non-Energy	JMCXXNEP	JMCXXNEE	JMCXXNET
Ex-FM Industrial Metals	JMCXXIMP	JMCXXIME	JMCXXIMT
Ex-FM Precious Metals	JMCXXPMP	JMCXXPME	JMCXXPMT
Ex-FM All Metals	JMCXXMEP	JMCXXMEE	JMCXXMET
Ex-FM Agriculture	JMCXXAGP	JMCXXAGE	JMCXXAGT
Ex-FM Livestock	JMCXXLIP	JMCXXLIE	JMCXXLIT
Ex-FM Crude Oil	JMCXXCLP	JMCXXCLE	JMCXXCLT
Ex-FM Gasoline	JMCXXXBP	JMCXXXBE	JMCXXXBT
Ex-FM Heating Oil	JMCXXHOP	JMCXXHOE	JMCXXHOT
Ex-FM Natural Gas	JMCXXNGP	JMCXXNGE	JMCXXNGT
Ex-FM Brent Crude	JMCXXCOP	JMCXXCOE	JMCXXCOT
Ex-FM Gas Oil	JMCXXQSP	JMCXXQSE	JMCXXQST
Ex-FM Ethanol	JMCXXDLP	JMCXXDLE	JMCXXDLT
Ex-FM Gold	JMCXXGCP	JMCXXGCE	JMCXXGCT

Ex-FM Silver	JMCXXSIP	JMCXXSIE	JMCXXSIT
Ex-FM Palladium	JMCXXPAP	JMCXXPAE	JMCXXPAT
Ex-FM Platinum	JMCXXPLP	JMCXXPLE	JMCXXPLT
Ex-FM Aluminum	JMCXXLAP	JMCXXLAE	JMCXXLAT
Ex-FM Copper (LME)	JMCXXLPP	JMCXXLPE	JMCXXLPT
Ex-FM Lead	JMCXXLLP	JMCXXLLE	JMCXXLLT
Ex-FM Nickel	JMCXXLNP	JMCXXLNE	JMCXXLNT
Ex-FM Zinc	JMCXXLXP	JMCXXLXE	JMCXXLXT
Ex-FM Tin	JMCXXLTP	JMCXXLTE	JMCXXLTT
Ex-FM Copper (Comex)	JMCXXHGP	JMCXXHGE	JMCXXHGT
Ex-FM Corn	JMCXXCP	JMCXXCE	JMCXXCT
Ex-FM Soybeans	JMCXXSP	JMCXXSE	JMCXXST
Ex-FM Soybean Meal	JMCXXSMP	JMCXXSME	JMCXXSMT
Ex-FM Soybean Oil	JMCXXBOP	JMCXXBOE	JMCXXBOT
Ex-FM Wheat	JMCXXWP	JMCXXWE	JMCXXWT
Ex-FM Rough Rice	JMCXXRRP	JMCXXRRE	JMCXXRRT
Ex-FM Winter Wheat	JMCXXKWP	JMCXXKWE	JMCXXKWT
Ex-FM Spring Wheat	JMCXXMWP	JMCXXMWE	JMCXXMWT
Ex-FM Cocoa	JMCXXCCP	JMCXXCCE	JMCXXCCT
Ex-FM Coffee	JMCXXKCP	JMCXXKCE	JMCXXKCT
Ex-FM Cotton	JMCXXCTP	JMCXXCTE	JMCXXCTT
Ex-FM Orange Juice	JMCXXJOP	JMCXXJOE	JMCXXJOT
Ex-FM Sugar	JMCXXSBP	JMCXXSBE	JMCXXSBT
Ex-FM Robusta Coffee	JMCXXCFP	JMCXXCFE	JMCXXCFT
Ex-FM White Sugar	JMCXXQWP	JMCXXQWE	JMCXXQWT
Ex-FM Feeder Cattle	JMCXXFCP	JMCXXFCE	JMCXXFCT
Ex-FM Lean Hogs	JMCXXLHP	JMCXXLHE	JMCXXLHT

Ex-FM Live Cattle	JMCXXLCP	JMCXXLCE	JMCXXLCT

The table below shows the JPMCCI Sector Indices, the JPMCCI Exchange Commodities included in each JPMCCI Sector Index and the weights for JPMCCI as of January 31, 2013. The JPMCCI Aggregate Indices include all 35 JPMCCI Exchange Commodities set out below. The JPMCCI Energy Light Indices also include all 35 JPMCCI Exchange Commodities set out below, with a target dollar weight of the JPMCCI Exchange Commodities included in the energy JPMCCI Sector Index set to a maximum weight of 33% of such JPMCCI Energy Light Indices.

	Aggregate Weighting	Energy Light Weighting
Energy	**50.48%**	**33.57%**
NYMEX Crude Oil	20.67%	13.75%
NYMEX Gasoline	3.90%	2.59%
NYMEX Natural Gas	3.67%	2.44%
ICE Brent Crude	11.33%	7.53%
ICE Gas Oil	6.29%	4.19%
CBOT Ethanol	0.07%	0.05%
Precious Metals	**12.02%**	**16.12%**
COMEX Gold	9.27%	12.43%
COMEX Silver	2.19%	2.94%
NYMEX Palladium	0.18%	0.24%
NYMEX Platinum	0.37%	0.50%
Industrial Metals	**15.53%**	**20.83%**
LME Aluminum	4.24%	5.69%
LME Copper	6.19%	8.30%
LME Lead	0.70%	0.94%
LME Nickel	1.19%	1.60%
LME Tin	0.27%	0.36%
LME Zinc	1.46%	1.95%

	Aggregate Weighting	Energy Light Weighting
Agriculture	**18.78%**	**25.19%**
CBOT Corn	5.01%	6.72%
CBOT Soybean	4.65%	6.24%
CBOT Soybean Meal	0.96%	1.29%
CBOT Soybean Oil	1.11%	1.49%
CBOT Rough Rice	0.06%	0.08%
CBOT Wheat	1.98%	2.65%
KCBOT Winter Wheat	0.79%	1.06%
MGE Spring Wheat	0.24%	0.32%
NYBOT Cocoa	0.39%	0.53%
NYBOT Coffee	0.82%	1.10%
NYBOT Cotton	0.83%	1.11%
NYBOT Sugar	1.56%	2.09%
LIFFE Robusta Coffee	0.22%	0.29%
LIFFE White Sugar	0.17%	0.23%
Livestock	**3.20%**	**4.29%**
CME Feeder Cattle	0.32%	0.43%
CME Lean Hogs	0.95%	1.28%
CME Live Cattle	1.93%	2.58%

COMEX Copper	1.49%	2.00%

JPMCCI Methodology

Selection of JPMCCI Exchange Commodities

GIRG acts as the calculation agent for JPMCCI. When discussing GIRG's role as the calculation agent, we refer to GIRG as the "Index Calculation Agent". The Index Calculation Agent selects the commodities futures contracts that will be considered for inclusion in JPMCCI each year (the "JPMCCI Exchange Commodities"). A two-stage process is followed by the Index Calculation Agent under the supervision of the JPMCCI Supervisory Committee to select futures contracts to be included in JPMCCI in any given year. First, the Index Calculation Agent identifies Potential JPMCCI Exchange Commodities and, second, the Index Calculation Agent selects JPMCCI Exchange Commodities for inclusion in JPMCCI.

"Potential JPMCCI Exchange Commodity" means each physical commodity futures contract (but in respect of which physical delivery is not a requirement for inclusion in this definition) which:

- is listed on an exchange that meets the geographical or other criteria published by Index Calculation Agent from time to time;

- is denominated in U.S. dollars;

- has an Estimated Market Size of at least $250 million and such Estimated Market Size represents at least 10 basis point (0.10%) of the aggregate sum of all the Estimated Market Sizes for all of the Potential JPMCCI Exchange Commodities. If a Potential JPMCCI Exchange Commodity is already included in JPMCCI, its Estimated Market Size must neither have fallen below $150 million or below 6 basis points (0.06%) of the aggregate sum of all the Estimated Market Sizes for all of the Potential JPMCCI Exchange Commodities as of the relevant JPMCCI Exchange Commodity Publication Date. The "Estimated Market Size" means, in respect of a Potential JPMCCI Exchange Commodity on any day, a notional amount expressed in U.S. dollars equal to the most recent complete thirty-six monthly average historical open interest on such day calculated using data published by the Futures Industry Association for such exchange commodity *multiplied by* the settlement price for the monthly contract on such exchange commodity with the nearest expiration date on the last Scheduled Index Valuation Day in October of the applicable year; *provided* that the Index Calculation Agent may, in its good faith and commercially reasonable judgment, use a shorter historical period in respect of Potential JPMCCI Exchange Commodities that have a shorter trading history or as other data limitations necessitate;

- has a sufficiently liquid market for general trading, as determined by the Index Calculation Agent in a good faith and commercially reasonable manner and subject to the review of the JPMCCI Supervisory Committee;

- is not a "mini-contract" (as defined by the Relevant Exchange) or a swap contract, basis contract, spread contract or weather contract, as determined by the Index Calculation Agent;

- has traded for at least one year prior to its inclusion in JPMCCI, unless the Index Calculation Agent waives this requirement. The Index Calculation Agent may waive this requirement if it determines, in its good faith and commercially reasonable judgment, and subject to the review of the JPMCCI Supervisory Committee, that the JPMCCI Exchange Commodity's significance in terms of investor interest is so great that its omission would significantly undermine the representativeness of JPMCCI; and

- has sufficient data available to allow the Index Calculation Agent to appropriately determine its historical performance and analyze its performance on an on-going basis, determined based on the existence of adequate independent historical data. The Index Calculation Agent may determine that the historical performance of a Potential JPMCCI Exchange Commodity may be reasonably calculated in the absence of what would normally be considered adequate independent historical data. (Section B.1 of the Index Rules)

"JPMCCI Exchange Commodity" means, with respect to the version of JPMCCI established in a particular calendar year (*e.g.*, the 2012 version of JPMCCI established in November 2011), each Potential JPMCCI Exchange Commodity chosen for inclusion in JPMCCI in that calendar year. The Index Calculation Agent will select for inclusion in JPMCCI, subject to the review of the JPMCCI Supervisory Committee, each Potential JPMCCI Exchange Commodity which (a) is not related to milk, electricity or coal, (b) is not "Sugar #14" (traded on NYBOT) and (c) with respect to aluminum (i.e., High Grade Primary Aluminum, Aluminum Alloy and North American Special Aluminum Alloy), the aluminum futures contract with the greatest open interest.

On each JPMCCI Exchange Commodity Publication Date, the Index Calculation Agent will calculate and publish the JPMCCI Exchange Commodities for inclusion in JPMCCI for the following calendar year. In addition, the composition of the JPMCCI Sector Indices for the following calendar year is determined by the Index Calculation Agent on each JPMCCI Exchange Commodity Publication Date, subject to the review and approval of the JPMCCI Supervisory Committee. The Index Calculation Agent may introduce additional JPMCCI Sector Indices on any future date.

Based on the above criteria, the 2012 composition for JPMCCI did not include any new JPMCCI Exchange Commodities.

If the Index Calculation Agent determines, in good faith and a commercially reasonable manner, that the occurrence or existence of an Extraordinary Event (as defined below) affects a JPMCCI Constituent Index (an "Affected Index"), then the Index Calculation Agent may take the following action with the aim of maintaining the objective of the Affected Index: (i) the Index Calculation Agent may replace one or more JPMCCI Exchange Commodities in the Affected Index with other Potential JPMCCI Exchange Commodities that it determines, in good faith and a commercially reasonable manner, are natural substitutes for the JPMCCI Exchange Commodities being replaced, or (ii) the Index Calculation Agent may exclude one or more JPMCCI Exchange Commodities from the Affected Index and recalculate the weight of the JPMCCI Exchange Commodities remaining in the Affected Index so that the aggregate weight of all such JPMCCI Exchange Commodities sum to 100%. (Section B.2 of the Index Rules)

With respect to the replacement of one or more JPMCCI Exchange Commodities, the weight assigned to each Potential JPMCCI Exchange Commodity will generally be equal to the weight of the JPMCCI Exchange Commodity that it is replacing. However, the Index Calculation Agent may assign a different weight to a Potential JPMCCI Exchange Commodity if it determines, in good faith and a commercially reasonable manner, that this is appropriate to maintain the objective of the Affected Index. With respect to the exclusion of one or more JPMCCI Exchange Commodities, the weight of the Affected Index's remaining JPMCCI Exchange Commodities will be adjusted accordingly so that the aggregate weight of all components sum to 100%. The Index Calculation Agent will endeavor to effect any replacement and re-weighting (if any) or exclusion and re-weighting (if any) as soon as practicable in light of the prevailing circumstances and if possible during the immediately following set of Roll Days. In making the calculation of Aggregate Commodity Units (as defined below) and Monthly Contract Weights (as defined below) upon any such replacement and re-weighting (if any) or exclusion and re-weighting (if any), the Index Calculation Agent relies on a combination of data based on such affected JPMCCI Exchange Commodity(ies) and the Potential JPMCCI Exchange Commodity(ies) that will be introduced as a result of the Index Calculation Agent's determination. The methodology by which any such substitution will be effected will be announced by the Index Calculation Agent as soon as reasonably practicable. The Index Calculation Agent will obtain the approval of the JPMCCI Supervisory Committee prior to making any replacement and re-weighting or exclusion and re-weighting or any other changes described in this paragraph and the immediately preceding paragraph. (Section B.2 of the Index Rules).

"Extraordinary Event" means,

(a) due to (i) the adoption of, or any change in, any applicable law, regulation or rule (including, without limitation, any tax law) or (ii) the promulgation of, or any change in, the interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, as implemented by the U.S. Commodity and Futures Trading Commission or exchange or trading facility), in each case after December 29, 1989, the Index Calculation Agent determines in good faith that (x) it is contrary to such law, rule, regulation or order for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) any Potential JPMCCI Exchange Commodity and/or any JPMCCI Exchange Commodity or any transaction referencing any Potential JPMCCI Exchange Commodity and/or any JPMCCI Exchange Commodity or, (y) holding a position in any Potential JPMCCI Exchange Commodity and/or any JPMCCI Exchange Commodity or any transaction referencing any Potential JPMCCI Exchange Commodity and/or any JPMCCI Exchange Commodity is (or, but for the consequent disposal or termination thereof, would otherwise be) in excess of any allowable position limit(s) applicable to any market participants that are brokers or financial intermediaries (individually or collectively) under any such law, rule, regulation in relation to such Potential JPMCCI Exchange Commodity and/or JPMCCI Exchange Commodity traded on any exchange(s) or other trading facility (including, without limitation, any Relevant Exchange); or

(b) the occurrence or existence of any (i) suspension or limitation imposed on trading commodity futures contracts (including, without limitation, any Potential JPMCCI Exchange Commodity or any JPMCCI Exchange Commodity) or (ii) or any other event that causes trading in any commodity futures contracts (including, without limitation, any Potential JPMCCI Exchange Commodity or any JPMCCI Exchange Commodity) to cease. (Section B.2 of the Index Rules)

"Aggregate Commodity Units" means, in relation to the JPMCCI Aggregate Indices, the JPMCCI Energy Light Indices and the JPMCCI Sector Indices, the average monthly units of each JPMCCI Exchange Commodity over a three year period ending on a given calendar year corresponding to contracts outstanding used in calculating the JPMCCI Aggregate Indices, the JPMCCI Energy Light Indices and the JPMCCI Sector Indices. In the case of the Aggregate Commodity Units in relation to the JPMCCI Energy Light Indices, the Aggregate Commodity Units corresponding to the JPMCCI Exchange Commodities included in the energy JPMCCI Sector Indices may be adjusted in order to assign the energy sector Estimated Post Rebalance Market Capitalization (as defined in Section G.1 of the Index Rules) a maximum of 33% of the total Estimated Post Rebalance Market Capitalization related to the JPMCCI Energy Light Indices.

“Monthly Contract Weight” means, with respect to any JPMCCI Exchange Commodity, the weighting allocated in the relevant Composition to a given Monthly Contract with respect to a JPMCCI Exchange Commodity as discussed in more detail in “—Monthly Calculation of Monthly Contract Weights” below.

“Composition” means, with respect to each JPMCCI Exchange Commodity and each month, the hypothetical portfolio of Monthly Contracts and associated Monthly Contract Weights.

“Monthly Contract” means, with respect to each JPMCCI Exchange Commodity and each month, the contract considered most associated to such month as determined by the Index Calculation Agent based (i) with respect to all JPMCCI Exchange Commodities other than JPMCCI Exchange Commodities that are traded on the London Metals Exchange, the contract designated by the Relevant Exchange (typically being the contract that will expire in such month, or the contract in which delivery or settlement will occur immediately following such month) that (ii) with respect to a JPMCCI Exchange Commodity whose Relevant Exchange is the London Metals Exchange, the Monthly Contract will be the relevant contract expiring on the third Wednesday of such month.

Representation of JPMCCI Exchange Commodities and Monthly Contract Open Interest

When there is more than one eligible Potential JPMCCI Exchange Commodity related to a particular underlying physical commodity, the Index Calculation Agent may, where deemed appropriate and subject to the approval of the JPMCCI Supervisory Committee, aggregate the Monthly Contract Open Interest of similar non-selected Potential JPMCCI Exchange Commodities with those of the relevant JPMCCI Exchange Commodities and thus increase the number of Aggregate Commodity Units for the relevant JPMCCI Exchange Commodity. (Section B.3 of the Index Rules)

The Monthly Contracts combined as described in Section B.3 of the Index Rules will be published in May and November of each calendar year and as additionally necessary in light of market developments between those months. The table below sets out currently selected JPMCCI Exchange Commodities whose Monthly Contract Open Interest has been combined with non-selected potential alternative JPMCCI Exchange Commodities. (Appendix H of the Index Rules)

Open Interest for:	**Combined for JPMCCI Exchange Commodity**	**since**
ICE Crude Oil	NYMEX Crude Oil	Feb-2006
ICE Heating Oil	NYMEX Heating Oil	Apr-2006
CBOT Gold	COMEX Gold	Oct-2004
CBOT Silver	COMEX Silver	Oct-2004
NYMEX Unleaded Gasoline	NYMEX RBON Gasoline	July-2006
LIFFE Robusta Coffee	LIFFE Robusta Coffee 10	Jan-2009

The Index Calculation Agent will publish any changes or additions to the combinations set forth in the table above on or before the effective date of any changes and/or additions.

Final Inclusion Determination and Rebalancing Announcement

The Index Calculation Agent will present to the JPMCCI Supervisory Committee for review the JPMCCI Exchange Commodities for any given year after the completion of the procedures set forth above. The Index Calculation Agent will publish the determination of the JPMCCI Exchange Commodities for a given year no later than the last Scheduled Index Valuation Day in November of each calendar year immediately preceding the relevant year for inclusion. (Section B.4 of the Index Rules)

Calculation of Monthly Contract Weights

Each JPMCCI Exchange Commodity included in a JPMCCI Constituent Index includes one or more Monthly Contracts related to such JPMCCI Exchange Commodity (except in circumstances of substitution of contracts, where the Monthly Contracts may be related to different JPMCCI Exchange Commodities). Each JPMCCI Exchange Commodity included in a JPMCCI Constituent Index is thus represented by futures contracts from across its respective futures curve, as described under "–General" above, with a range of maturities (and which are weighted according to their respective open interests).

The Composition with respect to each JPMCCI Exchange Commodity is determined monthly by averaging the historical open interests of relevant futures contracts across the futures curve for such JPMCCI Exchange Commodity in the relevant calendar month in each of the preceding three years, which is intended to capture shifts of open interest in each relevant futures contract along the futures curve. For example, to determine the weightings of the Monthly Contracts for a JPMCCI Exchange Commodity in July 2008, the Index Calculation Agent determined the numerical unweighted average of the open interests for each Monthly Contract available on such JPMCCI Exchange Commodity in July 2005, July 2006 and July 2007.

First, the Index Calculation Agent will calculate the "Monthly Contract Open Interest" in month *m*, denominated in physical units, for the JPMCCI Exchange Commodity *c* Monthly Contract expiring *n* months after month *m*, through the following formula:

$$MCOI_{m,n}^{c} = F^{c} \times \sum_{d \in D_m^c} DCOI_{d,m,n}^{c}$$

where:

$DCOI_{d,m,n}^{c}$ is the Daily Contract Open Interest on day *d* of month *m*, denominated in number of contracts, for JPMCCI Exchange Commodity *c* Monthly Contract expiring *n* months after month *m;*

D_m^c is the set of all days in month *m* for which open interest data for one or more Monthly Contracts of JPMCCI Exchange Commodity *c* is obtainable by the Index Calculation Agent from the relevant information source;

F^c is the number of physical units of JPMCCI Exchange Commodity *c* represented by one contract, given the contract specification (*e.g.* the number of barrels underlying one crude oil futures contract).

For example, if *m* corresponds to March 2001 and *n*=15, the Monthly Contract being referred to would be the June 2002 contract. In this example, the Monthly Contract Open Interest in March 2001 for a JPMCCI Exchange Commodity would represent the sum of the total number of June 2002 contracts for such JPMCCI Exchange Commodity outstanding on each Scheduled Valuation Day in March 2001 multiplied by the number of physical units represented by one contract for that JPMCCI Exchange Commodity. (Section D.2 of the Index Rules)

Next, the Index Calculation Agent will calculate the monthly contract open interest percentage ("MCOIP") in month *m*, for JPMCCI Exchange Commodity *c* Monthly Contract expiring *n* months after month *m*, through the following formula:

$$MCOIP_{m,n}^{c} = \frac{MCOI_{m,n}^{c}}{\sum_{i} MCOI_{m,i}^{c}}$$

The MCOIP for a JPMCCI Exchange Commodity represents the percentage of total market open interest for such JPMCCI Exchange Commodity represented by a futures contract in a given month. Continuing with the example from the previous paragraph, if the MCOIP for a June 2002 contract in March 2001 was 500 and the sum of the Monthly Contract Open Interests for all monthly contracts in March 2001 was 10,000, then the MCOIP for June 2002 contracts would be 5%. (Section D.3 of the Index Rules)

Then, the Index Calculation Agent will calculate the historical monthly contract open interest percentage ("HMCOIP") in month *m*, for the JPMCCI Exchange Commodity *c* Monthly Contract expiring *n* months after month *m*, through the following formula:

$$HMCOIP_{m,n}^{c} = \underset{i=12,24,36}{average}\left(MCOIP_{m-i,n}^{c}\right)$$

Continuing with the example from the previous two paragraphs, the HMCOIP for a JPMCCI Exchange Commodity for a June 2003 contract in March 2002 is the arithmetic average of:

(a) the MCOIP for that JPMCCI Exchange Commodity's June 2002 contract in March 2001 (as calculated in the last paragraph);

(b) the MCOIP for that JPMCCI Exchange Commodity's June 2001 contract in March 2000;

(c) the MCOIP for that JPMCCI Exchange Commodity's June 2000 contract in March 1999. (Section D.4 of the Index Rules)

Finally, the Monthly Contract Weights and Composition for each JPMCCI Exchange Commodity are determined. The following Monthly Contracts are excluded:

(a) Monthly Contracts with a HMCOIP of less than 3%; and

(b) Monthly Contracts due to expire, in which there will be a Last Trading Day (as defined below) or First Notice Day (as defined below) prior to the last anticipated Roll Day (as defined below in "— Rolling Process") or if the Monthly Contract is traded on the London Metals Exchange, Monthly Contracts in which there will be a Last Trading Day in a month in which the last anticipated Roll Day falls. (Section D.5 of the Index Rules)

The "Monthly Contract Weight" for month *m* for JPMCCI Exchange Commodity *c* Monthly Contract expiring *n* months after month *m* is:

$$CW^c_{m,n} = \frac{HMCOIP^c_{m,n}}{\sum_{i \in N^c_m} HMCOIP^c_{m,i}}$$

where:

N^c_m is the set of all Monthly Contracts for JPMCCI Exchange Commodity *c* in month *m* that are not excluded by the exclusion rules set forth above

For Monthly Contracts that are excluded by the exclusion rules set forth in the formula above, the Monthly Contract Weight will be deemed to equal zero. The Monthly Contract Weight represents the HMCOIP for a Monthly Contract of the relevant JPMCCI Exchange Commodity in a given month that is not excluded, *divided* by the total sum of the HMCOIP for all Monthly Contracts for such JPMCCI Exchange Commodity in a given month that are not excluded. (Section D.5 of the Index Rules)

"Last Trading Day" means the final day on which a given Monthly Contract may trade or be closed out before delivery of the relevant JPMCCI Exchange Commodity must occur.

"First Notice Day" means the first day a notice of intent to deliver a JPMCCI Exchange Commodity can be made by a clearinghouse to a buyer in fulfillment of a given month's futures contract.

Rolling Process

All JPMCCI Exchange Commodities included in JPMCCI will be deemed to be rolled before their respective maturities into futures contracts with maturities in the more-distant future. JPMCCI Exchange Commodities nominally included in JPMCCI that are approaching maturity will generally be rolled in the calendar month immediately preceding the month in which they are due to mature. In addition, JPMCCI is weighted by open interest, and, thus, all Monthly Contracts included in JPMCCI are re-weighted on a monthly basis whether they are approaching maturity or not to reflect the monthly change in their respective open interests. The re-weighting is achieved by rolling the Monthly Contracts included in the relevant JPMCCI Constituent Index into contracts with a different maturity.

Monthly Contracts included in JPMCCI are deemed to be rolled over a period of the first ten Scheduled Index Valuation Days (each day, a "Roll Day") of the relevant month, subject to postponement if any such Roll Day is a Disrupted Day (as defined below in "— Calculation and Publication of JPMCCI Values"). Over this period, the Monthly Contract Weight of any Monthly Contract about to mature will be progressively reduced in equal increments of 10% until its weight equals zero and the weight of the replacement Monthly Contract will be progressively increased in equal increments of 10% until it equals its allocated Monthly Contract Weight. Similarly, Monthly Contracts whose Monthly Contract Weights are scheduled to be reduced or increased to reflect a change in their respective open interests will have their respective Monthly Contract Weights progressively reduced or increased, as applicable, in equal increments of 10% until their respective new Monthly Contract Weights are achieved. (Section D.7 of the Index Rules)

If a scheduled Roll Day is a Disrupted Day, then (i) the Monthly Contract Weight will not be amended on that day and (ii) the portion of the Monthly Contract Weight that would have been amended on that day will be amended on the next following Scheduled Index Valuation Day (as defined below in "— Calculation and Publication of JPMCCI Values") that is not a Disrupted Day. This delayed portion of the deemed roll will be executed on the next following Scheduled Index Valuation Day that is not a Disrupted Day, along with the portion of the deemed roll for all such contracts originally scheduled to occur on such Scheduled Index Valuation Day. Therefore, the incremental change in Monthly Contract Weight for these contracts on the relevant next following Scheduled Index Valuation Day that is not a Disrupted Day will be larger than 10% of the Monthly Contract Weight. (Section D.7 of the Index Rules)

Portfolio Continuity Factors

"Portfolio Continuity Factors" are factors introduced to prevent discontinuities in the JPMCCI Aggregate Indices and the JPMCCI Sector Indices when rebalancing occurs (in December) from one set of Aggregate Commodity Units to the next set of Aggregate Commodity Units. Portfolio Continuity Factors for each JPMCCI Sector Index are calculated in the same manner as for the JPMCCI Aggregate Index, except that only the Aggregate Commodity Units of the JPMCCI Exchange Commodities relevant to the JPMCCI Sector Index in question will be used in the calculations. (Sections E.1, E.2 and E.3 of the Index Rules)

The Portfolio Continuity Factor PCF_y for year *y* is expressed as follows:

$$PCF_y = PCF_{y-1} \times \frac{\sum_c ACU_y^c \times \sum_n CW^c_{m^*_{y-1},n} \times CP^c_{d^*_{y-1},m^*_{y-1},n}}{\sum_c ACU_{y-1}^c \times \sum_n CW^c_{m^*_{y-1},n} \times CP^c_{d^*_{y-1},m^*_{y-1},n}}$$

where:

m^*_{y-1}	means December in year *y-1*
d^*_{y-1}	means the last Index Valuation Day in year *y-1*

$CP^{c}_{d,m,n}$ means the Settlement Price denominated in U.S. dollars per physical unit of the commodity underlying the JPMCCI Exchange Commodity as of day *d*, for the JPMCCI Exchange Commodity *c* Monthly Contract expiring *n* months after month *m*

At inception $PCF_{inception}$ is set so that $JPMCCIPR_{d}$ (see below) is equal to 100.

Calculation and Publication of JPMCCI Values

The level of each JPMCCI Constituent Index will be published on each Scheduled Index Valuation Day (as defined below), even if such day is a Limit Day (as defined below); *provided, however,* that the Index Calculation Agent will not be obliged to publish any level of any JPMCCI Constituent Index upon the occurrence or continuation of a Force Majeure Event (as defined below). If for any reason a settlement price for a given Monthly Contract cannot be obtained, then the Index Calculation Agent will use the most recently available settlement price to determine the level of the relevant JPMCCI Constituent Index. In these circumstances, the level of the relevant JPMCCI Constituent Index will only approximate the actual performance of the commodity futures contracts that compose such JPMCCI Constituent Index. (Section D.6 of the Index Rules) All JPMCCI levels calculated are rounded to the fifth decimal. (Section F of the Index Rules)

The JPMCCI Single Commodity Price Index Level $JPMCCIPR^{c}_{d}$ for JPMCCI Exchange Commodity *c* on Index Valuation Day *d* is:

$$JPMCCIPR^{c}_{d} = RW^{c}_{d} \times \sum_{n} CW^{c}_{m_d - 1,n} \times CP^{c}_{d,m_d - 1,n} + \left(1 - RW^{c}_{d}\right) \times \sum_{n} CW^{c}_{m_d,n} \times CP^{c}_{d,m_d,n}$$

where:

m_{d} is the month on which Index Valuation Day *d* falls

The JPMCCI Single Commodity Excess Return Index Level $JPMCCIER^{c}_{d}$ for JPMCCI Exchange Commodity c on Index Valuation Day *d* is:

$$JPMCCIER^{c}_{d} = JPMCCIER^{c}_{d-1} \times (1 + CDER^{c}_{d})$$

where:

$CDER^{c}_{d}$ for JPMCCI Exchange Commodity *c* on Index Valuation Day *d* means the following:

$$CDER^{c}_{d} = \frac{RW^{c}_{d-1} \times \sum_{n} CW^{c}_{m_{d-1}-1,n} \times CP^{c}_{d,m_{d-1}-1,n} + \left(1 - RW^{c}_{d-1}\right) \times \sum_{n} CW^{c}_{m_{d-1},n} \times CP^{c}_{d,m_{d-1},n}}{RW^{c}_{d-1} \times \sum_{n} CW^{c}_{m_{d-1}-1,n} \times CP^{c}_{d-1,m_{d-1}-1,n} + \left(1 - RW^{c}_{d-1}\right) \times \sum_{n} CW^{c}_{m_{d-1},n} \times CP^{c}_{d-1,m_{d-1},n}} - 1$$

On the Inception Date, each JPMCCI Single Commodity Excess Return Index Level or $JPMCCIER^{c}_{inception}$ =100.

The JPMCCI Single Commodity Total Return Index Level or $JPMCCITR^{c}_{d}$ for JPMCCI Exchange Commodity c on Index Valuation Day *d* is:

$$JPMACCITR^{c}_{d} = JPMACCITR^{c}_{d-1} \times (1 + CDER^{c}_{d} + TBR_{d}) \times \prod_{a \in A} (1 + TBR_{a})$$

where*:*

TBR_d is the “ US Treasury Bill Return” on calendar day *d*, calculated as follows:

$$TBR_d = \left(\frac{1}{1 - 91/360 \times TBRATE_{d-1}} \right)^{1/91} - 1$$

$TBRATE_{d-1}$ is the 91-day auction high rate for U.S. Treasury Bills on the most recent weekly auction date available on the calendar day immediately preceding the calendar day *d*

A is the set of calendar days in between the immediately preceding Index Valuation Day and the Index Valuation Day *d* (exclusive)

On the Inception Date, JPMCCI Single Commodity Total Return Index Level or $JPMCCITR^{c}_{inception}$ =100.

The JPMCCI Aggregate Price Index Level or $JPMACCIPR_d$ on Index Valuation Day *d* is:

$$JPMACCIPR_d = \frac{1}{PCF_{y_{m_d-1}}} \times \sum_c ACU^{c}_{y_{m_d-1}} \times RW^{c}_{d} \times \sum_n CW^{c}_{m_d-1,n} \times CP^{c}_{d,m_d-1,n}$$

$$+ \frac{1}{PCF_{y_{m_d}}} \times \sum_c ACU^{c}_{y_{m_d}} \times \left(1 - RW^{c}_{d}\right) \times \sum_n CW^{c}_{m_d,n} \times CP^{c}_{d,m_d,n}$$

where:

y_{m_d} is the year in which month m_d falls

On the Inception Date, the JPMCCI Aggregate Price Index Level or $JPMCCIPR_{inception}$ =100

The JPMCCI Aggregate Excess Return Index Level or $JPMACCIER_d$ on Index Valuation Day *d,* is:

$$JPMACCIER_d = JPMACCIER_{d-1} \times (1 + ADER_d)$$

where the "Aggregate Daily Excess Return" $ADER_d$ for Index Valuation Day *d* is:

$$ADER_d = \frac{A}{B} - 1$$

where:

$$A = \left\{ \frac{1}{PCF_{y_{m_{d-1}-1}}} \times \sum_c ACU^c_{y_{m_{d-1}-1}} \times RW^c_{d-1} \times \sum_n CW^c_{m_{d-1}-1,n} \times CP^c_{d,m_{d-1}-1,n} \right.$$

$$\left. + \frac{1}{PCF_{y_{m_{d-1}}}} \times \sum_c ACU^c_{y_{m_{d-1}}} \times \left(1 - RW^c_{d-1}\right) \times \sum_n CW^c_{m_{d-1},n} \times CP^c_{d,m_{d-1},n} \right\}$$

$$B = \left\{ \frac{1}{PCF_{y_{m_{d-1}-1}}} \times \sum_c ACU^c_{y_{m_{d-1}-1}} \times RW^c_{d-1} \times \sum_n CW^c_{m_{d-1}-1,n} \times CP^c_{d-1,m_{d-1}-1,n} \right.$$

$$\left. + \frac{1}{PCF_{y_{m_{d-1}}}} \times \sum_c ACU^c_{y_{m_{d-1}}} \times \left(1 - RW^c_{d-1}\right) \times \sum_n CW^c_{m_{d-1},n} \times CP^c_{d-1,m_{d-1},n} \right\}$$

On the Inception Date, the JPMCCI Aggregate Excess Return Index Level $JPMACCIER_{inception}$ =100.

The JPMCCI Aggregate Total Return Index Level or $JPMACCITR_d$ on Index Valuation Day *d,* is:

$$JPMACCITR_d = JPMACCITR_{d-1} \times (1 + ADER_d + TBR_d) \times \prod_{a \in A} (1 + TBR_a)$$

On the Inception Date, JPMCCI Aggregate Total Return Index Level or $JPMACCITR_{inception}$ =100.

JPMCCI Sector Price Indices, JPMCCI Excess Return Indices and JPMCCI Total Return Indices are calculated in the same manner as the JPMCCI Aggregate Indices, except that only the Aggregate Commodity Units of the JPMCCI Exchange Commodities included in the relevant JPMCCI Sector Index are used in the calculation of the relevant JPMCCI Sector Index. (Section F.7 of the Index Rules)

"Limit Day" means, with respect to a JPMCCI Exchange Commodity and its Relevant Exchange, any day on which there is a limitation on, or suspension of, the trading of options or futures contracts on any physical commodity that underlies a relevant JPMCCI Exchange Commodity imposed by the Relevant Exchange for such JPMCCI Exchange Commodity by reason of movements exceeding "limit up" or "limit down" levels permitted by the Relevant Exchange and that has a material adverse effect on trading volumes and liquidity as compared to other Scheduled Trading Days as determined by the Index Calculation Agent in its commercially reasonable discretion.

"Scheduled Index Valuation Day" means, for any JPMCCI Constituent Index, each Scheduled Trading Day with respect to at least 50% of the JPMCCI Exchange Commodities constituting such JPMCCI Constituent Index.

"Scheduled Trading Day" means, with respect to a JPMCCI Exchange Commodity, a day on which the Relevant Exchange for such JPMCCI Exchange Commodity is scheduled to be open for trading for its regular trading sessions and to publish a settlement price for such JPMCCI Exchange Commodity.

"Disrupted Day" means, with respect to a JPMCCI Exchange Commodity, a Scheduled Trading Day on which either (a) the settlement price for any Monthly Contract for such JPMCCI Exchange Commodity is not obtainable or (b) is a Limit Day with respect to such JPMCCI Exchange Commodity.

"Relevant Exchange" means, with respect to each Potential JPMCCI Exchange Commodity, the primary futures exchange on which futures contracts related to the physical commodity underlying such Potential JPMCCI Exchange Commodity are traded.

"Force Majeure Event" means any event beyond the control of the Index Calculation Agent, including any act of God, act of governmental authority, act of public enemy, or due to war, the outbreak or escalation of hostilities, fire, flood, civil commotion, insurrection, labor difficulty including, without limitation, any strike, other work stoppage, or slow-down, severe or adverse weather conditions, power failure, communications line or other technological failure.

Publication of Corrected Index Levels

In the event that a settlement price used in the calculation of any JPMCCI Constituent Index Level is corrected subsequent to the publication of such JPMCCI Constituent Index Level that employed such corrected settlement price and the correction is published by the Relevant Exchange for a JPMCCI Exchange Commodity included in such JPMCCI Constituent Index before the next following Rebalancing Date, or any other element used in the calculation of any JPMCCI Constituent Index Level is determined by the Index Calculation Agent, in its sole discretion, to have been incorrect prior to the next following Rebalancing Date, then the Index Calculation Agent may, if practicable and if the correction is deemed material by the Index Calculation Agent, in its sole discretion, adjust or correct the relevant JPMCCI Constituent Index Level published on any relevant Scheduled Index Valuation Day and publish such corrected JPMCCI Constituent Index Level as soon as it is reasonably practicable. (Section F.8 of the Index Rules)

Historical Limitations

There are limitations in the methodology used to calculate historical index levels of the JPMCCI Constituent Indices prior to the launch of JPMCCI. The Index Calculation Agent has exercised its discretion in varying the methodology of calculating such historical Index Levels for various reasons including data availability. For example, for years prior to 2003, the Aggregate Commodity Units were set to those of year 2003 because open interest data were not obtainable from the Futures Industries Association for many commodity contracts prior to 1999, making the first reliable Observation Period from November 1999 to October 2002. (Section N of the Index Rules)

Data Unavailability with regard to HMCOIP

In determining levels of JPMCCI prior to its actual launch in November 2007, in any year during which any HMCOIP could not be calculated due to missing MCOIP data, all the HMCOIPs of that year were set to the HMCOIPs of the following year for which complete MCOIP data were available. For example, if reliable open interest data were not available prior to 1997 (inclusive), then all the HMCOIPs for 1998 to 2000, all of which rely on MCOIPs of 1997, would have been set to the HMCOIPs of 2001, assuming that MCOIPs for 1998, 1999 and 2000 were intact. (Section N of the Index Rules)

The Index Calculation Agent and the Rules

The methodology employed in determining the composition and calculation of JPMCCI is set out in the calculations and procedures described in the Index Rules. JPMSC currently acts as Index Calculation Agent with respect to JPMCCI but may be replaced by a substitute index calculation agent at some future date (who, in the event of such replacement, shall be regarded for all purposes of JPMCCI as the Index Calculation Agent). For the avoidance of doubt, the substitution of any Index Calculation Agent will not be deemed to terminate JPMCCI or any instrument referencing JPMCCI. (Section A.4 of the Index Rules)

JPMS plc may from time to time revise, amend and/or supplement the Index Rules and in such event will publish the amended JPMCCI rules no later than one calendar month following such revision, amendment or supplement. (Section A.4 of the Index Rules)

The JPMCCI Supervisory Committee

In order to maintain objectivity in the administration and execution of JPMCCI, JPMS plc has, pursuant to the rules described below, formed the “JPMCCI Supervisory Committee.” The Index Calculation Agent will from time to time (and in any event within one month of any change in the composition of its membership) make available upon written request the names, titles and company affiliation of the individuals forming the JPMCCI Supervisory Committee. (Section A.3 of the Index Rules)

The JPMCCI Supervisory Committee will meet annually to review and approve the composition of JPMCCI for the following calendar year and any proposed modifications to the methodology of determining the composition and calculation of JPMCCI. (Section A.3 of the Index Rules)

The JPMCCI Supervisory Committee is composed of at least three voting members, each of whom is appointed by the Index Calculation Agent. Each voting member serving on the JPMCCI Supervisory Committee shall be independent. For the purposes of determining whether a particular member of the JPMCCI Supervisory Committee is independent, “independent” means that the individual in question is not an employee, director, officer, agent or affiliate of JPMorgan Chase & Co. or any of its affiliates and does not have a personal direct financial interest in JPMCCI or any financial product linked to JPMCCI while serving as a voting member of the JPMCCI Supervisory Committee. All voting members of the JPMCCI Supervisory Committee are sufficiently knowledgeable about commodity futures contracts and the commodities markets in general, as determined by the Index Calculation Agent in a good faith and commercially reasonable manner. The Index Calculation Agent may from time to time add or remove voting members of the JPMCCI Supervisory Committee; *provided* that such addition or removal is not a result of a particular vote of a specific committee member.

Additionally, upon the occurrence of a Disrupted Day, or any other extraordinary or unanticipated market events, the Index Calculation Agent may seek the advice of the JPMCCI Supervisory Committee on the necessary adjustments, methodological amendments or data corrections that may need to be implemented to JPMCCI.

In the event that GIRG ceases to act as Index Calculation Agent, the composition and role of the JPMCCI Supervisory Committee may be reviewed and amended by the successor Index Calculation Agent. (Section A.3 of the Index Rules)

Discontinuation of the JPMCCI; Alteration of Method of Calculation

With the approval of the JPMCCI Supervisory Committee, the Index Calculation Agent may cancel the calculation and publication of any JPMCCI Constituent Index. For example, upon the occurrence or existence of an Extraordinary Event, the Index Calculation Agent may cancel any JPMCCI Constituent Index if it determines, acting in good faith, that the objective of the relevant JPMCCI Constituent Index can no longer be achieved. (Section B.2 of the Index Rules)

If the Calculation Agent discontinues the publication of any relevant JPMCCI Constituent Index and the Index Calculation Agent or another entity publishes a successor or substitute index that the Index Calculation Agent determines, in its sole discretion, to be comparable to the discontinued JPMCCI Constituent Index (such index being referred to herein as a "successor index"), then the closing level of such JPMCCI Constituent Index on any relevant Determination Date or any other relevant date on which the closing level of the JPMCCI Constituent Index is to be determined will be determined by reference to the level of such successor index at the close of trading on the relevant exchange for the successor index on such day, subject to the necessary adjustments that the Index Calculation Agent will make for continuity purposes.

Upon any selection by the Index Calculation Agent of a successor index, the Index Calculation Agent will cause written notice thereof to be promptly furnished to the counterparties of the Commodity Index Derivative Transaction.

If the Index Calculation Agent discontinues the publication of any relevant JPMCCI Constituent Index prior to, and such discontinuation is continuing on a Determination Date or any other relevant date on which the closing level of such JPMCCI Constituent Index is to be determined and the Index Calculation Agent determines, in its sole discretion, that no successor index is available at such time, or the Index Calculation Agenthas previously selected a successor index and publication of such successor index is discontinued prior to, and such discontinuation is continuing on, such Determination Date, or such other relevant date, then the Index Calculation Agent will determine the closing level of such JPMCCI Constituent Index for such Determination Date or such other relevant date on such date. The closing level of such JPMCCI Constituent Index will be computed by the Index Calculation Agent in accordance with the formula for and method of calculating such JPMCCI Constituent Index or successor index, as applicable, last in effect prior to such discontinuation, using the daily settlement price or fixing level, as applicable (or, if trading in the relevant commodity futures contracts has been materially suspended or materially limited, the Index Calculation Agent's good faith estimate of the daily settlement price or fixing level, as applicable, that would have prevailed but for such suspension or limitation), at the close of the principal trading session on such date of each commodity futures contract most recently composing such JPMCCI Constituent Index or successor index, as applicable. Notwithstanding these alternative arrangements, discontinuation of the publication of a relevant JPMCCI Constituent Index or successor index, as applicable, may adversely affect the value of the Commodity Index Derivative Transactions.

If at any time the method of calculating any relevant JPMCCI Constituent Index or a successor index, or the level thereof, is changed in a material respect, or if such JPMCCI Constituent Index or a successor index is in any other way modified so that such JPMCCI Constituent Index or such successor index does not, in the commercially reasonable opinion of the Index Calculation Agent, fairly represent the level of such JPMCCI Constituent Index or successor index had such changes or modifications not been made, then the Index Calculation Agent will, at the close of business in New York City on each date on which the closing level of such JPMCCI Constituent Index is to be determined, make such calculations and adjustments as, in the good faith judgment of the Index Calculation Agent, may be necessary in order to arrive at a level of a commodity index comparable to such JPMCCI Constituent Index or such successor index, as the case may be, as if such changes or modifications had not been made, and the Index Calculation Agent will calculate the closing level of such JPMCCI Constituent Index with reference to such JPMCCI Constituent Index or such successor index, as adjusted. Accordingly, if the method of calculating any relevant JPMCCI Constituent Index or a successor index is modified so that the level of such JPMCCI Constituent Index or such successor index is a fraction of what it would have been if there had been no such modification, then the Index Calculation Agent will adjust its calculation of such JPMCCI Constituent Index or such successor index in order to arrive at a level of such JPMCCI Constituent Index or such successor index as if there had been no such modification.

RISK FACTORS RELATING TO THE JPMCCI COMMODITY INDICES

The following risk factors relate solely to JPMCCI Commodity Indices and supplements the other risk factors set forth in the accompanying disclosures related to any Commodity Index Derivatives Transaction between you and us. These risk factors should be read together with the risk factors set forth in the General Disclosure Statement, the Commodity Disclosure Annex, the Commodity Index Disclosure Annex and any other disclosure annex. ***You should carefully review these risk factors (including the risk factors relating to potential conflicts of interest) prior to making your investment decision to enter into a Commodity Index Derivatives Transaction.***

The Index Calculation Agent may cancel the calculation and publication of one or more JPMCCI Constituent Indices.

With the approval of the JPMCCI Supervisory Committee, the Index Calculation Agent may discontinue the calculation and publication of any JPMCCI Constituent Index. For example, following a change in a law, regulation or rule applicable to commodity futures contracts, the Index Calculation Agent may cancel publication of any JPMCCI Constituent Index if it determines that the objective of the relevant JPMCCI Constituent Index can no longer be achieved. If publication of a JPMCCI Constituent Index is discontinued prior to, and such discontinuation is continuing on, a date on which the closing level of such JPMCCI Constituent Index is to be determined, the Index Calculation Agent will either select a successor index or determine the closing level of such JPMCCI Constituent Index for such date. Although the Index Calculation Agent will only select a successor index that it determines, in its sole discretion, to be comparable to the discontinued JPMCCI Constituent Index and, if required to compute the closing level of any JPMCCI Constituent Index, will use, in good faith, the formula for and method of calculating such index, a discontinuation of the publication of any JPMCCI Constituent Index may adversely affect the value of the Commodity Index Derivative Transaction. See "— Discontinuation of the JPMCCI; Alteration of Method of Calculation."

JPMCCI has a limited operating history and may perform in unanticipated ways.

JPMCCI was established in November 2007, and therefore has limited historical performance. Any back-testing or similar analysis in respect of the JPMCCI must be considered illustrative only and may be based on estimates or assumptions not used by the Index Calculation Agent when determining JPMCCI levels. Past performance should not be considered indicative of future performance.

An investment in the Commodity Index Derivative Transaction carries the risks associated with the JPMCCI's open interest investment strategy.

JPMCCI seeks to offer a representative approach to passive commodity investing. Unlike other commodity indices which focus exposure at a single maturity (traditionally, the front month contract or a single deferred contract), JPMCCI seeks to track exposure along the entire futures curve (*i.e.*, exposure to futures contracts with different maturities) in proportion to their open interest.

No assurance can be given that the investment strategy used to construct the JPMCCI will be successful or that the JPMCCI will outperform any alternative investment that might be constructed from commodity indices that focus exposure at a single maturity.

Commodities prices are volatile and the roll return generated by rolling commodity futures included in the JPMCCI Constituent Indices will have an effect on the level of the JPMCCI Constituent Indices and the value of the Commodity Index Derivative Transaction.

JPMCCI is comprised of commodity futures with different maturities selected on the basis of historical open interest. Each month, contracts that are about to mature, whose weighting in the JPMCCI Constituent Indices have been decreased or that cease to be available for trading before the end of the next roll period will be rolled into contracts with different maturities. In addition, because JPMCCI is weighted by open-interest, all contracts included in JPMCCI will be re-weighted on a monthly basis, whether they are approaching maturity or not, to reflect the monthly change in their open interest. The act of replacing and re-weighting the commodity futures that comprise JPMCCI will generate a profit or loss known as the roll return. This return will be affected by a number of factors including, whether the prices of the relevant longer dated contracts are more or less than the prices of the shorter dated contracts. The roll return will generally be negative if the prices of the relevant longer dated contracts are greater than the prices of the shorter dated contracts. Conversely, if the prices of the longer dated contracts are less than the prices of the shorter dated contracts then the roll return will generally be positive. The prices of commodity futures can be volatile and the roll return generated by rolling commodity futures included in JPMCCI will have an effect, which can be positive or negative, on the JPMCCI, and therefore the level of the JPMCCI Constituent Indices and the value of the Commodity Index Derivative Transaction.

There can be no assurance that the historical average open interest figures will resemble the actual open interest for any particular commodity futures contract.

JPMCCI is intended to be a benchmark weighted across the commodity futures curve by open interest so that it is representative of the investment opportunities in the broad commodity futures market. However, it is impossible to weight by actual open interest because those figures cannot be determined at the time the weightings are calculated. JPMCCI is therefore weighted using historical average open interest figures, averaged over the previous three years. A three year average was chosen by the Index Calculation Agent to capture structural and cyclical shifts in liquidity and filter out any short term anomalies. However, there can be no assurance that the historical average open interest figures will resemble the actual open interest for any particular commodity futures contract.

The Index Calculation Agent has discretion in relation to the JPMCCI and is under no obligation to consider your interests as a counterparty of the Commodity Index Derivative Transaction.

The Index Calculation Agent has responsibility for calculating and publishing JPMCCI levels. It is entitled to exercise discretion in relation to the JPMCCI, including but not limited to, the determination of the levels to be used in the event of market disruptions that affect its ability to calculate and publish the strategy and the interpretation of the JPMCCI rules. Although the Index Calculation Agent will make all determinations and take all action in relation to the JPMCCI acting in good faith, it should be noted that such discretion could have an impact, positive or negative, on JPMCCI levels. The Index Calculation Agent is under no obligation to consider your interests as a counterparty of the Commodity Index Derivative Transaction in taking any actions.

JPMCCI is not a fully diversified portfolio.

Diversification is generally considered to reduce the amount of risk associated with generating returns. There can be no assurance, however, that an investment in an instrument related to the JPMCCI Constituent Indices will be sufficiently diversified at any time to reduce or minimize such risks to any extent. In particular, if the JPMCCI Constituent Indices are weighted to reflect a relatively high concentration of exposure to certain JPMCCI indices, the extent to which your overall investment portfolio is diversified will be reduced relative to an investment in an instrument with less concentrated exposures.

Disclosure Supplement D for the J.P. Morgan Contag Beta Indices
(dated April 22, 2016)

This Disclosure Supplement for J.P. Morgan Contag Beta Indices, dated April 22, 2016 (the "Disclosure Supplement"), supplements and should be read in conjunction with the General Disclosure Statement ("General Disclosure Statement") and the Disclosure Annex for Commodity Derivatives (the "Commodities Disclosure Annex"), each dated April 26, 2013, published by the International Swaps & Derivatives Association Inc. ("ISDA") and the Disclosure Annex For Commodity Index Derivative Transactions, dated April 22, 2016 (the "Commodity Index Disclosure Annex"), published by JPMorgan Chase Bank, National Association. NOTHING IN THIS SUPPLEMENT AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions in this Disclosure Supplement of the operation of Commodity Index Derivative Transactions (as defined below) and the consequences of various events are in all cases subject to the actual terms of a Commodity Index Derivative Transaction executed between you and us and its governing documentation.

When we refer to a "Commodity Index Derivative Transaction", we are referring to Transactions in which the underlying(s) is/are an index/indices that reference(s) physical commodities or contracts for the future delivery of physical commodities. The terms of a Commodity Index Derivative Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Commodity Index Derivative Transaction and its governing documentation. Before entering into a Commodity Index Derivative Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under the Commodity Index Derivative Transaction, its value and its appropriateness for your particular objectives.

To the extent you enter into a Commodity Index Derivative Transaction that references a Bloomberg Commodity Index or GSCI Index, in whole or in part, or another index that references a Bloomberg Commodity Index or GSCI Index, as one of its constituents, you should carefully review the disclosure set forth herein. This Disclosure Supplement, together with the rules for a particular index ("Index Rules"), the documents governing your Commodity Index Derivative Transaction, the disclosure annexes referenced above and any other disclosure delivered by us to you related to your specific Commodity Index Derivative Transaction, constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Commodity Index Derivative Transaction. You should carefully consider all of these documents prior to entering into a Commodity Index Derivative Transaction.

General

Table A below lists the names and Bloomberg tickers for each of the "Benchmark" J.P. Morgan Contag Beta Indices (each, a "Benchmark Index" and, collectively the "Benchmark Indices").

Table A. The Benchmark Indices

Index Name	Bloomberg Ticker
J.P. Morgan Contag Beta Full Energy Class A Excess Return Index	JCTABFEE
J.P. Morgan Contag Beta Light Energy Class A Excess Return Index	JCTABLEE
J.P. Morgan Contag Beta Light Energy Class A Total Return Index	JCTABLET

J.P. Morgan Contag Beta Alternate Benchmark Class A Excess Return Index	JCTABDJE
J.P. Morgan Contag Beta Alternate Benchmark Class A Total Return Index	JCTABDJT
J.P. Morgan Contag Beta Full Energy Class A Total Return Index	JCTABFET

Table B below lists the names and Bloomberg tickers for each of the “Sector” J.P. Morgan Contag Beta Indices (each, a “Sector Index” and, collectively the “Sector Indices”).

Table B. The Sector Indices

Index Name	**Bloomberg Ticker**
J.P. Morgan Contag Beta Agriculture Class A Excess Return Index	JCTABAGE
J.P. Morgan Contag Beta Energy Class A Excess Return Index	JCTABENE
J.P. Morgan Contag Beta Industrial Metals Class A Excess Return Index	JCTABIME
J.P. Morgan Contag Beta Livestock Class A Excess Return Index	JCTABLVE
J.P. Morgan Contag Beta Petroleum Class A Excess Return Index	JCTABPTE
J.P. Morgan Contag Beta Precious Metals Class A Excess Return Index	JCTABPME
J.P. Morgan Contag Beta Agriculture Class A Total Return Index	JCTABAGT
J.P. Morgan Contag Beta Energy Class A Total Return Index	JCTABENT
J.P. Morgan Contag Beta Industrial Metals Class A Total Return Index	JCTABIMT
J.P. Morgan Contag Beta Livestock Class A Total Return Index	JCTABLVT
J.P. Morgan Contag Beta Petroleum Class A Total Return Index	JCTABPTT
J.P. Morgan Contag Beta Precious Metals Class A Total Return Index	JCTABPMT

Table C below lists the names and Bloomberg tickers for each of the “Single Commodity” J.P. Morgan Contag Beta Indices (each, a “Single Commodity Index” and, collectively the “Single Commodity Indices”).

Table C. The Single Commodity Indices

Name of Index	**Bloomberg Ticker**
J.P. Morgan Contag Beta WTI Crude Oil Excess Return Index	JCTABCLE
J.P. Morgan Contag Beta Brent Crude Oil Excess Return Index	JCTABCOE
J.P. Morgan Contag Beta Heating Oil Excess Return Index	JCTABHOE

J.P. Morgan Contag Beta Gas Oil Excess Return Index	JCTABQSE
J.P. Morgan Contag Beta Gasoline Excess Return Index	JCTABXBE
J.P. Morgan Contag Beta Natural Gas Excess Return Index	JCTABNGE
J.P. Morgan Contag Beta Wheat Excess Return Index	JCTABWE
J.P. Morgan Contag Beta Kansas Wheat Excess Return Index	JCTABKWE
J.P. Morgan Contag Beta Soybeans Excess Return Index	JCTABSE
J.P. Morgan Contag Beta Soybean Meal Excess Return Index	JCTABSME
J.P. Morgan Contag Beta Corn Excess Return Index	JCTABCE
J.P. Morgan Contag Beta Coffee Excess Return Index	JCTABKCE
J.P. Morgan Contag Beta Sugar Excess Return Index	JCTABSBE
J.P. Morgan Contag Beta Cotton Excess Return Index	JCTABCTE
J.P. Morgan Contag Beta Cocoa Excess Return Index	JCTABCCE
J.P. Morgan Contag Beta Aluminum Excess Return Index	JCTABLAE
J.P. Morgan Contag Beta Copper Excess Return Index	JCTABLPE
J.P. Morgan Contag Beta Lead Excess Return Index	JCTABLLE
J.P. Morgan Contag Beta Nickel Excess Return Index	JCTABLNE
J.P. Morgan Contag Beta Zinc Excess Return Index	JCTABLXE
J.P. Morgan Contag Beta Gold Excess Return Index	JCTABGCE
J.P. Morgan Contag Beta Silver Excess Return Index	JCTABSIE
J.P. Morgan Contag Beta Lean Hogs Excess Return Index	JCTABLHE
J.P. Morgan Contag Beta Live Cattle Excess Return Index	JCTABLCE
J.P. Morgan Contag Beta Feeder Cattle Excess Return Index	JCTABFCE
J.P. Morgan Contag Beta Brent Crude Oil Total Return Index	JCTABCOT
J.P. Morgan Contag Beta WTI Crude Oil Total Return Index	JCTABCLT
J.P. Morgan Contag Beta Copper Total Return Index	JCTABLPT

The Benchmark Indices, Sector Indices and Single Commodity Indices are part of the the J.P. Morgan Contag Beta Indices family and are collectively referred to as the “Contag Beta Indices”. Unless otherwise indicated, any description herein of the "Contag Beta Indices" or a "Contag Beta Index" generally applies to the Benchmark Indices, Sector Indices and Single Commodity Indices.

The Contag Beta Indices were developed and are maintained by J.P. Morgan Securities plc ("JPMS plc") and are calculated by the JPMorgan Global Index Research Group ("GIRG"), a separate division of J.P. Morgan Securities LLC, which will use only employees of JPMorgan Chase Bank, National Association for purposes of calculating the Contag Beta Indices. Each Contag Beta Index is a notional rules-based proprietary index developed by JPMS plc, which is intended to capture the return of the synthetic exposure to a notional basket consisting of a number of commodities (which will be one, in the case of a Single Commodity Index) specified in the applicable index rules, each of which is represented by a commodity futures contract selected by a methodology developed by JPMS plc, which we refer to as the "Selection Methodology." The Selection Methodology uses the slope of the futures curve for each eligible commodity to select the futures contract for each eligible commodity with the highest level of backwardation (or in the absence of backwardation, the least amount of contango), subject to certain limitations. "Backwardation" refers to the situation where the futures contracts for a commodity with a delivery month further in time have lower contract prices than futures contracts for the same commodity with a delivery month closer in time. "Contango" refers to the situation where the futures contracts for a commodity with a delivery month further in time have higher contract prices than futures contracts for the same commodity with a delivery month closer in time.

The description of the strategy and methodology underlying the Contag Beta Indices (including the Selection Methodology) is based on rules for that specific Contag Beta Index as formulated by JPMS plc (which we refer to as the "Contag Beta Rules") and is qualified by the full text of the applicable Contag Beta Rules. The applicable Contag Beta Rules, and not this description, will govern the calculation and constitution of each Contag Beta Index and other decisions and actions related to their maintenance. The Contag Beta Rules are the intellectual property of JPMS plc, and JPMS plc reserves all rights with respect to its ownership of the Contag Beta Indices. The Contag Beta Indices were created on or after May 29, 2009 and therefore have limited historical performance.

Each Contag Beta Index will be either an excess return or total return index. The Contag Beta Indices are intended to capture the return of synthetic long exposure to either a single Contag Contract for a Relevant Commodity (in the case of the Single Commodity Indices) or a basket of Contag Contracts for a specified number of Eligible Commodities (in the case of the Benchmark Indices and Sector Indices). The Contag Beta Indices are intended to include the effect of the monthly composition change of such Contag Beta Index due to the roll from the Contag Contract(s) for a relevant month to the Contag Contract(s) for the next relevant month. The "Contag Contract" for each Eligible Commodity is the futures contract for such Eligible Commodity selected according to the Selection Methodology as the one with the highest level of backwardation (or in the absence of backwardation, the least amount of contango), subject to certain limitations. The "Eligible Commodities" are the commodities that are currently represented by the S&P GSCI™ and the Bloomberg Commodity Index℠ and are set forth in Table 1 *(Eligible Commodities)* under "—Selection Methodology" below. A"Relevant Commodity" is the Eligible Commodity to which a Single Commodity Index takes exposure through the appropriate Contag Contract. Each month, the Selection Methodology will determine the Contag Contract(s) to which the Contag Beta Indices should be synthetically exposed, based on the settlement price of the futures contract(s) as published by the relevant exchange (which we refer to as the "Contract Price") for the last Dealing Day of the calendar month immediately preceding the relevant month (each of which we refer to as a "Contract Selection Date"). A "Dealing Day" is a day on which the NYSE Euronext is scheduled to open for trading for its regular trading session. When a new Contag Contract is selected, each Contag Beta Index transfers its synthetic exposure from the previously selected Contag Contract to the new Contag Contract, such exposure being gradually transferred in equal percentages per Dealing Day over a roll period in order to limit any adverse impact of such rolling process on the level of the relevant Contag Beta Index. The Selection Methodology is described in further detail under "— Selection Methodology" below.

The Contag Beta Indices are rebalanced monthly on the Rebalancing Date, which is the first day of each calendar month on which the NYSE Euronext is scheduled to be open for its regular trading session.

The Selection Methodology uses, among other criteria, the slope of the futures curve for each Eligible Commodity to select the futures contract for each Eligible Commodity with the highest level of backwardation (subject to certain limitations). "Backwardation" refers to the situation where the futures contracts for a commodity with a delivery month further in time have lower contract prices than futures contracts for the same commodity with a delivery month closer in time. If there is no futures contract for one or more eligible commodities with backwardation, the Selection Methodology will select the futures contract with the lowest level of contango for any such commodities. "Contango" refers to the situation where the futures contracts for a commodity with a delivery month further in time have higher contract prices than futures contracts for the same commodity with a delivery month closer in time. The weightings of the commodities the futures contracts of which underlie each of the Benchmark Indices (other than J.P. Morgan Contag Beta Alternate Benchmark Class A Excess Return Index or J.P. Morgan Contag Beta Alternate Benchmark Class A Total Return Index, the "Alternative Benchmark Indices") and the Sector Indices are determined, on an annual basis, by reference to the contract production weights calculated by S&P Dow Jones Indices LLC ("SPDJI") for the S&P GSCI™ Index Excess Return or the S&P GSCI™ Light Energy Index (each, a "S&P GSCI Family-Index"). The weights for each Alternative Benchmark Index are determined, on an annual basis, by reference to the commodity index percentages calculated by Bloomberg Finance L.P. for the Bloomberg Commodity Index℠. Each single commodity index has a 100% weight in the relevant Eligible Commodity.

Each Contag Beta Index is described as a "notional" or "synthetic" portfolio or basket because its reported level does not represent the value of any actual assets held by any person and there is no actual portfolio of assets in which any person has any ownership interest. The level of each excess return Contag Beta Index at any point is the return of the hypothetical uncollateralized[3] portfolio of the relevant Contag Contract(s), which are weighted in accordance with the weighting algorithm described below. The level of each total return Contag Beta Index at any point is the return of the hypothetical collateralized portfolio of the relevant Contag Contracts, which are weighted in accordance with the weighting algorithm described below, plus interest that could be earned on funds committed to the trading of the underlying futures contracts, as represented by the 3-month Treasury Bill rate. Each Contag Beta Index had an initial level of 100 as of December 30, 1994 (which we refer to as the "Initial Index Day").

Calculation and Publication of the Contag Beta Index Level

JPMS plc, the sponsor of the Contag Beta Indices (with respect to this Disclosure Supplement, the "Index Sponsor"), has designated GIRG to act as calculation agent for the Contag Beta Indices (with respect to this Disclosure Supplement, the "Index Calculation Agent").

Subject to the occurrence of a Market Disruption (as described below), the Long Constituent Calculation Agent will calculate and publish the level of each Contag Beta Index on each Dealing Day (which we refer to as the "Index Level"), reported to four (4) decimal places, on the Bloomberg ticker page identified for the relevant Contag Beta Index in the tables above.

[3] In the case of any Index other than a Total Return Index.

Commodity Weights

Determining Commodity Weights for the Benchmark Indices (other than the Alternative Benchmark Indices) and the Sector Indices

Each Eligible Commodity is attributed a decimal number that represents the number of units of such Eligible Commodity included in the Nominal Basket used to calculate the Index Level for the Benchmark Index, referred to as a "Commodity Weight". One difference between one particular Contag Beta Index as compared to another Contag Beta Index is the way in which the Commodity Weights are determined and, if applicable, the deduction of an adjustment factor. Eligible Commodities include (but are not limited to) those commodities referenced by the S&P GSCI™ and S&P GSCI™ Light Energy Index.

The Commodity Weight for each Eligible Commodity for certain of the Contag Beta Indices is based on the Contract Production Weight, determined as specified in the document setting out the rules of the S&P GSCI™ indices entitled "S&P GSCI™ Index Methodology" as updated, modified and superseded from time to time by S&P, the sponsor of the S&P GSCI™, which we refer to as the "S&P GSCI Index Sponsor" (the "S&P GSCI Methodology"). For example, the Commodity Weight for each Eligible Commodity in the J.P. Morgan Contag Beta Full Energy Class A Excess Return Index and the J.P. Morgan Contag Beta Full Energy Class A Total Return Index is equal to the Contract Production Weight of the relevant Designated Contract in the S&P GSCI™ (Bloomberg ticker: SPGCCIP Index) for the S&P GSCI Period corresponding to the relevant Weights Period for the J.P. Morgan Contag Beta Full Energy Class A Excess Return Index and the J.P. Morgan Contag Beta Full Energy Class A Total Return Index, respectively; and the Commodity Weight for each Eligible Commodity in the J.P. Morgan Contag Beta Light Energy Class A Excess Return Index and the J.P. Morgan Contag Beta Light Energy Class A Total Return Index is equal to the Contract Production Weight of the relevant Designated Contract in the S&P GSCI™ Light Energy Index (Bloomberg ticker: SPGCLEP Index) for the S&P GSCI Period corresponding to the relevant Weights Period for the J.P. Morgan Contag Beta Light Energy Class A Excess Return Index and the J.P. Morgan Contag Beta Light Energy Class A Total Return Index, respectively.

Each Commodity Weight for an Eligible Commodity is calculated with respect to a Weights Period. The "Weights Period" for the Benchmark Indices is the period beginning on the first calendar day of the first month of the S&P GSCI Period, to and including the last calendar day of the month immediately preceding the last day of the S&P GSCI Period.

"Contract Production Weight," with respect to each Eligible Commodity, means the Contract Production Weight assigned to that Designated Contract included in the S&P GSCI™ or the S&P GSCI™ Light Energy Index, as applicable, in accordance with the S&P GSCI Methodology. The Contract Production Weights, or CPWs, used in calculating the S&P GSCI™ are derived from world or regional production averages, as applicable, of the relevant commodities, and are calculated based on the total quantity traded for the relevant contract and the world or regional production average, as applicable, of the underlying commodity. However, if the volume of trading in the relevant contract, as a multiple of the production levels of the commodity, is below specified thresholds, the CPW of the contract is reduced until the threshold is satisfied. This is designed to ensure that trading in each such contract is sufficiently liquid relative to the production of the commodity. The CPW for the energy-related commodities in the S&P GSCI™ is divided by 4 to get the CPW for the Designated Contracts included in the S&P GSCI™ Light Energy Index.

"Designated Contract" has the same meaning as in the S&P GSCI Methodology. The "Designated Contract" means a particular contract included in the S&P GSCI for a given S&P GSCI Period, based on eligibility criteria set forth in section II of the S&P GSCI Methodology.

"S&P GSCI Period" has the same meaning as in the S&P GSCI Methodology. The "S&P GSCI Period" means the period beginning on the fifth S&P GSCI Business Day of the calendar month in which new Contract Production Weights first become effective, and ending on the S&P GSCI Business Day immediately preceding the first day of the next following S&P GSCI Period.

"S&P GSCI Business Day" means a day on which the S&P GSCI™ indices are calculated, as determined by the NYSE Euronext holiday & hours schedule.

Regular Amendments to Commodity Weights for Benchmark Indices (other than the Alternative Benchmark Indices) and the Sector Indices

The Commodity Weights in respect of the Contag Beta Indices are determined by reference to the Contract Production Weights as specified in the S&P GSCI Methodology and as described above. The Commodity Weights for the Contag Beta Indices are expected to change on an annual basis in line with the frequency with which the Contract Production Weights are routinely updated by the S&P GSCI Index Sponsor. From time to time the S&P GSCI Index Sponsor may change the Contract Production Weights on an intra-annual basis, in which case a new S&P GSCI Period will begin, in which case, corresponding changes will be made by the Index Sponsor to the Weights Period for the Contag Beta Indices. The Commodity Weights for the Contag Beta Indices in respect of a given Weights Period will always be equal to the Contract Production Weights in respect of the corresponding S&P GSCI Period.

Determining Commodity Weights for the Alternative Benchmark Indices

Each Eligible Commodity is attributed a decimal number that represents the number of units of such Eligible Commodity included in the Nominal Basket used to calculate the Index Level for an Alternative Benchmark Index, referred to as a "Commodity Weight." The Commodity Weight for each Eligible Commodity in a Sector Index is equal to:

$$\frac{CIP_c}{CPO_d^c(d-1)}$$

where:

CIP_c is, with respect to DJ-UBS CI℠ Index (Bloomberg ticker: DJUBS), the Commodity Index Percentage for Eligible Commodity c;

$CPO_d^c(d-1)$ is the Contract Price Outgoing for c with Valuation Day d-1 and Composition Day d; and

d is the first day of the roll period in the first month of the new Weights Period,

provided, however, that if an Eligible Commodity c is not a Bloomberg Commodity Index Commodity, then such Eligible Commodity c will have a Commodity Weight equal to zero.

"Contract Index Percentage" has the meaning given in the document setting out the rules of the DJ-UBS CI℠ Indices entitled "DJ-UBS CI℠ Index Methodology" as updated, modified and superseded from time to time by the sponsor of the DJ-UBS CI℠ Index, which we refer to as the "DJ-UBS℠ Index Sponsor" (the "DJ-UBS CI Methodology").

"Contract Price Outgoing" means the Contract Price on Dealing Day vd (the "Valuation Day") of the Outgoing Contract for Dealing Day cd (the "Composition Day") for Eligible Commodity c.

“Current Month” means, in relation to a Dealing Day, the calendar month in which such day falls.

“Outgoing Contract” means, in respect of an Eligible Commodity and Dealing Day d, the applicable Contag Contract for the Previous Month.

“Previous Month” means, in relation to a Dealing Day d, the calendar month immediately preceding the Current Month.

“Weight Period” means, with respect to DJ-UBS CI℠ Index (Bloomberg ticker: DJUBS), the period from and including the first Dealing Day of the calendar month in which the CIM Determination Date t occurs through and including the first Dealing Day of the calendar month in which the CIM Determination Date t +1 occurs.

“CIM Determination Date” has the meaning given in the DJ-UBS CI Methodology.

Regular Amendments to Commodity Weights for the Alternative Benchmark Indices

The Commodity Weights in respect of the Alternative Benchmark Indices are determined by reference to the Commodity Index Percentages as specified in the DJ-UBS CI Methodology and as detailed above. The Commodity Weights for the Alternative Benchmark Indices are expected to change on an annual basis in line with the frequency with which the Commodity Index Percentages are routinely updated by the DJ-UBS Index Sponsor in respect of the DJ-UBS CI℠ Index. Furthermore, from time to time the DJ-UBS Index Sponsor may change the Commodity Index Percentages on an intra-annual basis, in which case a new Weights Period will begin on the first Dealing Day of the calendar month in which the CIM Determination Date t occurs for the Commodity Index Percentages. Corresponding changes will be made by the Index Sponsor to the Weights Period for the Alternative Benchmark Indices. The Commodity Weights for the Alternative Benchmark Indices in respect of a given Weights Period will always be determined by reference to the Commodity Index Percentages in respect of the corresponding CIM Determination Date.

Determining Commodity Weights for the Single Commodity Indices

The Commodity Weight for the Relevant Commodity in each Single Commodity Index is equal to 1 and the Commodity Weight of all other Eligible Commodities is 0.

Each Commodity Weight is calculated with respect to a Weights Period. There is only one “Weights Period” for all applicable months in connection with the calculation of the Single Commodity Indices.

Normalizing Constant

The “Normalizing Constant” is a number associated with each Weights Period, and is an adjustment to allow for the fact that the Commodity Weights change from one Weights Period to the next. The Commodity Weights are not percentage weights which would sum to 100% in the Nominal Basket in all cases, and accordingly, changes in the Commodity Weights may have the unintended effect of increasing or decreasing the total weight of the Nominal Basket. This, in turn, could distort the intended rate of rolling from the applicable Contag Contracts for the month preceding the current month (which we refer to as the “Outgoing Contracts”) to the applicable Contag Contracts for the current month (which we refer to as the “Incoming Contracts”). Such rolling occurs in the sequence of Dealing Days over which the exposure of the Contag Beta Index is rolled from the Outgoing Contracts to the Incoming Contracts (the “Roll Period”). The monthly Roll Period for each Contag Beta Index is the first 10 Dealing Days of the relevant month.

A new Normalizing Constant (which we refer to as the “New Normalizing Constant”) is determined by the Long Constituent Calculation Agent with respect to each subsequent Weights Period (which we refer to as the “New Weights Period”) based on:

(a) the Contract Prices on the Dealing Day immediately preceding the first Dealing Day of the first Roll Period of the New Weights Period;

(b) the Commodity Weights for (x) the New Weights Period and (y) the Weights Period immediately preceding the New Weights Period (which we refer to as the “Old Weights Period”); and

(c) the Normalizing Constant associated with the Old Weights Period (which we refer to as the “Old Normalizing Constant”).

The Normalizing Constant:

(a) for the Weights Period following the Initial Index Day is 1,000; and

(b) thereafter, for any New Weights Period, is determined by the Long Constituent Calculation Agent in accordance with the following formula:

$$NC_{new} = NC_{old} \times \frac{\sum_{c} CWI_d^c \times CPO_d^c\ (d-1)}{\sum_{c} CWO_d^c \times CPO_d^c\ (d-1)}$$

where:

NC_{new}	means the New Normalizing Constant;
NC_{old}	means the Old Normalizing Constant, being 1,000 if the Old Weights Period is the first Weights Period;
CWI_d^c	means the Commodity Weight in respect of Dealing Day d and Eligible Commodity c for the Weights Period in which such Dealing Day falls (the “Commodity Weight Incoming”);
CWO_d^c	means the Commodity Weight in respect Dealing Day d and Eligible Commodity c for the Weights Period for the month immediately preceding the relevant month in which such Dealing Day falls (the “Commodity Weight Outgoing”);
$CPO_d^c\ (d-1)$	means the Contract Price on Dealing Day vd (the “Valuation Day”) of the Outgoing Contract for Dealing Day cd (the “Composition Day”) (the “Contract Price Outgoing”) in respect of Eligible Commodity c with Composition Day d and Valuation Day d-1; and
d	means the first Dealing Day of the first Roll Period of the New Weights Period.

The New Normalizing Constant is applicable to the whole of the New Weights Period. During the first Roll Period of the New Weights Period, the Nominal Basket will be based on a combination of the Commodity Weights for the Old Weights Period and the Commodity Weights for the New Weights Period.

The Commodity Weights given to the Outgoing Contracts are adjusted by the ratio of the New Normalizing Constant to the Old Normalizing Constant as described further in " — The Nominal Basket."

Contract Roll Weights

The exposure of each Contag Beta Index to the Contag Contract in respect of an Eligible Commodity is rolled from the Outgoing Contract to the Incoming Contract over the course of a Roll Period. The Outgoing Contracts and the Incoming Contracts for an Eligible Commodity are assigned a weighting (which we refer to as the "Contract Roll Weight Outgoing" and the "Contract Roll Weight Incoming," respectively, and together, the "Contract Roll Weights"), determined as further described below.

In respect of an Eligible Commodity c and a Dealing Day d, each of the Contract Roll Weight Incoming and Contract Roll Weight Outgoing is a number between 0.0 and 1.0, representing the fraction of the weight for that Eligible Commodity given to the Incoming Contract and the Outgoing Contract, respectively, and is calculated by the Long Constituent Calculation Agent as described below. The sum of the Contract Roll Weight Outgoing and the Contract Roll Weight Incoming is always equal to 1.

The Contract Roll Weight on any Dealing Day in a Roll Period

The Contract Roll Weights on each i-th Dealing Day (d_i) of the Roll Period for a relevant month (where i is between 1 and 10, inclusive) are determined by the Long Constituent Calculation Agent as follows:

$$CRWI_{d_i}^{c} = \frac{i}{10}$$

$$CRWO_{d_i}^{c} = 1 - \frac{i}{10}$$

where:

$CRWI_{d_i}^{c}$ means the Contract Roll Weight Incoming for Eligible Commodity c and Dealing Day d;

$CRWO_{d_i}^{c}$ means the Contract Roll Weight Outgoing for Eligible Commodity c and Dealing Day d; and

d_i means the i-th Dealing Day of the Roll Period.

The Contract Roll Weight on any Dealing Day which is not in the Roll Period

The Contract Roll Weights on each Dealing Day d which is not during the Roll Period for a relevant month are determined by the Long Constituent Calculation Agent as follows:

(a) In respect of any Dealing Day d of the relevant month prior to the start of the Roll Period for such relevant month, the Contract Roll Weight Incoming is 0.0 and the Contract Roll Weight Outgoing is 1.0.

(b) In respect of any Dealing Day d of the relevant month following the last Dealing Day of the Roll Period for such relevant month, the Contract Roll Weight Incoming is 1.0 and the Contract Roll Weight Outgoing is 0.0.

For example, because the Roll Period for each Contag Beta Index begins on the first Dealing Day of a relevant month and ends on the tenth Dealing Day of that month, in the absence of Market Disruptions, the Contract Roll Weights would be as shown as follows:

Dealing Day d of the Relevant Month	Contract Roll Weight Outgoing	Contract Roll Weight Incoming
1 (first Dealing Day of Roll Period)	0.90	0.10
2	0.80	0.20
3	0.70	0.30
4	0.60	0.40
5	0.50	0.50
6	0.40	0.60
7	0.30	0.70
8	0.20	0.80
9	0.10	0.90
10 (the tenth and last Dealing Day of Roll Period)	0.0	1.0
11	0.0	1.0
etcetera	etcetera	etcetera

Adjustment of the roll for Disrupted Days

If any Dealing Day during the Roll Period is a Disrupted Day (as described under "— Market Disruptions to the Contag Beta Indices") for either an Incoming Contract or an Outgoing Contract, then the portion of the roll which was scheduled to take place on that Dealing Day for the affected Eligible Commodity will be postponed until the next following Dealing Day which is not a Disrupted Day for either of the Incoming Contract or Outgoing Contract in respect of such Eligible Commodity, irrespective of whether such day is already a day on which a portion of the roll is scheduled to take place.

For example, if the first and second Dealing Days of the relevant month are Disrupted Days for the Eligible Commodity Corn (CBOT); then the Contract Roll Weights for Corn (CBOT) would be as follows:

Dealing Day d of the relevant month	$CRWO_d^c$	$CRWI_d^c$

1 (first Dealing Day of the Roll Period that is a Disrupted Day)	1.0	0.0
2 (Disrupted Day)	1.0	0.0
3	0.70	0.30
4	0.60	0.40
5	0.50	0.50
6	0.40	0.60
7	0.30	0.70
8	0.20	0.80
9	0.10	0.90
10 (the tenth and last Dealing Day of Roll Period)	0.0	1.0
11	0.0	1.0
etcetera	etcetera	etcetera

The Nominal Basket

The Nominal Basket for each Contag Beta Index is a nominal basket of Futures Contracts representing the synthetic exposure of that Contag Beta Index. A particular composition of the Nominal Basket is associated with each Composition Day, which is the Dealing Day in respect of which the Nominal Basket is composed. Furthermore, a level of the Nominal Basket composed in respect of that Composition Day is associated with each Valuation Day, which is the Dealing Day on which the Nominal Basket is valued, defined as follows:

$$NB_{cd}\,(vd) = \frac{NCI}{NCO} \sum_{c} CWO^{c}_{cd} \times CRWO^{c}_{cd} \times CPO^{c}_{cd}\,(vd) + \sum_{c} CWI^{c}_{cd} \times CRWI^{c}_{cd} \times \mathrm{CPI}^{c}_{cd}\,(vd)$$

where:

$N\mathrm{B}_{cd}\,(vd)$ means the level of the Nominal Basket composed in respect of Dealing Day cd (“Composition Day”), valued as at Dealing Day vd (“Valuation Day”);

NCO means the Normalizing Constant in respect of the Weights Period including the previous month as at Dealing Day cd;

NCI means the Normalizing Constant in respect of the Weights Period including the current month as at Dealing Day cd;

c means an Eligible Commodity, where the summation sign ($\sum$) indicates summation over all Eligible Commodities;

cd means the Dealing Day in respect of which the Nominal Basket is composed; and

vd means the Dealing Day in respect of which the Nominal Basket is valued.

Accordingly, the value of the Nominal Basket in respect of a Dealing Day (the Composition Day) is based on the weighted Contract Price of each Outgoing Contract valued as of the Valuation Day and the weighted Contract Price of each Incoming Contract valued as of the Valuation Day, and is adjusted by the Normalizing Constants.

The Index Level for each Contag Beta Index

The Index Level for each Contag Beta Index on the Initial Index Day was 100 (the "Initial Index Level").

The Index Level for each Contag Beta Index is determined in respect of each Dealing Day by reference to the Index Level published in respect of the immediately preceding Dealing Day and the notional return on the exposure of such Contag Beta Index to the relevant Contag Contracts from the close of business on the Relevant Exchanges on the immediately preceding Dealing Day to the close of business on the Relevant Exchanges on such Dealing Day. This notional return is measured by reference to the Contract Prices of the relevant Contag Contracts on such Dealing Days. Where one or more Relevant Exchanges is closed on a Dealing Day, this will constitute a Market Disruption and the Contract Prices of the affected Eligible Commodities will be determined in accordance with "— Market Disruptions to the Contag Beta Indices."

"Relevant Exchange" means, in respect of an Eligible Commodity, the exchange on which such futures contract is listed, or any successor to such exchange.

The Index Level for each excess return Contag Beta Index

In respect of each Dealing Day following the Initial Index Day, the Index Level for each excess return Contag Beta Index will be determined by the Long Constituent Calculation Agent, representing the cumulative effect of the Investment Return (as described below) since the Initial Index Day, calculated in accordance with the following formula:

$$Index_d = Index_{d-1} \times \left(1 + IR_d\right)$$

where:

IR_d means the Investment Return for Dealing Day d, which is determined by the Long Constituent Calculation Agent in accordance with the following formula:

$$IR_d = \frac{\mathrm{NAR}_d}{NAI_{d-1}} - 1$$

where:

NAI_{d-1} means the Nominal Amount Invested as at Dealing Day d-1, which is $\mathrm{NB}_{d-1}(d-1)$, the level of the Nominal Basket composed in respect of Dealing Day d-1, valued as at Dealing Day d-1; and

NAR_d means the Nominal Amount Returned as at Dealing Day d, which is $\mathrm{NB}_{d-1}(d)$, the level of the Nominal Basket composed in respect of Dealing Day d-1, valued as at Dealing Day d.

The Index Level for each total return Contag Beta Index

In respect of each Dealing Day following the Initial Index Day, the Index Level for each total return Contag Beta Index will be determined by the Index Calculation Agent. The Index Level of a total return Contag Beta Index represents the cumulative effect of the Investment Return (as described below) since the Initial Index Day, calculated in accordance with the following formula:

$$IndexTR_d = IndexTR_{d-1} \times \left[1 + IR_d + TBR_d\right] \times \left(1 + TBR_d\right)^{A(d)}$$

where

IR_d means the Investment Return for Dealing Day d, which is determined by the Index Calculation Agent in accordance with the following formula:

$$IR_d = \frac{NAR_d}{NAI_{d-1}} - 1$$

where:

NAI_{d-1} means the Nominal Amount Invested as at Dealing Day d – 1, which is $NB_{d-1}(d-1)$, the level of the Nominal Basket composed in respect of Dealing Day d-1, valued as at Dealing Day d-1;

NAR_d means the Nominal Amount Returned as at Dealing Day d, which is $NB_{d-1}(d)$, the level of the Nominal Basket composed in respect of Dealing Day d-1, valued as at Dealing Day d;

TBR_d means the Treasury Bill return on Dealing day d, calculated using the following formula:

$$\left((1 - \frac{91}{360} \times TBILL_{d-1})^{\frac{-1}{91}}\right) - 1$$

$TBILL_{d-1}$ means the T-Bill Rate on Dealing Day d-1;

T-Bill Rate means, in respect of a Dealing Day, the 3-month weekly Auction High Discount Rate for United States Treasury Bills on the Dealing Day immediately preceding the relevant Dealing Day, as reported on the Bloomberg® Ticker USB3MTA and expressed as a money market rate; provided, however if such rate is not available at the applicable Bloomberg Ticker, the rate will be determined in accordance with "Extraordinary Events—T-Bill Rate Abnormalities" below; and

$A(d)$ means the number of calendar days which are not Dealing Days from (and excluding) Dealing Day d-1 to (and including) Dealing Day d.

Selection Methodology

The Selection Methodology is an algorithmic methodology developed by JPMS plc, which uses the slope of the futures curve of the Eligible Commodities in order to select a particular futures contract in respect of each Eligible Commodity in which to synthetically gain exposure. The Selection Methodology determines, in respect of each relevant month and each Eligible Commodity, the Contag Contract, based on the Contract Prices on the Contract Selection Date. The Selection Methodology may be described as "backwardation-seeking" in that it aims to select a futures contract with the highest level of "backwardation," based on the Contract Price for a futures contract on the Contract Selection Date compared to the Contract Price for the Closest Dated Preceding futures contract (as defined below), subject to certain constraints, as described in further detail below.

"Backwardation" is used to refer to the situation where commodity futures contracts with a Delivery Month further away in time have lower settlement prices than commodity futures contracts with a Delivery Month closer in time. If plotted on a graph, the curve of the settlement prices of commodity futures contracts would be downward sloping.

The Eligible Commodities used in the Selection Methodology are listed below:

Table 1: Eligible Commodities

Eligible Commodity	Relevant Exchange	Deferring Commodity (D) or Non-Deferring Commodity (N)*	Liquid Contract Months
WTI Crude Oil	NYMEX	D	Z
RBOB Gasoline	NYMEX	D	None
Heating Oil	NYMEX	D	M, Z
Natural Gas	NYMEX	D	F, H, J, V
Brent Crude Oil	ICE	D	Z
Gas Oil	ICE	D	M, Z
Gold	COMEX	N	Not Applicable
Silver	COMEX	N	Not Applicable
Aluminum	LME	D	Z
Copper	LME	D	Z

Lead	LME	D	Z
Nickel	LME	D	Z
Zinc	LME	D	Z
Corn	CBOT	D	Z
Soybeans	CBOT	D	X
Wheat	CBOT	D	N, Z
Kansas Wheat	KCBOT	D	N, Z
Cocoa	NYBOT	D	None
Coffee	NYBOT	D	None
Cotton	NYBOT	N	Not Applicable
Sugar	NYBOT	D	H
Feeder Cattle	CME	N	Not Applicable
Lean Hogs	CME	N	Not Applicable
Live Cattle	CME	D	None

* See "— Eligible Contracts" below.

The Base Set

In respect of each relevant month and for each Eligible Commodity, only certain Futures Contracts may be considered by the Selection Methodology. These Futures Contracts comprise the "Base Set" and each such Futures Contract in the Base Set is a "Base Contract."

The Base Set for each relevant month is determined by reference to Table 2 (*Futures Contracts entering into the Base Set*) below.

Each row of Table 1 gives information about an Eligible Commodity. Under the heading "Contract at Month Start" are twelve columns, corresponding (from left to right) to each calendar month from, and including, January to, and including, December. The entries in the columns are single uppercase letters (each a "Contract Letter"). Each Contract Letter relates to a month which is detailed in Table 2 (*Mapping of Contract Letter to Delivery Months*) below and such month is the Delivery Month of a Futures Contract. Reading from left to right in Table 1, the Delivery Month is increasing through the year, so that where the

Delivery Month in the columns towards the right of the table moves from a later month e.g., Z (December) to an earlier month e.g. F (January) the Delivery Month refers to that month in the year immediately following the, year in which the relevant month falls.

Table 2: Futures Contracts entering into the Base Set

Eligible Commodity (Relevant Exchange)	Contract at Month Start											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WTI Crude Oil (NYMEX)	G	H	J	K	M	N	Q	U	V	X	Z	F
Brent Crude Oil (ICE)	H	J	K	M	N	Q	U	V	X	Z	F	G
Heating Oil (NYMEX)	G	H	J	K	M	N	Q	U	V	X	Z	F
Gas Oil (ICE)	G	H	J	K	M	N	Q	U	V	X	Z	F
RBOB Gasoline (NYMEX)	G	H	J	K	M	N	Q	U	V	X	Z	F
Natural Gas (NYMEX)	G	H	J	K	M	N	Q	U	V	X	Z	F
Wheat (CBOT)	H	H	K	K	N	N	U	U	Z	Z	Z	H
Kansas Wheat (KCBOT)	H	H	K	K	N	N	U	U	Z	Z	Z	H
Soybeans (CBOT)	H	H	K	K	N	N	X	X	X	X	F	F
Corn (CBOT)	H	H	K	K	N	N	U	U	Z	Z	Z	H
Coffee (NYBOT)	H	H	K	K	N	N	U	U	Z	Z	Z	H
Sugar (NYBOT)	H	H	K	K	N	N	V	V	V	H	H	H
Cotton (NYBOT)	H	H	K	K	N	N	Z	Z	Z	Z	Z	H
Cocoa (NYBOT)	H	H	K	K	N	N	U	U	Z	Z	Z	H
Aluminum (LME)	G	H	J	K	M	N	Q	U	V	X	Z	F
Copper (LME)	G	H	J	K	M	N	Q	U	V	X	Z	F
Lead (LME)	G	H	J	K	M	N	Q	U	V	X	Z	F
Nickel (LME)	G	H	J	K	M	N	Q	U	V	X	Z	F
Zinc (LME)	G	H	J	K	M	N	Q	U	V	X	Z	F

Eligible Commodity (Relevant Exchange)	Contract at Month Start											
Gold (COMEX)	G	J	J	M	M	Q	Q	Z	Z	Z	Z	G
Silver (COMEX)	H	H	K	K	N	N	U	U	Z	Z	Z	H
Lean Hogs (CME)	G	J	J	M	M	N	Q	V	V	Z	Z	G
Live Cattle (CME)	G	J	J	M	M	Q	Q	V	V	Z	Z	G
Feeder Cattle (CME)	H	H	J	K	Q	Q	Q	U	V	X	F	F

Table 3: Mapping of Contract Letter to Delivery Months

Contract Letter	F	G	H	J	K	M	N	Q	U	V	X	Z
Delivery Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

The Base Set in respect of each Eligible Commodity comprises (i) the Futures Contract indicated as the "Contract at Month Start" in Table 2 above for the relevant month, which is the Futures Contract with the earliest Delivery Month in the Base Set, and (ii) each Futures Contract indicated for each subsequent month from, but excluding, the relevant month to, and including, the month falling twelve months after the relevant month.

For example, for the Eligible Commodity WTI Crude Oil (NYMEX) and the relevant month of April 2012, the Base Set consists of the 13 Futures Contracts with Delivery Months of May 2012 (the Contract at Month Start for the relevant month), June 2012, July 2012, August 2012, September 2012, October 2012, November 2012, December 2012, January 2013, February 2013, March 2013, April 2013 and May 2013.

Although the Base Set considers the Futures Contracts for the thirteen calendar months from and including the relevant month to and including the month falling twelve months after the relevant month, the number of Base Contracts in the Base Set may be less than thirteen (as in the example below). The number of Base Contracts in the Base Set can be determined by considering the number of different Contract Letters in the row relevant to an Eligible Commodity in Table 2 (*Futures Contracts entering into the Base Set*) above.

For example, for the Eligible Commodity Corn (CBOT) and the relevant month of April 2012, the Base Set consists of the six Futures Contracts with Delivery Months of May 2012 (the Contract at Month Start for the relevant month), July 2012, September 2012, December 2012, March 2013 and May 2013.

The Base Contracts contained in the Base Set are enumerated from 1 (the nearest-dated Base Contract in the Base Set) to *i* (the farthest-dated Base Contract in the Base Set) where *i* is the size of the Base Set. In the first example above, the May 2012 Base Contract is numbered 1 and the May 2013 Base Contract is numbered 13. In the second example above, the May 2012 Base Contract is numbered 1 and the May 2013 Base Contract is numbered 6.

Eligible Contracts

Once the Base Set in respect of an Eligible Commodity is determined, the Long Constituent Calculation Agent will then determine a sub-set of the Base Set (the "Eligible Set") by classifying each Eligible Commodity as either a "Deferring Commodity" or a "Non-Deferring Commodity," as specified in Table 1 (*Eligible Commodities*) above, based on the characteristics of such commodity. Each Futures Contract which is a member of such the Eligible Set is an "Eligible Contract."

In respect of Deferring Commodities, the Base Contracts with a Delivery Month:

(a) not earlier than the second Base Contract in the Base Set (F_2); and

(b) (1) not more than six months following the relevant month; or

(2) more than six months following the relevant month and included in the list of Liquid Contract Months for the Eligible Commodity as specified in Table 1 (*Eligible Commodities*) above,

will be the Eligible Contracts in the Eligible Set.

In respect of Non-Deferring Commodities, the Contract at Month Start for the month immediately following the relevant month will be the only Eligible Contract in the Eligible Set.

Choice of Contag Contract: Selecting the Most Backwardated Contract for the relevant Eligible Commodity

In the Selection Methodology, the term "Local Backwardation" is used as a measure of the degree of backwardation for the i^{th} Base Contract (F_i) in the Base Set compared to the preceding Base Contract (F_{i-1}) in the Base Set (the "Closest Dated Preceding Futures Contract"). In respect of each Eligible Commodity, the Local Backwardation is calculated for each Eligible Contract in the Eligible Set. When determining the Local Backwardation for an Eligible Contract, the Closest Dated Preceding Futures Contract in relation to such Eligible Contract is the Base Contract immediately preceding the Eligible Contract in the Base Set.

Subject to the occurrence of a Market Disruption and in respect of a relevant month, the Long Constituent Calculation Agent determines the Local Backwardation in respect of each Base Contract in the Base Set (F_i) in accordance with the following formula:

$$Local\,Backwardation(F_i) = \frac{1}{m}\left(\frac{Level(F_{i-1})}{Level(F_i)} - 1\right)$$

where:

Level(F_i) means the Contract Price of the i^{th} Base Contract in the Base Set (F_i) on the Contract Selection Date in respect of the relevant month;

Level(F_{i-1}) means the Contract Price of the $(i-1)^{th}$ Base Contract in the Base Set (F_{i-1}) on the Contract Selection Date in respect of the relevant month; and

m	means the number of calendar months from and including the Delivery Month of F_{i-1} to but excluding the Delivery Month of F_i. If the Delivery Months of F_{i-1} and F_i are consecutive, *m* will be 1.

Local Backwardation cannot be determined for the first Base Contract in a Base Set (F_1) since there is no Closest Dated Preceding Futures Contract in respect of Base Set (F_1).

The Eligible Contract with the highest Local Backwardation will be the "Most Backwardated Contract" for the relevant Eligible Commodity (subject to certain limitations). If there is no futures contract for one or more Eligible Commodities with backwardation, the Selection Methodology will select the futures contract with the lowest level of contango for any such commodities.

Changing the Contag Contract: the "Significant Benefit Test"

In cases where the Contag Contract for an Eligible Commodity for the month immediately preceding the relevant month (the "Previously Selected Contract") is also an Eligible Contract in the Eligible Set for the relevant month, the Long Constituent Calculation Agent will apply the Significant Benefit Test to determine if the Contag Contract should change from the prior month to the next relevant month. Under the Significant Benefit Test, the Contag Contract will change only where the increase in Local Backwardation with respect to the relevant Eligible Commodity by changing the exposure of the Contag Beta Index to the Most Backwardated Contract significantly increases the Local Backwardation with respect to the relevant Eligible Commodity.

The Significant Benefit Test is considered to be passed if either:

(a) F_{PS} is not in the Eligible Set; or

(b) the following inequality is true:

$$Local\ Backwardation(F_{MB}) > Local\ Backwardation(F_{PS}) + SBT$$

where:

F_{PS} means the Previously Selected Contract;

F_{MB} means the Most Backwardated Contract;

SBT means the "Significant Benefit Threshold" and is equal to 0.005.

If the Significant Benefit Test is passed, the Contag Contract for the relevant month will be the Most Backwardated Contract; otherwise it will be the Previously Selected Contract. In addition, if the Previously Selected Contract and the Most Backwardated Contract are the same Futures Contract, the Significant Benefit Test will fail and the Contag Contract for the prior month will remain as the Contact Contract for the relevant month.

Market Disruptions / Disrupted Days

If, on any Contract Selection Date, any of the conditions (a) to (c) below apply to a Futures Contract due to comprise the Base Set, then such day will be regarded as a "Long Constituent Disrupted Day" in respect of that Futures Contract and this will constitute a Market Disruption for such Futures Contract:

(a) such Contract Selection Date is not a Contract Business Day with respect to such Futures Contract;

(b) the Contract Price of such Futures Contract on such Contract Selection Date is a Limit Price;

(c) no Contract Price is available for the Futures Contract on such Contract Selection Date.

If a Market Disruption exists in respect of a Futures Contract, the Selection Methodology will be adjusted by the Long Constituent Calculation Agent as follows:

(i) in the case of (a) and (c) above, the Selection Methodology will treat the Contract Price for such Contract Selection Date as being equal to the Contract Price for the relevant Futures Contract which was available on the Dealing Day immediately preceding the Contract Selection Date and on which no Market Disruption occurred. If no such Contract Price exists, then that particular Futures Contract will be excluded from the Base Set and the Selection Methodology will otherwise remain unaltered; or

(ii) in the case of (b) above, the Selection Methodology will not be modified and the Contract Price for such Contract Selection Date will be the Limit Price.

"Contract Business Day" means, in relation to an Eligible Commodity and a Futures Contract, a day on which the Relevant Exchange for such Eligible Commodity is scheduled to be open for trading for its regular trading sessions and to publish a settlement price.

"Limit Price" means, in relation to a Dealing Day and a Contract Price, the maximum or minimum price allowed for that Futures Contract by the Relevant Exchange on such day.

Changes to the Relevant Eligible Commodities

Amendment to the Relevant Eligible Commodities

In the event that a Designated Contract is added to or removed from the calculation of the S&P GSCI™ Index or the S&P GSCI™ Light Energy Index (each, an "S&P GSCI Family- Index"), each of which determine the Commodity Weight of the applicable Eligible Commodity in the J.P. Morgan Contag Beta Full Energy Excess Return Index and the J.P. Morgan Contag Beta Light Energy Excess Return Index, respectively, corresponding changes will be made by the Index Sponsor to the Eligible Commodities that correspond to the Designated Contracts used in the calculation of the relevant S&P GSCI Family-Index (the "Relevant Eligible Commodities") contained in the relevant Contag Beta Index. Such amendments will be published by the Index Sponsor and will be effective for the Weights Period corresponding to the S&P GSCI Period in respect of which such Designated Contract is added or removed from the calculation of the relevant S&P GSCI Family-Index.

Addition of Eligible Commodities

In the event that a Designated Contract is added to the calculation of either the S&P GSCI™ Index or the S&P GSCI™ Light Energy Index that is not currently in the set of Eligible Commodities, such Designated Contract (the "New Eligible Commodity") will be considered an Eligible Commodity for the purposes of calculating the relevant Contag Beta Index, effective as of the Weights Period corresponding to the S&P GSCI Period for which the addition is set to take effect in the S&P GSCI™ Index or the S&P GSCI™ Light Energy Index, as applicable. All details relating to such New Eligible Commodity necessary for the purposes of carrying out the Selection Methodology (for example, the Liquid Contract Months) will be published by the Index Sponsor.

Modifications to, or Cancellation of, the S&P GSCI Family-Index

If either the S&P GSCI Family-Index is (a) not calculated and announced by the S&P GSCI Index Sponsor, but is calculated and announced by a successor sponsor acceptable to the Index Sponsor, or (b) replaced by a successor index using, in the determination of the Index Sponsor, the same or substantially similar formula for and method of calculation as used in the calculation of such S&P GSCI Family-Index, then such index will be deemed to be the index so calculated and announced by that successor index sponsor or that successor index, as the case may be.

If, on or prior to any Dealing Day on which the Long Constituent Calculation Agent is determining the Index Level of either of the Contag Beta Indices, the S&P GSCI Index Sponsor makes a material change in the formula for or the method of calculating the relevant S&P GSCI Family-Index (other than a modification prescribed in that formula or method to maintain such index in the S&P GSCI Family-Index or prescribed routine events) that affects the ability of the Long Constituent Calculation Agent to define the Commodity Weights or Weights Periods or any externally specified particular in respect of either of the Contag Beta Indices, then the Index Sponsor will, in good faith, make such adjustment(s) that it determines to be appropriate to any variable, calculation, methodology, externally specified particular, specified inputs or any other rule in relation to the Contag Beta Indices to account for such modification.

If, on or prior to any Dealing Day on which the Long Constituent Calculation Agent is determining the Index Level of either of the Contag Beta Indices, the S&P GSCI Index Sponsor permanently cancels either S&P GSCI Family-Index, and no successor index exists, the Index Sponsor will, in good faith, either:

(a) ensure that the Long Constituent Calculation Agent continues to calculate the Index Level of the relevant Contag Beta Index using the latest available Commodity Weights or Weights Periods or externally specified particulars at the time the S&P GSCI Family-Index was cancelled; or

(b) make such adjustment(s) that it determines to be appropriate to any variable, calculation, methodology, valuation terms or any other rule in relation to the Contag Beta Indices to account for such cancellation.

Publication of the Index Level

The Long Constituent Calculation Agent may calculate the Contag Beta Index levels with greater frequency than daily on each Dealing Day and share this calculation with its affiliates for internal purposes.

The Long Constituent Calculation Agent will be under no obligation to any person to provide the Contag Beta Index levels by any alternative method if publication of the relevant Bloomberg ticker identified in the table above is subject to any delay in or interruptions of publication or any act of God, act of governmental authority, or act of public enemy, or due to war, the outbreak or escalation of hostilities, fire, flood, civil commotion, insurrection, labor difficulty including, without limitation, any strike, other work stoppage, or slow-down, severe or adverse weather conditions, power failure, communications line or other technological failure that may occur or any other event beyond the control of the Long Constituent Calculation Agent.

The Long Constituent Calculation Agent is under no obligation to continue the calculation, publication and dissemination of any of the Contag Beta Indices or any Index Level.

Market Disruptions to the Contag Beta Indices

If there is a Market Disruption on any Dealing Day:

(a) during a Roll Period, the portion of the roll which was scheduled to take place on such Dealing Day will be postponed as described above under "— Calculation and Publication of the Contag Beta Index Level — Adjustment of the roll for Disrupted Days"; or

(b) on which the Nominal Basket or the Normalizing Constant is determined, the Long Constituent Calculation Agent will calculate the Nominal Basket or the Normalizing Constant, as applicable by (i) taking all published Contract Prices in respect of the Dealing Day in question and (ii) using the most recently published Contract Prices for those Futures Contracts for which no Contract Price is published by the Relevant Exchange on such day.

Extraordinary Events

Successor Futures Contract

If any Futures Contract is:

(a) not quoted by the Relevant Exchange but by a successor exchange acceptable to the Long Constituent Calculation Agent; or

(b) replaced by a successor futures contract referencing, in the determination of the Long Constituent Calculation Agent, a substantially similar commodity as used in the relevant Futures Contract,

then, in each case, the successor futures contract (the "Successor Futures Contract") shall replace the relevant Futures Contract and the Calculation Agent shall determine in good faith the adjustments to the Contag Beta Rules, as it determines appropriate, to account for such change.

Change in Law/Inaccurate Contract Prices

Without prejudice to the ability of the Index Sponsor to amend the Contag Beta Rules, the Long Constituent Calculation Agent may, acting in good faith and in a commercially reasonable manner:

(a) exclude; or

(b) substitute,

any Futures Contract following the occurrence (and/or continuation) of a Change in Law or in circumstances where it considers it reasonably necessary to do so to reflect the intention of the Contag Beta Indices, including (without prejudice to the generality of the foregoing) any perception among market participants generally that the published price of the relevant Futures Contract is inaccurate (and the Relevant Exchange fails to correct such level), and if it so excludes or substitutes any Futures Contract, then the Long Constituent Calculation Agent may adjust the Contag Beta Rules as it determines in good faith to be appropriate to account for such exclusion or substitution on such date(s) selected by the Long Constituent Calculation Agent. The Long Constituent Calculation Agent is under no obligation to continue the calculation and publication of any Contag Beta Index upon the occurrence or existence of a Change in Law; and the Long Constituent Calculation Agent or the Index Sponsor may decide to cancel any Contag Beta Indices if they determine, acting in good faith, that the objective of the relevant Contag Beta Indices can no longer be achieved.

For purposes of the paragraph above, "Change in Law" means:

(a) due to:

(i) the adoption of, or any change in, any applicable law, regulation, rule or order (including, without limitation, any tax law); or

(ii) the promulgation of, or any change in, the interpretation, application, exercise or operation by any court, tribunal, regulatory authority, exchange or trading facility or any other relevant entity with competent jurisdiction of any applicable law, rule, regulation, order, decision or determination (including, without limitation, as implemented by the CFTC or exchange or trading facility), in each case occurring on or after the Initial Index Day,

in each case, the Long Constituent Calculation Agent determines in good faith that it is contrary (or, upon adoption, it will be contrary) to such law, rule, regulation, order, decision or determination for any market participants that are brokers or financial intermediaries (individually or collectively) to purchase, sell, enter into, maintain, hold, acquire or dispose of any Futures Contracts or any transaction referencing any Futures Contract (in whole or in part) (in the aggregate on a portfolio basis or incrementally on a trade by trade basis) including (without limitation) if such Futures Contract (in whole or in part) are (or, but for the consequent disposal thereof, would otherwise be) in excess of any allowable position limit(s) applicable to any market participants that are brokers or financial intermediaries (individually or collectively) in relation to any Futures Contract traded on any exchange(s) or other trading facility; or

(b) the occurrence or existence of any:

(i) suspension or limitation imposed on trading commodity futures contracts (including, without limitation the Futures Contracts); or

(ii) any other event that causes trading in commodity futures contracts (including, without limitation Futures Contracts) to cease.

Material change to Futures Contract, cancellation or non-publication

If, at any time, any Relevant Exchange:

(a) announces that it will make a material change to any Futures Contract or in any other way materially modifies such contract (other than a modification prescribed in the definition of such contract); or

(b) (i) permanently cancels any Futures Contract and no Successor Futures Contract exists or (ii) is otherwise unable or unwilling to publish levels of the Futures Contract,

then the Long Constituent Calculation Agent may remove such futures contract from the Contag Beta Indices and may adjust the Contag Beta Rules as it determines in good faith to be appropriate to account for such change(s) (including, without limitation, selecting a replacement underlying futures contract traded on an equivalent exchange and having similar characteristics to the affected Futures Contract) on such date(s) as selected by the Long Constituent Calculation Agent.

T-Bill Rate Abnormalities

With respect to any total return Contag Beta Index, the following actions will be taken by the Index Calculation Agent following any abnormalities in the publication of the T-Bill Rate.

If, in respect of a Dealing Day, such rate for such date does not appear on Bloomberg® ticker USB3MTA (or any official successor page thereto), the rate for that date will be the Bond Equivalent Yield of the rate displayed in H.15 Daily Update, currently http://www.federalreserve.gov/releases/h15/update/, (or any official successor page thereto), or such other recognized electronic source used for the purpose of displaying such 3-month T-bill rate for that day under the caption "U.S. Government Securities/Treasury bills/Auction high" converted by the Index Calculation Agent in a commercially reasonable manner to bank discount basis such that it is expressed in the same manner as the T-Bill Auction High Rate.

If such rate for such date does not appear on Bloomberg® ticker USB3MTA (or any official successor page thereto) and such 3-month rate is not displayed in the H.15 Daily Update under the caption "U.S. Government securities/Treasury bills/Auction high" or another recognized electronic source, the rate for that date will be the Bond Equivalent Yield of the auction rate for those Treasury Bills as announced by the United States Department of Treasury, converted by the Index Calculation Agent in a commercially reasonable manner to bank discount basis such that it is expressed in the same manner as the T-Bill Auction High Rate.

If the rate for United States 3-month Treasury Bills is still not available, the rate will be determined by Index Sponsor in good faith and in a commercially reasonable manner.

Corrections

In the event that (a) the Contract Price of any Futures Contract used to calculate the Index Level in respect of any Dealing Day is subsequently corrected and the correction is published by the Relevant Exchange before the next following Roll Period or (b) the Long Constituent Calculation Agent identifies an error or omission in any of its calculations or determinations in respect of the Contag Beta Indices, then the Long Constituent Calculation Agent may, if practicable and the correction is deemed material by the Index Sponsor, adjust or correct the Index Level published in respect of the relevant Dealing Day and each subsequent Dealing Day and publish such corrected Index Level(s) as soon as reasonably practicable.

Index Sponsor; Long Constituent Calculation Agent; Amendment of Rules; Limitation of Liability

The Long Constituent Calculation Agent is appointed by the Index Sponsor to calculate and maintain the Contag Beta Indices from and until such time that the Index Sponsor terminates its relationship with the current Long Constituent Calculation Agent and appoints a successor index calculation agent.

The Index Sponsor will maintain all ownership rights, expressed or otherwise, with respect to the Contag Beta Indices, including the ability to license, sell or transfer any or all of its ownership rights with respect to any Contag Beta Index, including but not limited to terminating and appointing any successor index calculation agent.

The Contag Beta Rules provide that the Index Sponsor must act in good faith and in a commercially reasonable manner. In the event that ambiguities arise in interpreting or applying the Contag Beta Rules, the Long Constituent Calculation Agent and the Index Sponsor will resolve ambiguities in a reasonable manner and, if necessary, the Index Sponsor will amend the Contag Beta Rules to reflect such resolution.

None of the Index Sponsor, the Long Constituent Calculation Agent and their respective affiliates and subsidiaries and none of their respective directors, officers, employees, delegates and agents (each, a "Relevant Person") will have any responsibility to any person (whether as a result of negligence or otherwise) for any determinations made or anything done (or omitted to be determined or done) in respect of the Contag Beta Indices or in respect of the publication of the Index Level (or failure to publish such Index Level) and any use to which any person may put the Contag Beta Indices or the Index Levels.

None of the Index Sponsor, the Long Constituent Calculation Agent and any Relevant Person will have any liability, contingent or otherwise, to any person or entity for the quality, accuracy, timeliness or completeness of the information or data contained in the Contag Beta Rules or the Contag Beta Indices, or for delays, omissions or interruptions in the delivery of the Contag Beta Indices or related data. None of the Index Sponsor, the Long Constituent Calculation Agent and any Relevant Person makes any warranty, express or implied, as to the results to be obtained by any person or entity in connection with any use of the Contag Beta Indices, including but not limited to the trading of or investments in products based on or indexed or otherwise related to the Contag Beta Indices, any data related thereto or any components thereof.

None of the Index Sponsor, the Long Constituent Calculation Agent and any Relevant Person makes any express or implied warranties, and hereby expressly disclaims, to the fullest extent permitted by law, all warranties of merchantability or fitness for a particular purpose or use with respect to the Contag Beta Rules, the Contag Beta Indices or any data related thereto. Without limiting any of the foregoing, in no event will any of the Index Sponsor, the Long Constituent Calculation Agent and any Relevant Person have any liability for any special, punitive, indirect or consequential damages (including lost profits), in connection with any use by any person of the Contag Beta Indices or any products based on or indexed or otherwise related thereto, even if notified of the possibility of such damages.

All determinations of the Long Constituent Calculation Agent in respect of the Contag Beta Indices will be final, conclusive and binding, and no person will be entitled to make any claim against any of the Relevant Persons in respect thereof. Once a determination or calculation is made or action taken by the Long Constituent Calculation Agent, the Index Sponsor or any other Relevant Person in respect of the Contag Beta Indices, none of the Index Sponsor, the Long Constituent Calculation Agent and any Relevant Person will be under any obligation to revise any determination or calculation made or action taken for any reason.

The Commodity Futures Markets

Contracts on physical commodities are traded on regulated futures exchanges, in the over-the-counter market and on various types of physical and electronic trading facilities and markets. All of the contracts included in the Contag Beta Indices are exchange-traded futures contracts. An exchange-traded futures contract is a bilateral agreement providing for the purchase and sale of a specified type and quantity of a commodity or financial instrument during a stated delivery month for a fixed price. A futures contract on an index of commodities typically provides for the payment and receipt of a cash settlement based on the value of such commodities. A futures contract provides for a specified settlement month in which the commodity or financial instrument is to be delivered by the seller (whose position is described as "short") and acquired by the purchaser (whose position is described as "long") or in which the cash settlement amount is to be made.

There is no purchase price paid or received on the purchase or sale of a futures contract. Instead, an amount of cash or cash equivalents must be deposited with the broker as "initial margin." This amount varies based on the requirements imposed by the exchange clearing houses, but may be as low as 5% or less of the value of the contract. This margin deposit provides collateral for the obligations of the parties to the futures contract.

By depositing margin in the most advantageous form (which may vary depending on the exchange, clearing house or broker involved), a market participant may be able to earn interest on its margin funds, thereby increasing the potential total return that may be realized from an investment in futures contracts. The market participant normally makes to, and receives from, the broker subsequent payments on a daily basis as the price of the futures contract fluctuates. These payments are called “variation margin” and make the existing positions in the futures contract more or less valuable, a process known as “marking to market.”

Futures contracts are traded on organized exchanges, known as “contract markets” in the United States, through the facilities of a centralized clearing house and a brokerage firm which is a member of the clearing house. The clearing house guarantees the performance of each clearing member which is a party to the futures contract by, in effect, taking the opposite side of the transaction. At any time prior to the expiration of a futures contract, subject to the availability of a liquid secondary market, a trader may elect to close out its position by taking an opposite position on the exchange on which the trader obtained the position. This operates to terminate the position and fix the trader’s profit or loss.

U.S. contract markets, as well as brokers and market participants, are subject to regulation by the Commodity Futures Trading Commission. Futures markets outside the United States are generally subject to regulation by comparable regulatory authorities. However, the structure and nature of trading on non-U.S. exchanges may differ from the foregoing description. From their inception to the present, the Contag Beta Indices have been composed exclusively of futures contracts traded on regulated exchanges.

RISK FACTORS RELATING TO THE J.P. MORGAN CONTAG BETA INDICES

The following risk factors relate solely to the Contag Beta Indices and supplements the other risk factors set forth in the accompanying disclosures related to any Commodity Index Derivatives Transaction between you and us. These risk factors should be read together with the risk factors set forth in the General Disclosure Statement, the Commodity Disclosure Annex, the Commodity Index Disclosure Annex and any other disclosure annex. ***You should carefully review these risk factors (including the risk factors relating to potential conflicts of interest) prior to making your investment decision to enter into a Commodity Index Derivatives Transaction.***

There may be potential conflicts between your interests and those of the Index Calculation Agent, the Index Sponsor and other affiliates of ours.

We and our affiliates play a variety of roles in connection with the Contag Beta Indices, including acting as Index Calculation Agent and Index Sponsor. In performing these duties, the economic interests of the Index Calculation Agent, the Index Sponsor and other affiliates of ours may be potentially adverse to your interests as a party to a Commodity Index Derivatives Transaction. Additionally, we and our affiliates may from time to time develop other indices or products that may take positions that are contrary to your economic interests.

Our affiliate, GIRG, as the Index Calculation Agent, and our affiliate, JPMS plc, as the Index Sponsor, have the authority to make decisions and exercise judgment in specific instances in calculating and maintaining the Contag Beta Indices, may adjust a Contag Beta Index in a way that affects its level and are under no obligation to consider your interests.

GIRG, one of our affiliates, acts as the Index Calculation Agent and is responsible for calculating the Contag Beta Indices, and JPMS plc, one of our affiliates, acts as Index Sponsor and is responsible for maintaining the Contag Beta Indices and developing the guidelines and policies governing their composition and calculation. The rules governing the Contag Beta Indices will be interpreted by JPMS plc and GIRG and may be amended at any time by JPMS plc, in its sole discretion. The rules also permit GIRG to exercise decision-making authority and judgment in specific instances, including the right to substitute or exclude a futures contract included in a Contag Beta Index and the right to determine the values to be used in the event of market disruptions that affect its ability to calculate and publish the level of a Contag Beta Index. In addition, the rules permit JPMS plc to exercise decision-making authority and judgment in specific instances, including the right to replace or replicate an S&P GSCI (as defined below) or the Bloomberg Commodity Index^{SM}, as applicable, if that applicable index is discontinued or materially modified. Unlike other indices, the maintenance of the Contag Beta Indices is not governed by an independent committee. Although judgments, policies and determinations concerning the Contag Beta Indices are and will be made by JPMS plc and GIRG, JPMorgan Chase & Co., as the parent company of JPMS plc and GIRG, ultimately controls JPMS plc and GIRG.

In addition, the policies and judgments for which JPMS plc and GIRG are responsible could have an impact, positive or negative, on the level of the Contag Beta Indices and the value of an investment or transaction linked to such level. JPMS plc and GIRG are under no obligation to consider your interests as an investor or counterparty in a transaction linked to the Contag Beta Indices in taking any actions that might affect the value of your investment or transaction. Furthermore, the inclusion of the relevant futures contracts in any Contag Beta Index is not an investment recommendation by us, JPMS plc or GIRG of such futures contracts.

The commodity futures contracts underlying the Contag Beta Indices are subject to legal and regulatory regimes that may change in ways that could result in the Index Calculation Agent making changes to the Contag Beta Indices or the Index Sponsor modifying the rules governing the Contag Beta Indices, either of which would impact the level of the Contag Beta Index and, therefore, affect the value of an investment or transaction linked to such level.

Changes to the legal or regulatory regimes applicable to the commodity futures contracts that underlie the Contag Beta Indices may result in the Index Calculation Agent exercising its discretionary right under the rules governing the Contag Beta Indices to exclude or substitute any futures contract underlying, or substitute for a commodity the futures contracts of which underlie, the Contag Beta Indices, which may, in turn, have a negative effect on the value of any investment or transaction linked to the Contag Beta Indices. The exclusion or substitution of futures contracts or commodities as described above could also affect the diversity of the Contag Beta Indices. For example, a substitute futures contract may have a lower level of backwardation than the original futures contract or the value of the substitute commodity could be more correlated with the value of other commodities the futures contracts of which underlie the Contag Beta Indices.

In addition, changes to the legal or regulatory regimes applicable to the commodity futures contracts that underlie the Contag Beta Indices could also result in the Index Sponsor modifying the rules governing the Contag Beta Indices or canceling the Contag Beta Indices, which could, in turn, have an adverse effect on an investment or transaction linked to the Contag Beta Indices.

The Contag Beta Indices do not represent fully diversified portfolios, are not representative of a pure commodities allocation and are not designed to replicate or track commodities markets generally or any or all of the futures contracts underlying the Contag Beta Indices.

The Contag Beta Indices seek to reflect a notional basket containing a single futures contract or a certain number futures contracts that display the highest degree of backwardation (or in the absence of backwardation, the least amount of contango). The Contag Beta Indices are not designed to replicate or track commodities markets generally or any or all of the futures contracts underlying the Contag Beta Indices. For any given period, the commodities markets or any or all of the futures contracts underlying the Contag Beta Indices may have positive or significantly positive performance, and the Contag Beta Indices may have negative or significantly negative performance, in absolute terms or relative to the commodities markets. An increase in the value of any commodity futures contract included in a Contag Beta Index or any related commodity will not necessarily result in an increase in the level of such Contag Beta Index. In addition, while diversification is generally considered to reduce the amount of risk associated with generating returns, there can be no assurance that any Contag Beta Index will be sufficiently diversified at any time to reduce or minimize such risks to any extent.

The Contag Beta Indices comprise notional assets.

The exposures to the commodity futures contracts underlying the Contag Beta Indices are purely notional and will exist solely in the records maintained by or on behalf of the Index Calculation Agent. There is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. Consequently, you will not have any claim against any of the commodity futures contracts underlying the Contag Beta Indices.

The Contag Beta Indices may not be successful and may not outperform any alternative strategy that might be employed with respect to the futures contracts underlying the Contag Beta Indices.

The Contag Beta Indices follow a proprietary strategy that operates on the basis of predetermined rules. No assurance can be given that the investment strategy on which the Contag Beta Indices are based will be successful or that the Contag Beta Indices will outperform any alternative strategy that might be employed with respect to the futures contracts underlying the Contag Beta Indices.

An investment or transaction linked to the performance of the Contag Beta Indices carries the risks associated with the methodology used to calculate the Contag Beta Indices.

The Contag Beta Indices are constructed, in part, using a rules-based methodology that uses, along with other criteria, the slope of the commodity futures curve in order to select a particular futures contract for each eligible commodity in which to synthetically gain exposure (the "**Selection Methodology**"). The futures contract with the highest level of "backwardation" is selected for each eligible commodity (each, a "**Contag Contract**"), subject to certain limitations. "Backwardation" refers to the situation where commodity futures contracts with a delivery month further away in time have lower settlement prices than futures contracts with a delivery month closer in time. If there is no futures contract for one or more eligible commodities with backwardation, the Selection Methodology will select the futures contract with the lowest level of contango for any such commodities. "Contango" refers to the situation where the futures contracts for a commodity with a delivery month further in time have higher contract prices than futures contracts for the same commodity with a delivery month closer in time.

As the futures contracts approach expiration, they are replaced by futures contracts that have a later expiration in a process referred to as "rolling." Assuming the commodity futures market is in backwardation, the sale of contracts due for delivery in a nearer delivery month would take place at a price that is higher than the price of contracts that are due for delivery in a later delivery month, creating a yield referred to as a "roll yield." By capturing the synthetic return of a notional basket of futures contracts selected by the Selection Methodology, the Contag Beta Indices seek to capitalize on such "roll yield" and on the fact that contracts with backwardation tend to appreciate as those futures contracts draw nearer to expiration over time. The presence of "contango" in the commodity futures market (*i.e.,* where the prices for the relevant futures contracts included in a Contag Beta Index are higher in the distant delivery month than in the nearer delivery month) could result in negative "roll yields." Such contracts may also depreciate as they approach expiration. While the Selection Methodology is intended to select futures contracts with the highest level of backwardation (or in the absence of backwardation, the least amount of contango), commodity futures contracts generally have historically been in contango and no assurance can be given that the Selection Methodology will be successful in mitigating or avoiding contango and negative roll yields. Contango could adversely affect the level of the Contag Beta Indices and thus the value of an investment or transaction linked to a Contag Beta Index.

In addition, the Contag Beta Indices are synthetically exposed to the futures contracts selected as the Contag Contracts by the Selection Methodology and such futures contracts may, in general, be deferred futures contracts (*i.e.*, those contracts having a delivery month further dated than the futures contract with the nearest delivery month). It is generally expected that such deferred futures contracts may have less liquidity than the near-month futures contracts (those being the nearest-to-deliver) with respect to the same commodities. Deferred futures contracts may also be less well correlated with the spot market (physical) prices of the relevant commodities and exhibit different levels of volatility. Accordingly, the Contag Beta Indices may not perform as well as an index linked to the spot prices of the relevant commodities.

No assurance can be given that the investment strategy on which a Contag Beta Index is based will be successful or that such Contag Beta Index will outperform any alternative strategy that might be employed.

The Contag Beta Indices have limited operating histories and may perform in unanticipated ways.

The first Contag Beta Index was established on May 29, 2009, and subsequent Contag Beta Indices have since been introduced. As a result, the Contag Beta Indices have limited historical performance. Any back-testing or similar analysis in respect of any Contag Beta Index must be considered illustrative only and may be based on estimates or assumptions not used by the Index Calculation Agent when determining the level of the Contract Beta Indices. Past performance should not be considered indicative of future performance.

Index calculation disruption events may require an adjustment to the calculation of the Contag Beta Indices.

On any determination date, the daily calculation of the Contag Beta Indices may be adjusted in the event that the Index Calculation Agent determines that any of the following index calculation disruption events exists: the termination or suspension of, or material limitation or disruption in the trading of any exchange-traded futures contract used in the calculation of the Contag Beta Indices on that day; the settlement price of any exchange-traded futures contract used in the calculation of the Contag Beta Indices reflects the maximum permitted price change from the previous day's settlement price; or the failure of an exchange to publish official settlement prices for any futures contract used in the calculation of the Contag Beta Indices. Any such index calculation disruption events may have an impact on the level of the Contag Beta Indices.

S&P Dow Jones Indices LLC or Bloomberg Finance L.P. may add new, or substitute for existing, commodities in the S&P GSCI™ Index Excess Return, the S&P GSCI™ Light Energy Index Excess Return or the applicable S&P GSCI™ sector index (each, an "S&P GSCI" and collectively, the "S&P GSCIs") and the Bloomberg Commodity Index℠, respectively, which could affect the calculation and composition of the Contag Beta Indices.

A futures contract known as a "Designated Contract" has been selected as the reference contract for each of the underlying physical commodities included in the S&P GSCI Indices and the Bloomberg Commodity Index℠. The termination or replacement of a futures contract on an established exchange occurs infrequently; however, if one or more Designated Contracts were to be terminated or replaced by an exchange, a comparable futures contract would be selected, if available, to replace each such Designated Contract. In the event that a Designated Contract is added to the calculation of the applicable S&P GSCI or Bloomberg Commodity Index℠ that is not currently in the set of eligible commodities for such Contag Beta Index, such Designated Contract will be added as an eligible commodity for purposes of calculating such Contag Beta Index. S&P or UBS and CME Indexes, as applicable, may also substitute for an existing commodity, which would also result in a change to the set of eligible commodities for the Contag Beta Indices. The addition of a new eligible commodity, or the substitution for an existing commodity, could adversely affect the level of the Contag Beta Indices and therefore, the value of any investment or transaction linked to the Contag Beta Indices.

S&P Dow Jones Indices LLC and Bloomberg Finance L.P. have no obligation to consider your interests.

S&P Dow Jones Indices LLC is responsible for calculating and maintaining the S&P GSCI Indices, including, the Contract Production Weights of the S&P GSCI™ Excess Return Index, the S&P GSCI™ Light Energy Index Excess Return and the applicable S&P GSCI™ sector index, and Bloomberg Finance L.P. is responsible for calculating and maintaining the Bloomberg Commodity Index℠, including the Commodity Index Percentages of the Bloomberg Commodity Index℠. The weights assigned to the commodities referenced in the Contag Beta Indices (other than the single commodity Contag Beta Indices) are based on either such Contract Production Weights or Commodity Index Percentages. S&P Dow Jones Indices LLC and

Bloomberg Finance L.P., as applicable, can make methodological changes that could change the Contract Production Weights or the Commodity Index Percentages, as applicable, or their method of determination at any time and they have no obligation to consider your interests. S&P Dow Jones Indices LLC and Bloomberg Finance L.P., as applicable, may discontinue or suspend calculation or dissemination of the S&P GSCI Indices or the Bloomberg Commodity Index^{SM}, including the Contract Production Weights or the Commodity Index Percentages, as applicable. Any of these actions could adversely affect the market value of any investment or transaction linked to the Contag Beta Indices. S&P Dow Jones Indices LLC and Bloomberg Finance L.P. have no obligation to consider your interests in calculating or revising the methodology of the S&P GSCI Indices or the Bloomberg Commodity Index^{SM}, as applicable.

Disclosure Supplement E for the J.P. Morgan Single Commodity Indices
(dated April 22, 2016)

This Disclosure Supplement for the J.P. Morgan Single Commodity Indices, dated April 22, 2016 (the "Disclosure Supplement"), supplements and should be read in conjunction with the General Disclosure Statement ("General Disclosure Statement") and the Disclosure Annex for Commodity Derivatives (the "Commodities Disclosure Annex"), dated April 26, 2013 and April 26, 2013, respectively, published by the International Swaps & Derivatives Association Inc. and the Disclosure Annex For Commodity Index Derivative Transactions, dated April 22, 2016 (the "Commodity Index Disclosure Annex"), published by JPMorgan Chase Bank, National Association. NOTHING IN THIS DISCLOSURE SUPPLEMENT AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions of the Single Commodity Indices (as defined below) in this Disclosure Supplement are in all cases subject to the actual terms of a Commodity Index Derivative Transaction executed between you and us and its governing documentation.

When we refer to a "Commodity Index Derivative Transaction", we are referring to Transactions in which the underlying(s) is/are an index or indices that reference physical commodities or contracts for the future delivery of physical commodities. The terms of a Commodity Index Derivative Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Commodity Index Derivative Transaction and its governing documentation. Before entering into a Commodity Index Derivative Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under the Commodity Index Derivative Transaction, its value and its appropriateness for your particular objectives.

To the extent you enter into a Commodity Index Derivative Transaction that references a Single Commodity Index, in whole or in part, or another index that references a Single Commodity Index, as one of its constituents, you should carefully review the disclosure set forth herein. This Disclosure Supplement, together with the rules for a particular index ("Index Rules"), the documents governing your Commodity Index Derivative Transaction, the disclosure annexes referenced above and any other disclosure delivered by us to you related to your specific Commodity Index Derivative Transaction, constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Commodity Index Derivative Transaction. You should carefully consider all of these documents prior to entering into a Commodity Index Derivative Transaction.

General

The J.P. Morgan Single Commodity Indices (each, a **"Single Commodity Index**" and collectively, the "**Single Commodity Indices**") are developed and will be maintained and calculated by J.P. Morgan Securities plc (which we refer to as "**JPMS plc**"). JPMS plc also acts as the index sponsor of each Single Commodity Index.

Each Single Commodity Index is a notional rules-based proprietary commodity index. The methodology for calculating each Single Commodity Index is set forth in a set of index rules that may define one or more Single Commodity Indices. The index rules of each Single Commodity Index consist of astandard terms formulated by JPMS plc (which we refer to as the "**Standard**

Terms") that describe general terms relating to the J.P. Morgan Single Commodity Indices and a separate index supplement (an "**Index Supplement**"), which describes the specific terms that apply to each relevant Single Commodity Index. The relevant Index Supplement for each Single Commodity Index, when read together with the Standard Terms, constitutes the applicable index rules (the "**Index Rules**") for that Single Commodity Index. Any description is qualified by the full text of the Index Rules. The Index Rules, and not this description, will govern the calculation and constitution of each Single Commodity Index and other decisions and actions related to its maintenance. All Index Rules are the intellectual property of JPMS plc, and JPMS plc reserves all rights with respect to its ownership of the Single Commodity Indices.

This Disclosure Supplement describes the Standard Terms associated with each Single Commodity Index. Schedules 1 through 15 attached hereto set forth a description for different families of Single Commodity Indices. This Disclosure Supplement, together with the Schedules that describes the applicable Index Supplement, constitutes a summary of the material economic terms, material risks and potential conflicts of interest associated with the applicable Single Commodity Index.

Each Single Commodity Index will track the returns associated with maintaining a notional exposure to a pre-specified number of futures contract(s) in an underlying commodity. We refer to each Single Commodity Index as a "notional" or "synthetic" basket or portfolio of futures contracts because reported value of any Single Commodity Index does not represent the value of any actual assets held by any person and there is no actual portfolio of assets in which any person has any ownership interest.

Each Single Commodity Index will either be an excess return or total return index, as specified in the Index Supplement. Excess return indices attempt to track the (a) the price changes in the underlying futures contracts referenced by a commodity index and (b) the roll yield associated with the selling and buying futures contracts referenced by a commodity index. Because commodity indices are generally cash settled and futures contracts are financial instruments with a finite term and provide for physical delivery, commodity indices roll exposure from one set of futures contracts to another set of futures contracts. When we refer to a commodity index "rolling" its exposure, we refer to the synthetic selling of one futures contract and the buying of another futures contract, typically with a settlement date later in time than the futures contract that is being sold.

When a commodity index rolls its exposure from one futures contract to another futures contract, the price at which the commodity index synthetically buys and sells the applicable futures contracts may have an effect on the index level. If the relevant futures contracts are in "contango," the index level will decline, assuming no change in the price of the underlying futures. "Contango" means that the price of a near month futures contract has a price that is lower than the price of a far month contract. If the relevant futures contracts are in "backwardation," the index level will increase, assuming no change in the price of the underlying futures. "Backwardation" means the price of a near month futures contract has a price that is higher than the price of a far month contract. The effect of contango or backwardation may have a material impact on the index levels of an excess return commodity index.

Total return indices attempt to track (a) the price changes in the underlying futures contracts referenced by a commodity index, (b) the roll yield associated with the selling and buying futures contracts referenced by a commodity index and (c) the return associated with owning three-month U.S. treasury bills. Similar to excess return commodity indices, contango or backwardation may have a material impact on the index levels of a total return commodity index. Total return indices include the return associated with owning three-month U.S. treasury bills because historically an investment in futures contracts was collateralized using such debt securities.

The Index Supplement will also specify other terms, such as:

- the Index Name (e.g. the J.P. Morgan Custom Roll WTI Crude Oil Index);
- the Inception Date, which is the date on which the Single Commodity Index was set equal to the Inception Level;
- the Inception Level, which is typically 100 and is the index level on the inception date;
- the Underlying Commodity (*e.g.*, WTI Crude Oil);
- the Underlying Relevant Exchange: Each Single Commodity Index references underlying futures contracts of a specified commodity that trade on a particular change. For certain commodities, e.g., copper, such commodity may trade on more than one commodity exchange (e.g., copper is traded on both the LME and the CME). The Underlying Relevant Exchange defines the applicable exchange for the Underlying Commodity;
- the Roll Period Length: Each Single Commodity Index will roll from an outgoing contract to an incoming contract over a period, which may be a single business day or a period as defined in the Index Rules and otherwise described in the applicable Disclosure Supplement. The Roll Period Length defines the length of the Roll Period.
- the Roll Period Starting Day, which is defined in terms of the business day of a particular calendar month on which the synthetic positions are rolled;
- the Roll Period Ending Day, which is defined in terms of the business day of a particular calendar month on which the synthetic positions are rolled; and
- the Roll Schedule. The Roll Schedule for each Single Commodity Index is set forth in the applicable Index Supplement, which will specify a numerical value representing the day of the month on which a particular contract will be rolled. To the extent the number specified is positive, it will indicate the number of days counting forwards from the start of the calendar month on which a particular contract will roll; to the extent the number specified is negative, it will indicate the number of days prior to the start of the calendar month on which a particular contract will roll, counting backwards (*e.g.*, the number 2 indicates a roll on the second day of the month, the number -3 indicates a roll on the third to last day of the previous month). The Roll Schedule will further identify a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months of January through December. The Contract at Month Start is the futures contract that the Single Commodity Index will reference at the start of the applicable month. For example, for the month of March, the roll schedule may indicate that the Index will be in the June futures contract of a particular commodity. The Contract at Month Start also will be characterized by an upper case letter which corresponds to the expiration month of the applicable Month Contract (see Standard Term for information regarding the calendar month expiry corresponding to each upper case letter). A subscripted numeral will also

accompany each upper case letter for the Contract at Month Start. The subscripted numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month.

The Single Commodity Indices may have limited historical performance. Please see "Risk Factors" below.

All terms used herein but not otherwise defined will have the meaning ascribed thereto in the Index Rules.

Calculation and Publication of the Index Level

JPMS plc, or any affiliate or subsidiary designated by it, will act as calculation agent for each Single Commodity Index (the "Index Calculation Agent"). The Index Calculation Agent will calculate and publish the level (the "Index Level") for each Single Commodity Index on each Index Publication Day, reported to four (4) decimal places, on the Bloomberg ticker page identified for the Single Commodity Index in the Index Supplement in accordance with the method set forth in the Index Rules.

RISK FACTORS RELATING TO THE J.P. MORGAN SINGLE COMMODITY INDICES

The following risk factors relate solely to Commodity Index Derivative Transactions that are linked in whole or in part to one or more J.P. Morgan Front Month Commodity Indices. These risk factors should be read together with the risk factors set forth in the General Disclosure Statement, the Commodity Disclosure Annex, the Commodity Index Disclosure Annex and any other disclosure annex. ***You should carefully review these risk factors (including the risk factors relating to potential conflicts of interest) prior to making your investment decision to enter into a Commodity Index Derivatives Transaction.***

There may be potential conflicts between your interests and those of the Index Calculation Agent, the Index Sponsor and other affiliates of JPMorgan Chase & Co.

JPMorgan Chase & Co. and JPMorgan Chase & Co.'s affiliates play a variety of roles in connection with Commodity Index Derivative Transactions linked to the Single Commodity Indices, including acting Index Calculation Agent and the sponsor of the relevant Single Commodity Index (the "**Index Sponsor**") and hedging JPMorgan Chase & Co.'s obligations under such Commodity Index Derivative Transactions. In performing these duties, the economic interests of JPMorgan Chase & Co, the Index Calculation Agent, the Index Sponsor and other affiliates of JPMorgan Chase & Co. would be potentially adverse to your interests as a counterparty in such Commodity Index Derivative Transactions. Additionally, JPMorgan Chase & Co. and JPMorgan Chase & Co.'s affiliates may from time to time develop other indices or products that may take positions that are contrary to your economic interests.

The Index Calculation Agent may have discretion with respect to any relevant Single Commodity Index in certain extraordinary events and is under no obligation to consider your interests as a counterparty to a Commodity Index Derivative Transaction.

Unless otherwise specified, JPMS plc, one of JPMorgan Chase & Co.'s affiliates, acts as the Index Calculation Agent and sponsor of any relevant Single Commodity Index and is responsible for calculating and maintaining that Single Commodity Index and developing the guidelines and policies governing its composition and calculation. JPMS plc may be entitled to exercise discretion with respect to any Single Commodity Index if certain extraordinary events or other events occur. Unlike other indices, the maintenance of the Single Commodity Indices is not governed by an independent committee.

Although JPMS plc will make all determinations and take all action in relation to the Single Commodity Indices acting in good faith, it should be noted that such discretion could have an impact, positive or negative, on the level of any relevant Single Commodity Index and the value of your Commodity Index Derivative Transaction. JPMS plc is under no obligation to consider your interests in taking any actions that might affect the value of the Commodity Index Derivative Transaction. Furthermore, the inclusion of the Index Constituents in any relevant Single Commodity Index is not an investment recommendation by us or JPMS plc of the Index Constituents or the futures contracts underlying the Index Constituents.

A Single Commodity Index comprises notional assets.

The exposure to the commodity futures contracts underlying any Single Commodity Index is purely notional. There is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. Consequently, you will not have any claim against any of the commodity futures contracts underlying any Single Commodity Index.

A Single Commodity Index may not be successful and may not outperform a similar benchmark index or other strategy that references similar commodity futures contracts.

A Single Commodity Index will follow a proprietary strategy that operates on the basis of pre-determined rules. No assurance can be given that the investment strategy on which the Single Commodity Index is based will be successful or that such Single Commodity Index will outperform a similar benchmark index or other strategy that references similar commodity futures contracts.

A Single Commodity Index may have a limited operating history and may perform in unanticipated ways.

A Single Commodity Index may have limited historical performance. Any back-testing or similar analysis in respect of a Single Commodity Index must be considered illustrative only and may be based on estimates or assumptions not used by the Index Calculation Agent when determining the level of such Single Commodity Index. Past performance should not be considered indicative of future performance.

An Exchange Commodity may be changed in certain circumstances.

In certain circumstances the Index Calculation Agent may elect to replace the Exchange Commodity with a successor exchange commodity relating to the Underlying Commodity of the Single Commodity Index. You should realize that the changing of an Exchange Commodity may affect the performance of a Single Commodity Index, and therefore, the value of the Commodity Index Derivative Transaction.

A Single Commodity Index may not be a fully diversified portfolio.

Diversification is generally considered to reduce the amount of risk associated with generating returns. A Single Commodity Index will be concentrated in a particular commodity only. There can be no assurance that a Single Commodity Index will be sufficiently diversified at any time.

You will be exposed to the risks associated with the Underlying Commodity.

You will be exposed to the risks associated with each Underlying Commodity underlying any Single Commodity Index to which a Commodity Index Derivative Transaction is linked. For more information related to the risks associated with commodities generally, please see the relevant disclosure annexes described in the preamble above.

SCHEDULE 1: J.P. MORGAN FRONT MONTH COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan Front Month Commodity Index. Each J.P. Morgan Front Month Commodity Index rolls its synthetic exposure in equal parts beginning on the fifth (5^{th}) Index Publication Day and continuing through and including the ninth (9^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of April 8, 2014 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange	Inception Date
J.P. Morgan Front Month Aluminum Index—Excess Return	Aluminum	JMC10LAE <Index>	LME	30-Dec-94
J.P. Morgan Front Month Brent Crude Index—Excess Return	Brent Crude Oil	JMC10COE <Index>	ICE	30-Dec-94
J.P. Morgan Front Month Cocoa Index—Excess Return	Cocoa	JMC10CCE <Index>	ICE	30-Dec-94
J.P. Morgan Front Month Coffee Index—Excess Return	Coffee	JMC10KCE <Index>	ICE	30-Dec-94
J.P. Morgan Front Month U.S. Traded Copper Index—Excess Return	Comex Copper	JMC10HGE <Index>	COMEX	30-Dec-94
J.P. Morgan Front Month U.K. Traded Copper Index—Excess Return	Copper	JMC10LPE <Index>	LME	30-Dec-94
J.P. Morgan Front Month Cotton Index—Excess Return	Cotton	JMC10CTE <Index>	ICE	30-Dec-94
J.P. Morgan Front Month Corn Index—Excess Return	Corn	JMC10CE <Index>	CBOT	30-Dec-94
J.P. Morgan Front Month Feeder Cattle Index—Excess Return	Feeder Cattle	JMC10FCE <Index>	CME	30-Dec-94
J.P. Morgan Front Month Gas Oil Index—Excess Return	Gasoil	JMC10QSE <Index>	ICE	30-Dec-94

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange	Inception Date
J.P. Morgan Front Month Gasoline Index—Excess Return	Gasoline	JMC10XBE <Index>	NYMEX	30-Dec-94
J.P. Morgan Front Month Gold Index—Excess Return	Gold	JMC10GCE <Index>	CME	30-Dec-94
The J.P. Morgan Front Month Minneapolis Wheat Index — Excess Return	Hard Red Spring Wheat	JMC10MWE <Index>	MGEX	31-Dec-94
J.P. Morgan Front Month Heating Oil Index—Excess Return	Heating Oil	JMC10HOE <Index>	NYMEX	30-Dec-94
J.P. Morgan Front Month Kansas Wheat Index—Excess Return	Kansas Wheat	JMC10KWE <Index>	CBOT	30-Dec-94
J.P. Morgan Front Month Lead Index—Excess Return	Lead	JMC10LLE <Index>	LME	30-Dec-94
J.P. Morgan Front Month Lean Hogs Index—Excess Return	Lean Hogs	JMC10LHE <Index>	CME	30-Dec-94
J.P. Morgan Front Month Live Cattle Index—Excess Return	Live Cattle	JMC10LCE <Index>	CME	30-Dec-94
J.P. Morgan Front Month Natural Gas Index—Excess Return	Natural Gas	JMC10NGE <Index>	NYMEX	30-Dec-94
J.P. Morgan Front Month Nickel Index—Excess Return	Nickel	JMC10LNE <Index>	LME	30-Dec-94
The J.P. Morgan Front Month Palladium Index – Excess Return	Palladium	JMC10PAE <Index>	NYMEX	30-Dec-94
The J.P. Morgan Front Month Platinum Index – Excess Return	Platinum	JMC10PLE<Index>	NYMEX	30-Dec-94
The J.P. Morgan Front Month Tin Index – Excess Return	Refined Tin	JMC10LTE<Index>	LME	28-Nov-97
The J.P. Morgan Front Month Robusta Coffee Index – Excess Return	Robusta Coffee	JMC10DFE<Index>	NYSE Liffe	31-Oct-91
J.P. Morgan Front Month Silver Index—Excess Return	Silver	JMC10SIE <Index>	CME	30-Dec-94

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange	Inception Date
J.P. Morgan Front Month Soybean Index—Excess Return	Soybean	JMC10SE <Index>	CBOT	30-Dec-94
J.P. Morgan Front Month Soybean Meal Index—Excess Return	Soybean Meal	JMC10SME <Index>	CBOT	16-Jan-95
J.P. Morgan Front Month Soybean Oil Index—Excess Return	Soybean Oil	JMC10BOE <Index>	CBOT	30-Dec-94
J.P. Morgan Front Month Sugar Index—Excess Return	Sugar	JMC10SBE <Index>	ICE	30-Dec-94
J.P. Morgan Front Month Wheat Index—Excess Return	Wheat	JMC10WE <Index>	CBOT	30-Dec-94
The J.P. Morgan Front Month White Sugar Index – Excess Return	White Sugar	JMC10QWE<Index>	NYSE Liffe	31-Dec-90
J.P. Morgan Front Month WTI Crude Oil Index—Excess Return	WTI Crude Oil	JMC10CLE <Index>	NYMEX	30-Dec-94
J.P. Morgan Front Month Zinc Index—Excess Return	Zinc	JMC10LXE <Index>	LME	30-Dec-94

Each J.P. Morgan Front Month Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan Front Month Commodity Index. The Contract at Month Start refers to Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[4].

Table B

Index	Contract at Month Start											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
J.P. Morgan Front Month Aluminum Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Brent Crude Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Cocoa Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Coffee Index—Excess Return	G_0	J_0	J_0	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month U.S. Traded Copper Index—Excess Return	G_0	J_0	J_0	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month U.K. Traded Copper Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Cotton Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Corn Index—Excess Return	H_0	H_0	M_0	M_0	M_0	U_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Feeder Cattle Index—Excess Return	J_0	J_0	J_0	N_0	N_0	N_0	V_0	V_0	V_0	F_1	F_1	F_1
J.P. Morgan Front Month Gas Oil Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Gasoline Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1
J.P. Morgan Front Month Gold Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
The J.P. Morgan Front Month Minneapolis Wheat Index — Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1
J.P. Morgan Front Month Heating Oil Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	F_1
J.P. Morgan Front Month Kansas Wheat Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1
J.P. Morgan Front Month Lead Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1

[4] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

J.P. Morgan Front Month Lean Hogs Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Live Cattle Index—Excess Return	H_0	K_0	K_0	K_0	Q_0	Q_0	Q_0	V_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Natural Gas Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Nickel Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month Palladium Index – Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month Platinum Index – Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
The J.P. Morgan Front Month Tin Index – Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month Robusta Coffee Index – Excess Return	G_0	J_0	J_0	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month Silver Index—Excess Return	G_0	J_0	J_0	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month Soybean Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Soybean Meal Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Soybean Oil Index—Excess Return	H_0	H_0	M_0	M_0	M_0	U_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Sugar Index—Excess Return	J_0	J_0	J_0	N_0	N_0	N_0	V_0	V_0	V_0	F_1	F_1	F_1
J.P. Morgan Front Month Wheat Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month White Sugar Index – Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1
J.P. Morgan Front Month WTI Crude Oil Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Zinc Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1

Additionally, notwithstanding the provisions set forth in Section 8.4 of the Standard Terms, the Index Calculation Agent shall calculate (i) each Index (other than the J.P. Morgan Front Month Soybean Meal Index—Excess Return) to seven (7) significant figures and (ii) the J.P. Morgan Front Month Soybean Meal Index—Excess Return to four (4) decimal places.

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan Front Month Commodity Index is an excess return index.

For more information about each J.P. Morgan Front Month Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPMorgan_Front_Month_Index_Supplement_April_8_2014.pdf

The previous version of the Index Rules for the J.P. Morgan Front Month Commodity Indices is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/Front_Month.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 2: J.P. MORGAN SEASONAL COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan Seasonal Commodity Index. Each J.P. Morgan Seasonal Commodity Index rolls its synthetic exposure in equal parts beginning on the first (1^{st}) Index Publication Day and continuing through and including the fifth (5^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of January 27, 2012 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange
JPMorgan Seasonal Soybean Index—Excess Return	Soybean	JMC1SSE	CBOT
JPMorgan Seasonal Corn Index—Excess Return	Corn	JMC1SCE	CBOT
JPMorgan Seasonal Wheat Index—Excess Return	Wheat	JMC1SWE	CBOT
JPMorgan Seasonal Sugar Index—Excess Return	Sugar	JMC1SSBE	ICE
JPMorgan Seasonal Coffee Index—Excess Return	Coffee	JMC1SKCE	ICE
JPMorgan Seasonal Cocoa Index—Excess Return	Cocoa	JMC1SCCE	ICE
JPMorgan Seasonal Cotton Index—Excess Return	Cotton	JMC1SCTE	ICE
JPMorgan Seasonal Lean Hogs Index—Excess Return	Lean Hogs	JMC1SLHE	CME
JPMorgan Seasonal Live Cattle Index—Excess Return	Live Cattle	JMC1SLCE	CME
JPMorgan Seasonal Natural Gas Index—Excess Return	Natural Gas	JMC1SNGE	NYMEX

Each J.P. Morgan Seasonal Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan Seasonal Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[5].

[5] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Table B

Index	Contract at Month Start											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
JPMorgan Seasonal Soybean Index—Excess Return	N_0	N_0	N_0	N_0	N_0	N_1	N_1	N_1	N_1	N_1	N_1	N_1
JPMorgan Seasonal Corn Index—Excess Return	N_0	N_0	N_0	N_0	N_0	N_1	N_1	N_1	N_1	N_1	N_1	N_1
JPMorgan Seasonal Wheat Index—Excess Return	U_0	U_0	U_0	U_0	U_0	U_0	U_0	U_0	Z_0	Z_0	Z_0	U_1
JPMorgan Seasonal Sugar Index—Excess Return	H_0	H_0	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1
JPMorgan Seasonal Coffee Index—Excess Return	K_0	K_0	K_0	K_0	K_1	K_1	K_1	K_1	K_1	K_1	K_1	K_1
JPMorgan Seasonal Cocoa Index—Excess Return	H_0	H_0	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1
JPMorgan Seasonal Cotton Index—Excess Return	H_0	H_0	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1
JPMorgan Seasonal Lean Hogs Index—Excess Return	J_0	J_0	J_0	Q_0	Q_0	Q_0	Q_0	J_1	J_1	J_1	J_1	J_1
JPMorgan Seasonal Live Cattle Index—Excess Return	J_0	J_0	J_0	V_0	V_0	V_0	V_0	V_0	V_0	J_1	J_1	J_1
JPMorgan Seasonal Natural Gas Index—Excess Return	F_1	F_1	F_1	F_1	F_1	F_1	F_1	F_1	F_1	F_1	F_1	F_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan Seasonal Commodity Index is an excess return index.

For more information about each J.P. Morgan Seasonal Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/Seasonal.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 3: J.P. MORGAN F2 CUSTOM ROLL 1 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan F2 Custom Roll 1 Commodity Index. Each J.P. Morgan F2 Custom Roll 1 Commodity Index rolls its synthetic exposure in equal parts beginning on the last (0) Index Publication Day of the immediately preceding calendar month applicable to such Roll Period and continuing through and including the fourth (4^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement for J.P. Morgan F2 Custom Roll 1 Commodity Indices (other than the J.P. Morgan Seasonal Soybean Meal Index and the J.P. Morgan Seasonal Kansas Wheat Index), dated as of August 14, 2012, the Index Supplement for J.P. Morgan F2 Custom Roll 1 Soybean Meal Index—Excess Return and J.P. Morgan F2 Custom Roll 1 Kansas Wheat Index—Excess Return, dated as of January 25, 2013 and the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	**Underlying Commodity**	**Ticker**	**Underlying Relevant Exchange**
J.P. Morgan F2 Custom Roll 1 Natural Gas Index—Excess Return	Natural Gas	JMC1ANG2	NYMEX
J.P. Morgan F2 Custom Roll 1 WTI Index—Excess Return	WTI	JMC1ACL2	NYMEX
J.P. Morgan F2 Custom Roll 1 Gasoline Index—Excess Return	RBOB	JMC1AXB2	NYMEX
J.P. Morgan F2 Custom Roll 1 Heating Oil Index—Excess Return	Heating Oil	JMC1AHO2	NYMEX
J.P. Morgan F2 Custom Roll 1 Live Cattle Index—Excess Return	Live Cattle	JMC1ALC2	CME
J.P. Morgan F2 Custom Roll 1 Lean Hogs Index—Excess Return	Lean Hogs	JMC1ALH2	CME
J.P. Morgan F2 Custom Roll 1 Wheat Index—Excess Return	Wheat	JMC1AW2	CBOT
J.P. Morgan F2 Custom Roll 1 Corn Index—Excess Return	Corn	JMC1AC2	CBOT
J.P. Morgan F2 Custom Roll 1 Soybean Index—Excess Return	Soybean	JMC1AS2	CBOT
J.P. Morgan F2 Custom Roll 1 Aluminum Index—Excess Return	Aluminum	JMC1ALA2	LME
J.P. Morgan F2 Custom Roll 1 Comex Copper Index—Excess Return	Copper	JMC1AHG2	COMEX
J.P. Morgan F2 Custom Roll 1 Zinc Index—Excess Return	Zinc	JMC1ALXS	LME
J.P. Morgan F2 Custom Roll 1 Nickel Index—Excess Return	Nickel	JMC1ALN2	LME

J.P. Morgan F2 Custom Roll 1 Gold Index—Excess Return	Gold	JMC1AGC2	COMEX
J.P. Morgan F2 Custom Roll 1 Silver Index—Excess Return	Silver	JMC1ASI2	COMEX
J.P. Morgan F2 Custom Roll 1 Sugar Index—Excess Return	Sugar	JMC1ASB2	ICE
J.P. Morgan F2 Custom Roll 1 Cotton Index—Excess Return	Cotton	JMC1ACT2	ICE
J.P. Morgan F2 Custom Roll 1 Coffee Index—Excess Return	Coffee	JMC1AKC2	ICE
J.P. Morgan F2 Custom Roll 1 Brent Crude Index—Excess Return	Brent Crude	JMC1ACO2	ICE
J.P. Morgan F2 Custom Roll 1 Soybean Oil Index—Excess Return	Soybean Oil	JMC1ABO2	CBOT
J.P. Morgan F2 Custom Roll 1 Soybean Meal Index—Excess Return	Soybean Meal	JMC1ASM2	CBOT
J.P. Morgan F2 Custom Roll 1 Kansas Wheat Index—Excess Return	Kansas Wheat	JMC1AKW2	CBOT

Each J.P. Morgan F2 Custom Roll 1 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan F2 Custom Roll 1 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[6].

Table B

Index	Contract at Month Start											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
J.P. Morgan F2 Custom Roll 1 Natural Gas Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 WTI Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Gasoline Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Heating Oil Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Live Cattle Index—Excess Return	J_0	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1
J.P. Morgan F2 Custom Roll 1 Lean Hogs Index—Excess Return	J_0	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1
J.P. Morgan F2 Custom Roll 1 Wheat Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Corn Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Soybean Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Aluminum Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Comex Copper Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Zinc Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1

[6] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

J.P. Morgan F2 Custom Roll 1 Nickel Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Gold Index—Excess Return	J_0	M_0	M_0	Q_0	Q_0	Z_0	Z_0	Z_0	Z_0	G_1	G_1	J_1
J.P. Morgan F2 Custom Roll 1 Silver Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Sugar Index—Excess Return	K_0	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Cotton Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Coffee Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Brent Crude Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
J.P. Morgan F2 Custom Roll 1 Soybean Oil Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Soybean Meal Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 1 Kansas Wheat Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan F2 Custom Roll 1 Commodity Index is an excess return index.

For more information about each J.P. Morgan F2 Custom Roll 1 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/F2_Custom_Roll_1.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 4: J.P. MORGAN F2 CUSTOM ROLL 2 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan F2 Custom Roll 2 Commodity Index. Each J.P. Morgan F2 Custom Roll 2 Commodity Index rolls its synthetic exposure in equal parts beginning on the fifth (5^{th}) Index Publication Day and continuing through and including the ninth (9^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement for J.P. Morgan F2 Custom Roll 2 Commodity Indices (other than the J.P. Morgan Seasonal Soybean Meal Index and the J.P. Morgan Seasonal Kansas Wheat Index), dated as of August 14, 2012, the Index Supplement for J.P. Morgan F2 Custom Roll 2 Soybean Meal Index—Excess Return and J.P. Morgan F2 Custom Roll 2 Kansas Wheat Index—Excess Return, dated as of January 25, 2013 and the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange
J.P. Morgan F2 Custom Roll 2 Natural Gas Index—Excess Return	Natural Gas	JMC1DNG2	NYMEX
J.P. Morgan F2 Custom Roll 2 WTI Index—Excess Return	WTI	JMC1DCL2	NYMEX
J.P. Morgan F2 Custom Roll 2 Gasoline Index—Excess Return	RBOB	JMC1DXB2	NYMEX
J.P. Morgan F2 Custom Roll 2 Heating Oil Index—Excess Return	Heating Oil	JMC1DHO2	NYMEX
J.P. Morgan F2 Custom Roll 2 Live Cattle Index—Excess Return	Live Cattle	JMC1DLC2	CME
J.P. Morgan F2 Custom Roll 2 Lean Hogs Index—Excess Return	Lean Hogs	JMC1DLH2	CME
J.P. Morgan F2 Custom Roll 2 Wheat Index—Excess Return	Wheat	JMC1DW2	CBOT
J.P. Morgan F2 Custom Roll 2 Corn Index—Excess Return	Corn	JMC1DC2	CBOT
J.P. Morgan F2 Custom Roll 2 Soybean Index—Excess Return	Soybean	JMC1DS2	CBOT
J.P. Morgan F2 Custom Roll 2 Aluminum Index—Excess Return	Aluminum	JMC1DLA2	LME
J.P. Morgan F2 Custom Roll 2 Comex Copper Index—Excess Return	Copper	JMC1DHG2	COMEX
J.P. Morgan F2 Custom Roll 2 Zinc Index—Excess Return	Zinc	JMC1DLXS	LME
J.P. Morgan F2 Custom Roll 2 Nickel Index—Excess Return	Nickel	JMC1DLN2	LME
J.P. Morgan F2 Custom Roll 2 Gold Index—Excess Return	Gold	JMC1DGC2	COMEX

J.P. Morgan F2 Custom Roll 2 Silver Index—Excess Return	Silver	JMC1DSI2	COMEX
J.P. Morgan F2 Custom Roll 2 Sugar Index—Excess Return	Sugar	JMC1DSB2	ICE
J.P. Morgan F2 Custom Roll 2 Cotton Index—Excess Return	Cotton	JMC1DCT2	ICE
J.P. Morgan F2 Custom Roll 2 Coffee Index—Excess Return	Coffee	JMC1DKC2	ICE
J.P. Morgan F2 Custom Roll 2 Brent Crude Index—Excess Return	Brent Crude	JMC1DCO2	ICE
J.P. Morgan F2 Custom Roll 2 Soybean Oil Index—Excess Return	Soybean Oil	JMC1DBO2	CBOT
J.P. Morgan F2 Custom Roll 2 Soybean Meal Index—Excess Return	Soybean Meal	JMC1DSM2	CBOT
J.P. Morgan F2 Custom Roll 2 Kansas Wheat Index—Excess Return	Kansas Wheat	JMC1DKW2	CBOT

Each J.P. Morgan F2 Custom Roll 2 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan F2 Custom Roll 2 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[7].

Table B

Index	**Contract at Month Start**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
J.P. Morgan F2 Custom Roll 2 Natural Gas Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 WTI Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Gasoline Index—Excess Return*	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Heating Oil Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Live Cattle Index—Excess Return	J_0	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1
J.P. Morgan F2 Custom Roll 2 Lean Hogs Index—Excess Return	J_0	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1
J.P. Morgan F2 Custom Roll 2 Wheat Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Corn Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Soybean Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Aluminum Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Comex Copper Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Zinc Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Nickel Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1

[7] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

J.P. Morgan F2 Custom Roll 2 Gold Index—Excess Return	J_0	M_0	M_0	Q_0	Q_0	Z_0	Z_0	Z_0	Z_0	G_1	G_1	J_1
J.P. Morgan F2 Custom Roll 2 Silver Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Sugar Index—Excess Return	K_0	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Cotton Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Coffee Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Brent Crude Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
J.P. Morgan F2 Custom Roll 2 Soybean Oil Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Soybean Meal Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1
J.P. Morgan F2 Custom Roll 2 Kansas Wheat Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan F2 Custom Roll 2 Commodity Index is an excess return index.

For more information about each J.P. Morgan F2 Custom Roll 2 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/F2_Custom_Roll_2.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 5: J.P. MORGAN F2 CUSTOM ROLL 3 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan F2 Custom Roll 3 Commodity Index. Each J.P. Morgan F2 Custom Roll 3 Commodity Index rolls its synthetic exposure in equal parts beginning on the fifth to last (-5th) Index Publication Day immediately preceding the beginning of the applicable Roll Period and continuing through and including the fourth (4th) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of February 21, 2013 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange
J.P. Morgan Natural Gas F2 Custom Roll 3 Index—Excess Return	Natural Gas	JMC11NG2	NYMEX
J.P. Morgan WTI F2 Custom Roll 3 Index—Excess Return	WTI	JMC11CL2	NYMEX
J.P. Morgan Gasoline F2 Custom Roll 3 Index—Excess Return	RBOB	JMC11XB2	NYMEX
J.P. Morgan Heating Oil F2 Custom Roll 3 Index—Excess Return	Heating Oil	JMC11HO2	NYMEX
J.P. Morgan Live Cattle F2 Custom Roll 3 Index—Excess Return	Live Cattle	JMC11LC2	CME
J.P. Morgan Lean Hogs F2 Custom Roll 3 Index—Excess Return	Lean Hogs	JMC11LH2	CME
J.P. Morgan Wheat F2 Custom Roll 3 Index—Excess Return	Wheat	JMC11W2	CBOT
J.P. Morgan Corn F2 Custom Roll 3 Index—Excess Return	Corn	JMC11C2	CBOT
J.P. Morgan Soybean F2 Custom Roll 3 Index—Excess Return	Soybean	JMC11S2	CBOT
J.P. Morgan Aluminium F2 Custom Roll 3 Index—Excess Return	Aluminium	JMC11LA2	LME
J.P. Morgan Comex Copper F2 Custom Roll 3 Index—Excess Return	Copper	JMC11HG2	COMEX
J.P. Morgan Zinc F2 Custom Roll 3 Index—Excess Return	Zinc	JMC11LX2	LME
J.P. Morgan Nickel F2 Custom Roll 3 Index—Excess Return	Nickel	JMC11LN2	LME
J.P. Morgan Gold F2 Custom Roll 3 Index—Excess Return	Gold	JMC11GC2	COMEX
J.P. Morgan Silver F2 Custom Roll 3 Index—Excess Return	Silver	JMC11SI2	COMEX
J.P. Morgan Sugar F2 Custom Roll 3 Index—Excess Return	Sugar	JMC11SB2	ICE

J.P. Morgan Cotton F2 Custom Roll 3 Index—Excess Return	Cotton	JMC11CT2	ICE
J.P. Morgan Coffee F2 Custom Roll 3 Index—Excess Return	Coffee	JMC11KC2	ICE
J.P. Morgan Brent Crude F2 Custom Roll 3 Index—Excess Return	Brent Crude	JMC11CO2	ICE
J.P. Morgan Soybean Oil F2 Custom Roll 3 Index—Excess Return	Soybean Oil	JMC11BO2	CBOT
J.P. Morgan Soybean Meal F2 Custom Roll 3 Index—Excess Return	Soybean Meal	JMC11SM2	CBOT
J.P. Morgan Kansas Wheat F2 Custom Roll 3 Index—Excess Return	Kansas Wheat	JMC11KW2	KCBOT

Each J.P. Morgan F2 Custom Roll 3 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan F2 Custom Roll 3 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[8].

Table B

Index	**Contract at Month Start**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
J.P. Morgan Natural Gas F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan WTI F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan Gasoline F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan Heating Oil F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan Live Cattle F2 Custom Roll 3 Index—Excess Return	J_0	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1
J.P. Morgan Lean Hogs F2 Custom Roll 3 Index—Excess Return	J_0	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1
J.P. Morgan Wheat F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan Corn F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan Soybean F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan Aluminium F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan Comex Copper F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan Zinc F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1
J.P. Morgan Nickel F2 Custom Roll 3	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1

[8] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Index—Excess Return												
J.P. Morgan Gold F2 Custom Roll 3 Index—Excess Return	J_0	M_0	M_0	Q_0	Q_0	Z_0	Z_0	Z_0	Z_0	G_1	G_1	J_1
J.P. Morgan Silver F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan Sugar F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1
J.P. Morgan Cotton F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan Coffee F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1
J.P. Morgan Brent Crude F2 Custom Roll 3 Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
J.P. Morgan Soybean Oil F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1
J.P. Morgan Soybean Meal F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1
J.P. Morgan Kansas Wheat F2 Custom Roll 3 Index—Excess Return	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan F2 Custom Roll 3 Commodity Index is an excess return index.

For more information about each J.P. Morgan F2 Custom Roll 3 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/direcdoc/F2_Custom_Roll_3.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 6: J.P. MORGAN CONGESTION F3 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan Congestion F3 Commodity Index. Each J.P. Morgan Congestion F3 Commodity Index rolls its synthetic exposure in equal parts beginning on the last (0) Index Publication Day of the immediately preceding calendar month applicable to such Roll Period and continuing through and including the fourth (4th) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of March 27, 2013 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange
J.P. Morgan Congestion F3 Brent Crude Excess Return Index	Brent Crude Oil	JMC1BBRE	Not Applicable
J.P. Morgan Congestion F3 Gas Oil Excess Return Index	Gas Oil	JMC1BGOE	Not Applicable
J.P. Morgan Congestion F3 Heating Oil Excess Return Index	Heating Oil	JMC1BHOE	Not Applicable
J.P. Morgan Congestion F3 WTI Crude Excess Return Index	WTI Crude Oil	JMC1BCLE	Not Applicable
J.P. Morgan Congestion F3 Natural Gas Excess Return Index	Natural Gas	JMC1BNGE	Not Applicable
J.P. Morgan Congestion F3 Aluminum Excess Return Index	Aluminum	JMC1BIAE	Not Applicable
J.P. Morgan Congestion F3 LME Copper Excess Return Index	LME Copper	JMC1BICE	Not Applicable
J.P. Morgan Congestion F3 Lead Excess Return Index	Lead	JMC1BILE	Not Applicable
J.P. Morgan Congestion F3 Nickel Excess Return Index	Nickel	JMC1BIKE	Not Applicable
J.P. Morgan Congestion F3 Zinc Excess Return Index	Zinc	JMC1BIZE	Not Applicable
J.P. Morgan Congestion F3 Wheat Excess Return Index	Wheat	JMC1BWHE	Not Applicable
J.P. Morgan Congestion F3 Kansas Wheat Excess Return Index	Kansas Wheat	JMC1BKWE	Not Applicable
J.P. Morgan Congestion F3 Corn Excess Return Index	Corn	JMC1BCNE	Not Applicable
J.P. Morgan Congestion F3 Soybeans Excess Return Index	Soybeans	JMC1BSOE	Not Applicable
J.P. Morgan Congestion F3 Cotton Excess Return Index	Cotton	JMC1BCTE	Not Applicable
J.P. Morgan Congestion F3 Sugar Excess Return Index	Sugar	JMC1BSBE	Not Applicable

J.P. Morgan Congestion F3 Coffee Excess Return Index	Coffee	JMC1BKCE	Not Applicable
J.P. Morgan Congestion F3 Cocoa Excess Return Index	Cocoa	JMC1BCCE	Not Applicable
J.P. Morgan Congestion F3 Live Cattle Excess Return Index	Live Cattle	JMC1BLCE	Not Applicable
J.P. Morgan Congestion F3 Feeder Cattle Excess Return Index	Feeder Cattle	JMC1BFCE	Not Applicable
J.P. Morgan Congestion F3 Lean Hogs Excess Return Index	Lean Hogs	JMC1BLHE	Not Applicable

Each J.P. Morgan Congestion F3 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan Congestion F3 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[9].

Table B

Index	Contract at Month Start											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
J.P. Morgan Congestion F3 Brent Crude Excess Return Index	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1	K_1
J.P. Morgan Congestion F3 Gas Oil Excess Return Index	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
J.P. Morgan Congestion F3 Heating Oil Excess Return Index	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
J.P. Morgan Congestion F3 WTI Crude Excess Return Index	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
J.P. Morgan Congestion F3 Natural Gas Excess Return Index	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
J.P. Morgan Congestion F3 Aluminum Excess Return Index	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
J.P. Morgan Congestion F3 LME Copper Excess Return Index	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
J.P. Morgan Congestion F3 Lead Excess Return Index	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
J.P. Morgan Congestion F3 Nickel Excess Return Index	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
J.P. Morgan Congestion F3 Zinc Excess Return Index	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
J.P. Morgan Congestion F3 Wheat Excess Return Index	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
J.P. Morgan Congestion F3 Kansas Wheat Excess Return Index	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
J.P. Morgan Congestion F3 Corn	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1

[9] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Excess Return Index												
J.P. Morgan Congestion F3 Soybeans Excess Return Index	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
J.P. Morgan Congestion F3 Cotton Excess Return Index	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
J.P. Morgan Congestion F3 Sugar Excess Return Index	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1	K_1
J.P. Morgan Congestion F3 Coffee Excess Return Index	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
J.P. Morgan Congestion F3 Cocoa Excess Return Index	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
J.P. Morgan Congestion F3 Live Cattle Excess Return Index	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1
J.P. Morgan Congestion F3 Feeder Cattle Excess Return Index	K_0	Q_0	Q_0	Q_0	U_0	V_0	X_0	F_1	F_1	H_1	H_1	J_1
J.P. Morgan Congestion F3 Lean Hogs Excess Return Index	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan Congestion F3 Commodity Index is an excess return index.

For more information about each J.P. Morgan Congestion F3 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/F3_Custom_Roll_Indices.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 7: J.P. MORGAN F3 CUSTOM ROLL 1 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan F3 Custom Roll 1 Commodity Index. Each J.P. Morgan F3 Custom Roll 1 Commodity Index rolls its synthetic exposure in equal parts beginning on the last (0) Index Publication Day of the immediately preceding calendar month applicable to such Roll Period and continuing through and including the fourth (4^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement for J.P. Morgan F3 Custom Roll 1 Commodity Indices (other than the J.P. Morgan Seasonal Soybean Meal Index and the J.P. Morgan Seasonal Kansas Wheat Index), dated as of January 31, 2012, the Index Supplement for J.P. Morgan F3 Custom Roll 1 Soybean Meal Index—Excess Return and J.P. Morgan F3 Custom Roll 1 Kansas Wheat Index—Excess Return, dated as of January 25, 2013 and the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange
JPMorgan F3 Custom Roll 1 Natural Gas Index—Excess Return	Natural Gas	JMC1ANGE	NYMEX
JPMorgan F3 Custom Roll 1 WTI Index—Excess Return	WTI	JMC1ACLE	NYMEX
JPMorgan F3 Custom Roll 1 Gasoline Index—Excess Return	RBOB*	JMC1ARBE	NYMEX
JPMorgan F3 Custom Roll 1 Heating Oil Index—Excess Return	Heating Oil	JMC1AHOE	NYMEX
JPMorgan F3 Custom Roll 1 Live Cattle Index—Excess Return	Live Cattle	JMC1ALCE	CME
JPMorgan F3 Custom Roll 1 Lean Hogs Index—Excess Return	Lean Hogs	JMC1ALHE	CME
JPMorgan F3 Custom Roll 1 Wheat Index—Excess Return	Wheat	JMC1AWHE	CBOT
JPMorgan F3 Custom Roll 1 Corn Index—Excess Return	Corn	JMC1ACNE	CBOT
JPMorgan F3 Custom Roll 1 Soybean Index—Excess Return	Soybean	JMC1ASYE	CBOT
JPMorgan F3 Custom Roll 1 Aluminium Index—Excess Return	Aluminium	JMC1AALE	LME
JPMorgan F3 Custom Roll 1 Comex Copper Index—Excess Return	Copper	JMC1AHGE	COMEX
JPMorgan F3 Custom Roll 1 Zinc Index—Excess Return	Zinc	JMC1AZSE	LME
JPMorgan F3 Custom Roll 1 Nickel Index—Excess Return	Nickel	JMC1ALNE	LME
JPMorgan F3 Custom Roll 1 Gold Index—Excess Return	Gold	JMC1AGCE	COMEX

JPMorgan F3 Custom Roll 1 Silver Index—Excess Return	Silver	JMC1ASIE	COMEX
JPMorgan F3 Custom Roll 1 Sugar Index—Excess Return	Sugar	JMC1ASBE	ICE
JPMorgan F3 Custom Roll 1 Cotton Index—Excess Return	Cotton	JMC1ACTE	ICE
JPMorgan F3 Custom Roll 1 Coffee Index—Excess Return	Coffee	JMC1AKCE	ICE
JPMorgan F3 Custom Roll 1 Cocoa Index—Excess Return	Cocoa	JMC1ACCE	ICE
JPMorgan F3 Custom Roll 1 Soybean Oil Index—Excess Return	Soybean Oil	JMC1ABOE	CBOT
JPMorgan F3 Custom Roll 1 Brent Crude Oil Index—Excess Return	Brent	JMC1ACOE	ICE
JPMorgan F3 Custom Roll 1 Gas Oil Index—Excess Return	Gas Oil	JMC1AGOE	ICE
JPMorgan F3 Custom Roll 1 Kansas Wheat Index—Excess Return	Kansas Wheat	JMC1AWHE	KCB
JPMorgan F3 Custom Roll 1 Lead Index—Excess Return	Lead	JMC1APBE	LME
JPMorgan F3 Custom Roll 1 Feeder Cattle Index—Excess Return	Feeder Cattle	JMC1AFCE	CME
JPMorgan F3 Custom Roll 1 Soybean Meal Index—Excess Return	Soybean Meal	JMC1ASME	CBOT
J.P. Morgan F3 Custom Roll 1 Kansas Wheat Index—Excess Return	Kansas Wheat	JMC1AKWE	CBOT

Each J.P. Morgan F3 Custom Roll 1 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan F3 Custom Roll 1 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[10].

Table B

Index	**Contract at Month Start**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
JPMorgan F3 Custom Roll 1 Natural Gas Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 WTI Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Gasoline Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Heating Oil Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Live Cattle Index—Excess Return	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1
JPMorgan F3 Custom Roll 1 Lean Hogs Index—Excess Return	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1
JPMorgan F3 Custom Roll 1 Wheat Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Corn Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Soybean Index—Excess Return	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Aluminium Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Comex Copper Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Zinc Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Nickel	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1

[10] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Index—Excess Return												
JPMorgan F3 Custom Roll 1 Gold Index—Excess Return	M_0	M_0	Q_0	Q_0	Z_0	Z_0	Z_0	Z_0	G_1	G_1	J_1	J_1
JPMorgan F3 Custom Roll 1 Silver Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Sugar Index—Excess Return	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Cotton Index—Excess Return	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Coffee Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Cocoa Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Soybean Oil Index—Excess Return	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Brent Crude Oil Index—Excess Return	N_0	N_0	U_0	U_0	X_0	X_0	F	F_1	H_1	H	K_1	K_1
JPMorgan F3 Custom Roll 1 Gas Oil Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Kansas Wheat Oil Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K1
JPMorgan F3 Custom Roll 1 Lead Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 1 Feeder Cattle Index—Excess Return	K_0	Q_0	Q_0	Q_0	V_0	V_0	F_1	F_1	F_1	H_1	H_1	K_1
J.P. Morgan F3 Custom Roll 1 Soybean Meal Index—Excess Return	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1
J.P. Morgan F3 Custom Roll 1 Kansas Wheat Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan F3 Custom Roll 1 Commodity Index is an excess return index.

For more information about each J.P. Morgan F3 Custom Roll 1 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/F3_Custom_Roll_1.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 8: J.P. MORGAN F3 CUSTOM ROLL 2 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan F3 Custom Roll 2 Commodity Index. Each J.P. Morgan F3 Custom Roll 2 Commodity Index rolls its synthetic exposure in equal parts beginning on the fifth to last (-5th) Index Publication Day immediately preceding the beginning of the applicable Roll Period and continuing through and including the fourth (4th) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of February 21, 2013 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange
JPMorgan F3 Custom Roll 2 Natural Gas Index—Excess Return	Natural Gas	JMC11NG3	NYMEX
JPMorgan F3 Custom Roll 2 WTI Index—Excess Return	WTI	JMC11CL3	NYMEX
JPMorgan F3 Custom Roll 2 Gasoline Index—Excess Return	RBOB	JMC11RB3	NYMEX
JPMorgan F3 Custom Roll 2 Heating Oil Index—Excess Return	Heating Oil	JMC11HO3	NYMEX
JPMorgan F3 Custom Roll 2 Live Cattle Index—Excess Return	Live Cattle	JMC11LC3	CME
JPMorgan F3 Custom Roll 2 Lean Hogs Index—Excess Return	Lean Hogs	JMC11LH3	CME
JPMorgan F3 Custom Roll 2 Wheat Index—Excess Return	Wheat	JMC11WH3	CBOT
JPMorgan F3 Custom Roll 2 Corn Index—Excess Return	Corn	JMC11CN3	CBOT
JPMorgan F3 Custom Roll 2 Soybean Index—Excess Return	Soybean	JMC11SY3	CBOT
JPMorgan F3 Custom Roll 2 Aluminium Index—Excess Return	Aluminium	JMC11AL3	LME
JPMorgan F3 Custom Roll 2 Comex Copper Index—Excess Return	Copper	JMC11HG3	COMEX
JPMorgan F3 Custom Roll 2 Zinc Index—Excess Return	Zinc	JMC11ZS3	LME
JPMorgan F3 Custom Roll 2 Nickel Index—Excess Return	Nickel	JMC11LN3	LME
JPMorgan F3 Custom Roll 2 Gold Index—Excess Return	Gold	JMC11GC3	COMEX
JPMorgan F3 Custom Roll 2 Silver Index—Excess Return	Silver	JMC11SI3	COMEX
JPMorgan F3 Custom Roll 2 Sugar Index—Excess Return	Sugar	JMC11SB3	ICE

JPMorgan F3 Custom Roll 2 Cotton Index—Excess Return	Cotton	JMC11CT3	ICE
JPMorgan F3 Custom Roll 2 Coffee Index—Excess Return	Coffee	JMC11KC3	ICE
JPMorgan F3 Custom Roll 2 Soybean Oil Index—Excess Return	Soybean Oil	JMC11BO3	CBOT
JPMorgan F3 Custom Roll 2 Brent Crude Oil Index—Excess Return	Brent	JMC11CO3	ICE
JPMorgan F3 Custom Roll 2 Kansas Wheat Index—Excess Return	Kansas Wheat	JMC11WH3	KCBOT
JP Morgan F3 Custom Roll Soybean Meal Index--Excess Return	Soybean Meal	JMC11SM3	CBOT

Each J.P. Morgan F3 Custom Roll 2 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan F3 Custom Roll 2 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[11].

Table B

Index	Contract at Month Start											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
JPMorgan F3 Custom Roll 2 Natural Gas Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 WTI Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Gasoline Index—Excess Return*	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Heating Oil Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Live Cattle Index—Excess Return	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1
JPMorgan F3 Custom Roll 2 Lean Hogs Index—Excess Return	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1
JPMorgan F3 Custom Roll 2 Wheat Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Corn Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Soybean Index—Excess Return	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Aluminium Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Comex Copper Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Zinc Index—Excess Return	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Nickel	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1

[11] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Index—Excess Return												
JPMorgan F3 Custom Roll 2 Gold Index—Excess Return	M_0	M_0	Q_0	Q_0	Z_0	Z_0	Z_0	Z_0	G_1	G_1	J_1	J_1
JPMorgan F3 Custom Roll 2 Silver Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Sugar Index—Excess Return	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Cotton Index—Excess Return	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Coffee Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Cocoa Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Soybean Oil Index—Excess Return	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 2 Brent Crude Oil Index—Excess Return	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1
JPMorgan F3 Custom Roll 2 Kansas Wheat Oil Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K1
JPMorgan F3 Custom Roll 2 Soybean Meal Index—Excess Return	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan F3 Custom Roll 2 Commodity Index is an excess return index.

For more information about each J.P. Morgan F3 Custom Roll 2 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/F3_Custom_Roll_2.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 9: J.P. MORGAN F3 CUSTOM ROLL 3 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan F3 Custom Roll 3 Commodity Index. Each J.P. Morgan F3 Custom Roll 3 Commodity Index rolls its synthetic exposure in equal parts beginning on the fifth to last (-5th) Index Publication Day immediately preceding the beginning of the applicable Roll Period and continuing through and including the fourth (4th) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of February 21, 2013 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange
JPMorgan F3 Custom Roll 3 Natural Gas Index—Excess Return	Natural Gas	JMC12NG3	NYMEX
JPMorgan F3 Custom Roll 3 WTI Index—Excess Return	WTI	JMC12CL3	NYMEX
JPMorgan F3 Custom Roll 2 Gasoline Index—Excess Return	RBOB	JMC12HU3	NYMEX
JPMorgan F3 Custom Roll 3 Heating Oil Index—Excess Return	Heating Oil	JMC12HO3	NYMEX
JPMorgan F3 Custom Roll 3 Live Cattle Index—Excess Return	Live Cattle	JMC12LC3	CME
JPMorgan F3 Custom Roll 3 Lean Hogs Index—Excess Return	Lean Hogs	JMC12LH3	CME
JPMorgan F3 Custom Roll 2 Wheat Index—Excess Return	Wheat	JMC12W3	CBOT
JPMorgan F3 Custom Roll 3 Corn Index—Excess Return	Corn	JMC12C3	CBOT
JPMorgan F3 Custom Roll 2 Soybean Index—Excess Return	Soybean	JMC12S3	CBOT
JPMorgan F3 Custom Roll 3 Aluminium Index—Excess Return	Aluminium	JMC12IA3	LME
JPMorgan F3 Custom Roll 3 Copper Index—Excess Return	Copper	JMC12IC3	LME
JPMorgan F3 Custom Roll 3 Zinc Index—Excess Return	Zinc	JMC12IZ3	LME
JPMorgan F3 Custom Roll 3 Nickel Index—Excess Return	Nickel	JMC12IN3	LME
JPMorgan F3 Custom Roll 3 Gold Index—Excess Return	Gold	JMC12GC3	COMEX
JPMorgan F3 Custom Roll 3 Silver Index—Excess Return	Silver	JMC12SI3	COMEX
JPMorgan F3 Custom Roll 3 Sugar Index—Excess Return	Sugar	JMC12SB3	ICE
JPMorgan F3 Custom Roll 3 Cotton Index—Excess Return	Cotton	JMC12CT3	ICE

JPMorgan F3 Custom Roll 3 Coffee Index—Excess Return	Coffee	JMC12KC3	ICE
JPMorgan F3 Custom Roll 3 Cocoa Index—Excess Return	Cocoa	JMC12CC3	ICE
JPMorgan F3 Custom Roll 3 Brent Crude Oil Index—Excess Return	Brent	JMC12CO3	ICE
JPMorgan F3 Custom Roll 3 Gas Oil Index—Excess Return	Gas Oil	JMC12GO3	ICE
JPMorgan F3 Custom Roll 3 Kansas Wheat Index—Excess Return	Kansas Wheat	JMC12KW3	KCBOT
JPMorgan F3 Custom Roll 3 Lead Index—Excess Return	Lead	JMC12IL3	LME
JPMorgan F3 Custom Roll 3 Feeder Cattle Index—Excess Return	Feeder Cattle	JMC12FC3	CME

Each J.P. Morgan F3 Custom Roll 3 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan F3 Custom Roll 3 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[12].

Table B

Index	**Contract at Month Start**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
JPMorgan F3 Custom Roll 3 Natural Gas Index—Excess Return	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
JPMorgan F3 Custom Roll 3 WTI Index—Excess Return	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
JPMorgan F3 Custom Roll 3 Gasoline Index—Excess Return*	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
JPMorgan F3 Custom Roll 3 Heating Oil Index—Excess Return	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
JPMorgan F3 Custom Roll 3 Live Cattle Index—Excess Return	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1
JPMorgan F3 Custom Roll 3 Lean Hogs Index—Excess Return	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1
JPMorgan F3 Custom Roll 3 Wheat Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 3 Corn Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 3 Soybean Index—Excess Return	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 3 Aluminium Index—Excess Return	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
JPMorgan F3 Custom Roll 3 Copper Index—Excess Return	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
JPMorgan F3 Custom Roll 3 Zinc Index—Excess Return	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
JPMorgan F3 Custom Roll 3 Nickel	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1

[12] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Index—Excess Return												
JPMorgan F3 Custom Roll 3 Gold Index—Excess Return	M_0	M_0	Q_0	Q_0	Z_0	Z_0	Z_0	Z_0	G_1	G_1	J_1	J_1
JPMorgan F3 Custom Roll 3 Silver Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 3 Sugar Index—Excess Return	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 3 Cotton Index—Excess Return	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 3 Coffee Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 3 Cocoa Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1
JPMorgan F3 Custom Roll 3 Brent Crude Oil Index—Excess Return	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1	K_1
JPMorgan F3 Custom Roll 3 Gas Oil Index—Excess Return	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
JPMorgan F3 Custom Roll 3 Kansas Wheat Oil Index—Excess Return	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K1
JPMorgan F3 Custom Roll 3 Lead Index—Excess Return	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1
JPMorgan F3 Custom Roll 3 Feeder Cattle Index—Excess Return	K_0	Q_0	Q_0	Q_0	U_0	V_0	X_0	F_1	F_1	H_1	H_1	J_1
JPMorgan F3 Custom Roll 3 Natural Gas Index—Excess Return	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1	G_1	H_1	J_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan F3 Custom Roll 3 Commodity Index is an excess return index.

For more information about each J.P. Morgan F3 Custom Roll 3 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/F3_Custom_Roll_3.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 10: J.P. MORGAN F5 CUSTOM ROLL 1 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan F5 Custom Roll 1 Commodity Index. Each J.P. Morgan F5 Custom Roll 1 Commodity Index rolls its synthetic exposure in equal parts beginning on the last (0) Index Publication Day of the immediately preceding calendar month applicable to such Roll Period and continuing through and including the fourth (4^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement for J.P. Morgan F5 Custom Roll 1 Commodity Indices (other than the J.P. Morgan Seasonal Soybean Meal Index and the J.P. Morgan Seasonal Kansas Wheat Index), dated as of January 31, 2012, the Index Supplement for J.P. Morgan F5 Custom Roll 1 Soybean Meal Index—Excess Return and J.P. Morgan F5 Custom Roll 1 Kansas Wheat Index—Excess Return, dated as of January 25, 2013 and the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	**Underlying Commodity**	**Ticker**	**Underlying Relevant Exchange**
JPMorgan Brent Crude Oil F5 Custom Roll 1 Index—Excess Return	BRENT Crude Oil	JMC1ACO5	ICE
JPMorgan WTI Crude Oil F5 Custom Roll 1 Index—Excess Return	WTI Crude Oil	JMC1ACL5	NYMEX
JPMorgan RBOB Gasoline F5 Custom Roll 1 Index—Excess Return	RBOB Gasoline	JMC1ARB5	NYMEX
JPMorgan Heating Oil F5 Custom Roll 1 Index—Excess Return	Heating Oil	JMC1AHO5	NYMEX
JPMorgan Natural Gas F5 Custom Roll 1 Index—Excess Return	Natural Gas	JMC1ANG5	NYMEX
JPMorgan Aluminium F5 Custom Roll 1 Index—Excess Return	Aluminium	JMC1AAL5	LME
JPMorgan Copper F5 Custom Roll 1 Index—Excess Return	Copper	JMC1AHG5	COMEX
JPMorgan Nickel F5 Custom Roll 1 Index—Excess Return	Nickel	JMC1ANI5	LME
JPMorgan Zinc F5 Custom Roll 1 Index—Excess Return	Zinc	JMC1AZS5	LME
JPMorgan Gold F5 Custom Roll 1 Index—Excess Return	Gold	JMC1AGC5	CME
JPMorgan Silver F5 Custom Roll 1 Index—Excess Return	Silver	JMC1ASI5	CME
JPMorgan Wheat F5 Custom Roll 1 Index—Excess Return	Wheat	JMC1AWH5	CBOT

JPMorgan Corn F5 Custom Roll 1 Index—Excess Return	Corn	JMC1ACN5	CBOT
JPMorgan Soybeans F5 Custom Roll 1 Index—Excess Return	Soybeans	JMC1ASY5	CBOT
JPMorgan Soybean Oil F5 Custom Roll 1 Index—Excess Return	Soybean Oil	JMC1ABO5	CBOT
JPMorgan Coffee F5 Custom Roll 1 Index—Excess Return	Coffee	JMC1AKC5	NYBOT
JPMorgan Sugar F5 Custom Roll 1 Index—Excess Return	Sugar	JMC1ASB5	NYBOT
JPMorgan Cotton F5 Custom Roll 1 Index—Excess Return	Cotton	JMC1ACT5	NYBOT
JPMorgan Lean Hogs F5 Custom Roll 1 Index—Excess Return	Lean Hogs	JMC1ALH5	CME
JPMorgan Live Cattle F5 Custom Roll 1 Index—Excess Return	Live Cattle	JMC1ALC5	CME
J.P. Morgan F5 Custom Roll 1 Soybean Meal Index—Excess Return	Soybean Meal	JMC1ASM5	CBOT
J.P. Morgan F5 Custom Roll 1 Kansas Wheat Index—Excess Return	Kansas Wheat	JMC1AKW5	CBOT

Each J.P. Morgan F5 Custom Roll 1 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan F5 Custom Roll 1 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[13].

Table B

Index	Contract at Month Start											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
JPMorgan WTI Crude Oil F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan RBOB Gasoline F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Heating Oil F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Natural Gas F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Aluminium F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Copper F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Nickel F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Zinc F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Gold F5 Custom Roll 1 Index—Excess Return	Q_0	Q_0	Z_0	Z_0	Z_0	Z_0	G_1	G_1	J_1	J_1	M_1	M_1
JPMorgan Silver F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Wheat F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Corn F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Soybeans F5 Custom Roll 1	N_0	X_0	X_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1

[13] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Index—Excess Return												
JPMorgan Soybean Oil F5 Custom Roll 1 Index—Excess Return	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Coffee F5 Custom Roll 1 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Sugar F5 Custom Roll 1 Index—Excess Return	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Cotton F5 Custom Roll 1 Index—Excess Return	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Lean Hogs F5 Custom Roll 1 Index—Excess Return	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1	M_1	M_1
JPMorgan Live Cattle F5 Custom Roll 1 Index—Excess Return	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1	M_1	M_1
J.P. Morgan F5 Custom Roll 1 Soybean Meal Index—Excess Return	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan F5 Custom Roll 1 Kansas Wheat Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan F5 Custom Roll 1 Commodity Index is an excess return index.

For more information about each J.P. Morgan F5 Custom Roll 1 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/F5_Custom_Roll_1.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 11: J.P. MORGAN F5 CUSTOM ROLL 2 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan F5 Custom Roll 2 Commodity Index. Each J.P. Morgan F5 Custom Roll 2 Commodity Index rolls its synthetic exposure in equal parts beginning on the fifth (5^{th}) Index Publication Day and continuing through and including the ninth (9^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement for J.P. Morgan F5 Custom Roll 2 Commodity Indices (other than the J.P. Morgan Seasonal Soybean Meal Index and the J.P. Morgan Seasonal Kansas Wheat Index), dated as of January 31, 2012, the Index Supplement for J.P. Morgan F5 Custom Roll 2 Soybean Meal Index—Excess Return and J.P. Morgan F5 Custom Roll 2 Kansas Wheat Index—Excess Return, dated as of January 25, 2013 and the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	**Underlying Commodity**	**Ticker**	**Underlying Relevant Exchange**
JPMorgan Brent Crude Oil F5 Custom Roll 2 Index—Excess Return	BRENT Crude Oil	JMC1DCO5	ICE
JPMorgan WTI Crude Oil F5 Custom Roll 2 Index—Excess Return	WTI Crude Oil	JMC1DCL5	NYMEX
JPMorgan RBOB Gasoline F5 Custom Roll 2 Index—Excess Return	RBOB Gasoline	JMC1DXB5	NYMEX
JPMorgan Heating Oil F5 Custom Roll 2 Index—Excess Return	Heating Oil	JMC1DHO5	NYMEX
JPMorgan Natural Gas F5 Custom Roll 2 Index—Excess Return	Natural Gas	JMC1DNG5	NYMEX
JPMorgan Aluminium F5 Custom Roll 2 Index—Excess Return	Aluminium	JMC1DLA5	LME
JPMorgan Copper F5 Custom Roll 2 Index—Excess Return	Copper	JMC1DHG5	COMEX
JPMorgan Nickel F5 Custom Roll 2 Index—Excess Return	Nickel	JMC1DLN5	LME
JPMorgan Zinc F5 Custom Roll 2 Index—Excess Return	Zinc	JMC1DLX5	LME
JPMorgan Gold F5 Custom Roll 2 Index—Excess Return	Gold	JMC1DGC5	CME
JPMorgan Silver F5 Custom Roll 2 Index—Excess Return	Silver	JMC1DSI5	CME
JPMorgan Wheat F5 Custom Roll 2 Index—Excess Return	Wheat	JMC1DW5	CBOT
JPMorgan Corn F5 Custom Roll 2 Index—Excess Return	Corn	JMC1DC5	CBOT

JPMorgan Soybeans F5 Custom Roll 2 Index—Excess Return	Soybeans	JMC1DS5	CBOT
JPMorgan Soybean Oil F5 Custom Roll 2 Index—Excess Return	Soybean Oil	JMC1DBO5	CBOT
JPMorgan Coffee F5 Custom Roll 2 Index—Excess Return	Coffee	JMC1DKC5	NYBOT
JPMorgan Sugar F5 Custom Roll 2 Index—Excess Return	Sugar	JMC1DSB5	NYBOT
JPMorgan Cotton F5 Custom Roll 2 Index—Excess Return	Cotton	JMC1DCT5	NYBOT
JPMorgan Lean Hogs F5 Custom Roll 2 Index—Excess Return	Lean Hogs	JMC1DLH5	CME
JPMorgan Live Cattle F5 Custom Roll 2 Index—Excess Return	Live Cattle	JMC1DLC5	CME
J.P. Morgan F5 Custom Roll 2 Soybean Meal Index—Excess Return	Soybean Meal	JMC1DSM5	CBOT
J.P. Morgan F5 Custom Roll 2 Kansas Wheat Index—Excess Return	Kansas Wheat	JMC1DKW5	CBOT

Each J.P. Morgan F5 Custom Roll 2 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan F5 Custom Roll 2 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[14].

Table B

Index	Contract at Month Start											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
JPMorgan WTI Crude Oil F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan RBOB Gasoline F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Heating Oil F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Natural Gas F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Aluminium F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Copper F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Nickel F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Zinc F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Gold F5 Custom Roll 2 Index—Excess Return	Q_0	Q_0	Z_0	Z_0	Z_0	Z_0	G_1	G_1	J_1	J_1	M_1	M_1
JPMorgan Silver F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Wheat F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Corn F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Soybeans F5 Custom Roll 2	N_0	X_0	X_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1

[14] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Index—Excess Return												
JPMorgan Soybean Oil F5 Custom Roll 2 Index—Excess Return	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Coffee F5 Custom Roll 2 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Sugar F5 Custom Roll 2 Index—Excess Return	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Cotton F5 Custom Roll 2 Index—Excess Return	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
JPMorgan Lean Hogs F5 Custom Roll 2 Index—Excess Return	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1	M_1	M_1
JPMorgan Live Cattle F5 Custom Roll 2 Index—Excess Return	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1	M_1	M_1
J.P. Morgan F5 Custom Roll 2 Soybean Meal Index—Excess Return	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan F5 Custom Roll 2 Kansas Wheat Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan F5 Custom Roll 2 Commodity Index is an excess return index.

For more information about each J.P. Morgan F5 Custom Roll 2 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/ F5_Custom_Roll_2.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 12: J.P. MORGAN F5 CUSTOM ROLL 3 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan F5 Custom Roll 3 Commodity Index. Each J.P. Morgan F5 Custom Roll 3 Commodity Index rolls its synthetic exposure in equal parts beginning on the fifth to last (-5^{th}) Index Publication Day immediately preceding the beginning of the applicable Roll Period and continuing through and including the fourth (4^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of February 21, 2013 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange
J.P. Morgan Natural Gas F5 Custom Roll 3 Index—Excess Return	Natural Gas	JMC11NG5	NYMEX
J.P. Morgan WTI F5 Custom Roll 3 Index—Excess Return	WTI	JMC11CL5	NYMEX
J.P. Morgan Gasoline F5 Custom Roll 3 Index—Excess Return	RBOB	JMC11XB5	NYMEX
J.P. Morgan Heating Oil F5 Custom Roll 3 Index—Excess Return	Heating Oil	JMC11HO5	NYMEX
J.P. Morgan Live Cattle F5 Custom Roll 3 Index—Excess Return	Live Cattle	JMC11LC5	CME
J.P. Morgan Lean Hogs F5 Custom Roll 3 Index—Excess Return	Lean Hogs	JMC11LH5	CME
J.P. Morgan Wheat F5 Custom Roll 3 Index—Excess Return	Wheat	JMC11W5	CBOT
J.P. Morgan Corn F5 Custom Roll 3 Index—Excess Return	Corn	JMC11C5	CBOT
J.P. Morgan Soybean F5 Custom Roll 3 Index—Excess Return	Soybean	JMC11S5	CBOT
J.P. Morgan Aluminium F5 Custom Roll 3 Index—Excess Return	Aluminium	JMC11LA5	LME
J.P. Morgan Comex Copper F5 Custom Roll 3 Index—Excess Return	Copper	JMC11HG5	COMEX
J.P. Morgan Zinc F5 Custom Roll 3 Index—Excess Return	Zinc	JMC11LX5	LME
J.P. Morgan Nickel F5 Custom Roll 3 Index—Excess Return	Nickel	JMC11LN5	LME
J.P. Morgan Gold F5 Custom Roll 3 Index—Excess Return	Gold	JMC11GC5	COMEX
J.P. Morgan Silver F5 Custom Roll 3 Index—Excess Return	Silver	JMC11SI5	COMEX
J.P. Morgan Sugar F5 Custom Roll 3 Index—Excess Return	Sugar	JMC11SB5	ICE

J.P. Morgan Cotton F5 Custom Roll 3 Index—Excess Return	Cotton	JMC11CT5	ICE
J.P. Morgan Coffee F5 Custom Roll 3 Index—Excess Return	Coffee	JMC11KC5	ICE
J.P. Morgan Brent Crude F5 Custom Roll 3 Index—Excess Return	Brent Crude	JMC11CO5	ICE
J.P. Morgan Soybean Oil F5 Custom Roll 3 Index—Excess Return	Soybean Oil	JMC11BO5	CBOT
J.P. Morgan Soybean Meal F5 Custom Roll 3Index—Excess Return	Soybean Meal	JMC11SM5	CBOT
J.P. Morgan Kansas Wheat F5 Custom Roll 3Index—Excess Return	Kansas Wheat	JMC11KW5	KCBOT

Each J.P. Morgan F5 Custom Roll 3 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan F5 Custom Roll 3 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[15].

Table B

Index	Contract at Month Start											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
J.P. Morgan Natural Gas F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan WTI F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Gasoline F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Heating Oil F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Live Cattle F5 Custom Roll 3 Index—Excess Return	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1	M_1	M_1
J.P. Morgan Lean Hogs F5 Custom Roll 3 Index—Excess Return	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1	G_1	J_1	J_1	M_1	M_1
J.P. Morgan Wheat F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Corn F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Soybean F5 Custom Roll 3 Index—Excess Return	N_0	X_0	X_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Aluminium F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Comex Copper F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Zinc F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Nickel F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1

[15] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

J.P. Morgan Gold F5 Custom Roll 3 Index—Excess Return	Q_0	Q_0	Z_0	Z_0	Z_0	Z_0	G_1	G_1	J_1	J_1	M_1	M_1
J.P. Morgan Silver F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Sugar F5 Custom Roll 3 Index—Excess Return	N_0	V_0	V_0	V_0	H_1	H_1	H_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Cotton F5 Custom Roll 3 Index—Excess Return	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Coffee F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Brent Crude F5 Custom Roll 3 Index—Excess Return	N_0	U_0	U_0	X_0	X_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Soybean Oil F5 Custom Roll 3 Index—Excess Return	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1
J.P. Morgan Soybean Meal F5 Custom Roll 3Index—Excess Return	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1	H_1	H_1	K_1	K_1	N_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan F5 Custom Roll 3 Commodity Index is an excess return index.

For more information about each J.P. Morgan F5 Custom Roll 3 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/F5_Custom_Roll_3.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 13: J.P. MORGAN SEASONAL CUSTOM ROLL 2 COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan Seasonal Custom Roll 2 Commodity Index. Each J.P. Morgan Seasonal Custom Roll 2 Commodity Index rolls its synthetic exposure in equal parts beginning on the first (1^{st}) Index Publication Day of the applicable Roll Period and continuing through and including the tenth (10^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of November 20, 2012 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange
JPMorgan Seasonal Custom Roll 2 Wheat Index—Excess Return	Wheat	JMC1SWP	CBOT
JPMorgan Seasonal Custom Roll 2 Corn Index—Excess Return	Corn	JMC1SCP	CBOT
JPMorgan Seasonal Custom Roll 2 Soybean Index—Excess Return	Soybean	JMC1SSP	CBOT
JPMorgan Seasonal Custom Roll 2 Sugar Index—Excess Return	Sugar	JMC1SSBP	ICE
JPMorgan Seasonal Custom Roll 2 Kansas Wheat Index—Excess Return	Kansas Wheat	JMC1SKWP	KBOT
JPMorgan Seasonal Custom Roll 2 Cotton Index—Excess Return	Cotton	JMC1SCTP	ICE
JPMorgan Seasonal Custom Roll 2 Coffee Index—Excess Return	Coffee	JMC1SKCP	ICE
JPMorgan Seasonal Custom Roll 2 Cocoa Index—Excess Return	Cocoa	JMC1SCCP	ICE
JPMorgan Seasonal Custom Roll 2 Soybean Oil Index—Excess Return	Soybean Oil	JMC1SBOP	CBOT
JPMorgan Seasonal Custom Roll 2 Soybean Meal Index—Excess Return	Soybean Meal	JMC1SSMP	CBOT
JPMorgan Seasonal Custom Roll 2 Lean Hogs Index—Excess Return	Lean Hogs	JMC1SLHP	CME
JPMorgan Seasonal Custom Roll 2 Live Cattle Index—Excess Return	Live Cattle	JMC1SLCP	CME

Each J.P. Morgan Seasonal Custom Roll 2 Commodity Index rolls its exposure based on a pre-determined Roll Schedule. Table B sets forth the Contract at Month Start for each J.P. Morgan Seasonal Custom Roll 2 Commodity Index. The Contract at Month Start refers to the Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[16].

Table B

Index	Contract at Month Start											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
JPMorgan Seasonal Custom Roll 2 Wheat Index—Excess Return	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_1	Z_1
JPMorgan Seasonal Custom Roll 2 Corn Index—Excess Return	N_0	N_0	N_0	N_0	N_1	N_1	N_1	N_1	N_1	N_1	N_1	N_1
JPMorgan Seasonal Custom Roll 2 Soybean Index—Excess Return	N_0	N_0	N_0	N_0	N_0	N_1	N_1	N_1	N_1	N_1	N_1	N_1
JPMorgan Seasonal Custom Roll 2 Sugar Index—Excess Return	H_0	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1
JPMorgan Seasonal Custom Roll 2 Kansas Wheat Index—Excess Return	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_0	Z_1	Z_1
JPMorgan Seasonal Custom Roll 2 Cotton Index—Excess Return	H_0	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1
JPMorgan Seasonal Custom Roll 2 Coffee Index—Excess Return	K_0	K_0	K_0	K_1	K_1	K_1	K_1	K_1	K_1	K_1	K_1	K_1
JPMorgan Seasonal Custom Roll 2 Cocoa Index—Excess Return	H_0	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1	H_1
JPMorgan Seasonal Custom Roll 2 Soybean Oil Index—Excess Return	N_0	N_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	N_1	N_1	N_1
JPMorgan Seasonal Custom Roll 2 Soybean Meal Index—Excess Return	N_0	N_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	N_1	N_1	N_1
JPMorgan Seasonal Custom Roll 2 Lean Hog Index—Excess Return	J_0	J_0	Q_0	Q_0	Q_0	Q_0	J_1	J_1	J_1	J_1	J_1	J_1
JPMorgan Seasonal Custom Roll 2 Live Cattle Index—Excess Return	J_0	J_0	V_0	V_0	V_0	V_0	V_0	V_0	J_1	J_1	J_1	J_1

[16] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan Seasonal Custom Roll 2 Commodity Index is an excess return index.

For more information about each J.P. Morgan Seasonal Custom Roll 2 Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/Custom_Seasonal_Early_Roll_Index_Supp_Mar_30_Update.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan Custom (UNG) Commodity Index is an excess return index.

For more information about each J.P. Morgan Custom (UNG) Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JMC1UNGE.pdf

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 14: J.P. MORGAN 3-MONTH FORWARD COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan Front Month Commodity Index. Each J.P. Morgan Front Month Commodity Index rolls its synthetic exposure in equal parts beginning on the fifth (5th) Index Publication Day and continuing through and including the ninth (9th) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of May 9, 2014 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange	Inception Date	Specificity of Calculations
J.P. Morgan 3-Month Forward Aluminum Index - Excess Return	Aluminum	JMC13LAE <Index>	LME	2-Jan-98	4 decimal places
J.P. Morgan 3-Month Forward Brent Index - Excess Return	Brent Crude Oil	JMC13COE <Index>	ICE	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Cocoa Index - Excess Return	Cocoa	JMC13CCE <Index>	ICE	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Coffee Index - Excess Return	Coffee	JMC13KCE <Index>	ICE	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Comex Copper Index - Excess Return	Comex Copper	JMC13HGE <Index>	COMEX	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Copper Index - Excess Return	Copper	JMC13LPE <Index>	LME	2-Jan-98	4 decimal places
J.P. Morgan 3-Month Forward Cotton Index - Excess Return	Cotton	JMC13CTE <Index>	ICE	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Corn Index - Excess Return	Corn	JMC13CE <Index>	CBOT	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Feeder Cattle Index - Excess Return	Feeder Cattle	JMC13FCE <Index>	CME	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Gas Oil Index - Excess Return	Gasoil	JMC13QSE <Index>	ICE	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Gasoline Index - Excess Return	Gasoline	JMC13XBE <Index>	NYMEX	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Gold Index - Excess Return	Gold	JMC13GCE <Index>	CME	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Minneapolis Wheat Index - Excess Return	Hard Red Spring Wheat	JMC13MWE <Index>	MGEX	3-Jan-95	7 significant figures
J.P. Morgan 3-Month Forward Heating Oil Index - Excess Return	Heating Oil	JMC13HOE <Index>	NYMEX	3-Jan-91	4 decimal places

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange	Inception Date	Specificity of Calculations
J.P. Morgan 3-Month Forward Kansas Wheat Index - Excess Return	Kansas Wheat	JMC13KWE <Index>	CBOT	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Lead Index - Excess Return	Lead	JMC13LLE <Index>	LME	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Lean Hogs Index - Excess Return	Lean Hogs	JMC13LHE <Index>	CME	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Live Cattle Index - Excess Return	Live Cattle	JMC13LCE <Index>	CME	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Natural Gas Index - Excess Return	Natural Gas	JMC13NGE <Index>	NYMEX	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Nickel Index - Excess Return	Nickel	JMC13LNE <Index>	LME	2-Jan-98	4 decimal places
J.P. Morgan 3-Month Forward Palladium Index – Excess Return	Palladium	JMC13PAE <Index>	NYMEX	31-Dec-04	7 significant figures
J.P. Morgan 3-Month Forward Platinum Index – Excess Return	Platinum	JMC13PLE <Index>	NYMEX	30-Dec-05	7 significant figures
J.P. Morgan 3-Month Forward Tin Index – Excess Return	Refined Tin	JMC13LTE <Index>	LME	28-Nov-97	7 significant figures
J.P. Morgan 3-Month Forward Robusta Coffee Index – Excess Return	Robusta Coffee	JMC13DFE <Index>	NYSE Liffe	31-Oct-91	7 significant figures
J.P. Morgan 3-Month Forward Silver Index - Excess Return	Silver	JMC13SIE <Index>	CME	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Soybeans Index - Excess Return	Soybean	JMC13SE <Index>	CBOT	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Soybean Meal Index - Excess Return	Soybean Meal	JMC13SME <Index>	CBOT	16-Jan-95	7 significant figures
J.P. Morgan 3-Month Forward Soybean Oil Index - Excess Return	Soybean Oil	JMC13BOE <Index>	CBOT	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward Sugar Index - Excess Return	Sugar	JMC13SBE <Index>	ICE	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Wheat Index - Excess Return	Wheat	JMC13WE <Index>	CBOT	30-Dec-94	7 significant figures
J.P. Morgan 3-Month Forward White Sugar Index – Excess Return	White Sugar	JMC13QWE <Index>	NYSE Liffe	31-Dec-90	7 significant figures
J.P. Morgan 3-Month Forward WTI Index - Excess Return	WTI Crude Oil	JMC13CLE <Index>	NYMEX	3-Jan-91	4 decimal places
J.P. Morgan 3-Month Forward Zinc Index - Excess Return	Zinc	JMC13LXE <Index>	LME	31-Dec-96	7 significant figures

Each J.P. Morgan 3-Month Forward Commodity Index rolls its exposure based on a pre-determined Roll Schedule. In respect of an Index, the Contract at Month Start for a given calendar month (the **“Relevant Month”**) will be the contract specified in Table B below (pertaining to the J.P. Morgan Front Month Indices) that: (i) is under the column which is the third calendar month from the Relevant Month; and (ii) relates to the J.P. Morgan Front Month Index with the same Underlying Commodity as the relevant Index.

For example, the Contract at Month Start for December relating to an Index with an Underlying Commodity of Cotton will be the Contract at Month Start listed under the March column in the Front Month Schedule Table relating to the J.P. Morgan Front Month Cotton Index – Excess Return. Table B sets forth the Contract at Month Start for each J.P. Morgan Front Month Commodity Index. The Contract at Month Start refers to Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[17]. For additional information regarding the J.P. Morgan Front Month Commodity Indices, see Schedule 1 to this Disclosure Supplement E.

Table B

Index	**Contract at Month Start**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
J.P. Morgan Front Month Aluminum Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Brent Crude Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Cocoa Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Coffee Index—Excess Return	G_0	J_0	J_0	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month U.S. Traded Copper Index—Excess Return	G_0	J_0	J_0	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month U.K. Traded Copper Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Cotton Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Corn Index—Excess Return	H_0	H_0	M_0	M_0	M_0	U_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Feeder Cattle Index—Excess Return	J_0	J_0	J_0	N_0	N_0	N_0	V_0	V_0	V_0	F_1	F_1	F_1
J.P. Morgan Front Month Gas Oil Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Gasoline Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1
J.P. Morgan Front Month Gold Index—Excess	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1

[17] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Return												
The J.P. Morgan Front Month Minneapolis Wheat Index — Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1
J.P. Morgan Front Month Heating Oil Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	F_1
J.P. Morgan Front Month Kansas Wheat Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1
J.P. Morgan Front Month Lead Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1
J.P. Morgan Front Month Lean Hogs Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Live Cattle Index—Excess Return	H_0	K_0	K_0	K_0	Q_0	Q_0	Q_0	V_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Natural Gas Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Nickel Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month Palladium Index – Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month Platinum Index – Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
The J.P. Morgan Front Month Tin Index – Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month Robusta Coffee Index – Excess Return	G_0	J_0	J_0	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month Silver Index—Excess Return	G_0	J_0	J_0	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month Soybean Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Soybean Meal Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Soybean Oil Index—Excess Return	H_0	H_0	M_0	M_0	M_0	U_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Sugar Index—Excess Return	J_0	J_0	J_0	N_0	N_0	N_0	V_0	V_0	V_0	F_1	F_1	F_1
J.P. Morgan Front Month Wheat Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month White Sugar Index – Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1
J.P. Morgan Front Month WTI Crude Oil Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Zinc Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan 3-Month Forward Commodity Index is an excess return index.

For more information about each J.P. Morgan 3-Month Forward Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JP_Morgan_3Month_Forward_Index_Supplement_20140509

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

SCHEDULE 15: J.P. MORGAN 6-MONTH FORWARD COMMODITY INDICES

Table A sets forth the Index Names, Underlying Commodities, Tickers and Underlying Relevant Exchange for each J.P. Morgan Front Month Commodity Index. Each J.P. Morgan Front Month Commodity Index rolls its synthetic exposure in equal parts beginning on the fifth (5^{th}) Index Publication Day and continuing through and including the ninth (9^{th}) Index Publication Day provided that each such Index Publication Day is not a Disrupted Day. If any of such Index Publication Days is a Disrupted Day, the proportion of the synthetic exposure to be rolled will be rolled on the next Index Publication Day that is not a Disrupted Day.

Capitalized terms shall have the meaning set forth in the Index Supplement, dated as of February 18, 2015 or the Standard Terms, dated as of September 22, 2009.

Table A

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange	Inception Date	Specificity of Calculations
J.P. Morgan 6-Month Forward Aluminum Index - Excess Return	Aluminum	JMC16LAE <Index>	LME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Brent Index - Excess Return	Brent Crude Oil	JMC16COE <Index>	ICE	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Cocoa Index - Excess Return	Cocoa	JMC16CCE <Index>	ICE	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Coffee Index - Excess Return	Coffee	JMC16KCE <Index>	ICE	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Comex Copper Index - Excess Return	Comex Copper	JMC16HGE <Index>	COMEX	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Copper Index - Excess Return	Copper	JMC16LPE <Index>	LME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Cotton Index - Excess Return	Cotton	JMC16CTE <Index>	ICE	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Corn Index - Excess Return	Corn	JMC16CE <Index>	CBOT	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Feeder Cattle Index - Excess Return	Feeder Cattle	JMC16FCE <Index>	CME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Gas Oil Index - Excess Return	Gasoil	JMC16QSE <Index>	ICE	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Gasoline Index - Excess Return	Gasoline	JMC16XBE <Index>	NYMEX	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Gold Index - Excess Return	Gold	JMC16GCE <Index>	CME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Minneapolis Wheat Index - Excess Return	Hard Red Spring Wheat	JMC16MWE <Index>	MGEX	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Heating Oil Index - Excess Return	Heating Oil	JMC16HOE <Index>	NYMEX	31-Dec-05	7 significant figures

Index Name	Underlying Commodity	Ticker	Underlying Relevant Exchange	Inception Date	Specificity of Calculations
J.P. Morgan 6-Month Forward Kansas Wheat Index - Excess Return	Kansas Wheat	JMC16KWE <Index>	CBOT	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Lead Index - Excess Return	Lead	JMC16LLE <Index>	LME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Lean Hogs Index - Excess Return	Lean Hogs	JMC16LHE <Index>	CME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Live Cattle Index - Excess Return	Live Cattle	JMC16LCE <Index>	CME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Natural Gas Index - Excess Return	Natural Gas	JMC16NGE <Index>	NYMEX	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Nickel Index - Excess Return	Nickel	JMC16LNE <Index>	LME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Palladium Index – Excess Return	Palladium	JMC16PAE <Index>	NYMEX	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Platinum Index – Excess Return	Platinum	JMC16PLE <Index>	NYMEX	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Tin Index – Excess Return	Refined Tin	JMC16LTE <Index>	LME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Robusta Coffee Index – Excess Return	Robusta Coffee	JMC16DFE <Index>	NYSE Liffe	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Silver Index - Excess Return	Silver	JMC16SIE <Index>	CME	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Soybeans Index - Excess Return	Soybean	JMC16SE <Index>	CBOT	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Soybean Meal Index - Excess Return	Soybean Meal	JMC16SME <Index>	CBOT	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Soybean Oil Index - Excess Return	Soybean Oil	JMC16BOE <Index>	CBOT	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Sugar Index - Excess Return	Sugar	JMC16SBE <Index>	ICE	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Wheat Index - Excess Return	Wheat	JMC16WE <Index>	CBOT	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward White Sugar Index – Excess Return	White Sugar	JMC16QWE <Index>	NYSE Liffe	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward WTI Index - Excess Return	WTI Crude Oil	JMC16CLE <Index>	NYMEX	31-Dec-05	7 significant figures
J.P. Morgan 6-Month Forward Zinc Index - Excess Return	Zinc	JMC16LXE <Index>	LME	31-Dec-05	7 significant figures

Each J.P. Morgan 6-Month Forward Commodity Index rolls its exposure based on a pre-determined Roll Schedule. In respect of an Index, the Contract at Month Start for a given calendar month (the **"Relevant Month"**) will be the contract specified in Table B below (pertaining to the J.P. Morgan Front Month Indices) that: (i) is under the column which is the sixth calendar month from the Relevant Month; and (ii) relates to the J.P. Morgan Front Month Index with the same Underlying Commodity as the relevant Index.

For example, the Contract at Month Start for December relating to an Index with an Underlying Commodity of Cotton will be the Contract at Month Start listed under the March column in the Front Month Schedule Table relating to the J.P. Morgan Front Month Cotton Index – Excess Return. Table B sets forth the Contract at Month Start for each J.P. Morgan Front Month Commodity Index. The Contract at Month Start refers to Monthly Contract to which the applicable index is exposed on the first Index Publication Day of that calendar month[18]. For additional information regarding the J.P. Morgan Front Month Commodity Indices, see Schedule 1 to this Disclosure Supplement E.

Table B

Index	**Contract at Month Start**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
J.P. Morgan Front Month Aluminum Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Brent Crude Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Cocoa Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Coffee Index—Excess Return	G_0	J_0	J_0	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month U.S. Traded Copper Index—Excess Return	G_0	J_0	J_0	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month U.K. Traded Copper Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Cotton Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Corn Index—Excess Return	H_0	H_0	M_0	M_0	M_0	U_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Feeder Cattle Index—Excess Return	J_0	J_0	J_0	N_0	N_0	N_0	V_0	V_0	V_0	F_1	F_1	F_1
J.P. Morgan Front Month Gas Oil Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Gasoline Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1
J.P. Morgan Front Month Gold Index—Excess	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1

[18] Or, in the event that the numerical value representing the roll date for a particular contract is negative, the Monthly Contract to which the applicable index is exposed starting the specified number of days immediately preceeding such calendar month.

Return												
The J.P. Morgan Front Month Minneapolis Wheat Index — Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1
J.P. Morgan Front Month Heating Oil Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	Z_0	F_1
J.P. Morgan Front Month Kansas Wheat Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	Z_0	Z_0	Z_0	Z_0	F_1	F_1
J.P. Morgan Front Month Lead Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	V_0	V_0	V_0	H_1	H_1	H_1
J.P. Morgan Front Month Lean Hogs Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Live Cattle Index—Excess Return	H_0	K_0	K_0	K_0	Q_0	Q_0	Q_0	V_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Natural Gas Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Nickel Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month Palladium Index – Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month Platinum Index – Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
The J.P. Morgan Front Month Tin Index – Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month Robusta Coffee Index – Excess Return	G_0	J_0	J_0	M_0	M_0	N_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month Silver Index—Excess Return	G_0	J_0	J_0	M_0	M_0	Q_0	Q_0	V_0	V_0	Z_0	Z_0	G_1
J.P. Morgan Front Month Soybean Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Soybean Meal Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
J.P. Morgan Front Month Soybean Oil Index—Excess Return	H_0	H_0	M_0	M_0	M_0	U_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Sugar Index—Excess Return	J_0	J_0	J_0	N_0	N_0	N_0	V_0	V_0	V_0	F_1	F_1	F_1
J.P. Morgan Front Month Wheat Index—Excess Return	G_0	H_0	J_0	K_0	M_0	N_0	Q_0	U_0	V_0	X_0	Z_0	F_1
The J.P. Morgan Front Month White Sugar Index – Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	X_0	X_0	F_1	F_1
J.P. Morgan Front Month WTI Crude Oil Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	U_0	U_0	Z_0	Z_0	Z_0	H_1
J.P. Morgan Front Month Zinc Index—Excess Return	H_0	H_0	K_0	K_0	N_0	N_0	X_0	X_0	X_0	X_0	F_1	F_1

The Roll Schedule for any Index is a list of twelve Monthly Contracts which will be the Contract at Month Start for each of the months January through December. The Contract at Month Start will be indicated with an upper case letter, which corresponds to the expiration month of the applicable Monthly Contract, together with a subscript numeral, which corresponds to the calendar year of the applicable Monthly Contract.

The letter refers to the standard nomenclature for the delivery months of exchange traded futures contracts. Table C below sets out the delivery months for each letter.

The subscript numeral indicates the year of the Contract at Month Start expressed as an offset from the year of the current calendar month (such subscript, the "**Contract Year**"). For example, the subscript 0 indicates that the delivery month of the Contract at Month Start falls in the same calendar year as the current month. Similarly the subscript 1 indicates that the delivery month of the Contract at Month Start falls in the calendar year immediately following the calendar year of the current month.

Table C

Calendar Month	Letter
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

Each J.P. Morgan 6-Month Forward Commodity Index is an excess return index.

For more information about each J.P. Morgan 6-Month Forward Commodity Index, please see the Index Supplement that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JP_Morgan_6Month_Forward_Index_Supplement_2015_02_18

The Index Supplement supplements and should be read together with the Standard Terms. The Standard Terms that is available at the following hyperlink:

http://www.jpmorgan.com/directdoc/JPM_Single_Cmdty_Indices_Standard_Terms_9_24_09.pdf

Disclosure Supplement F for the J.P. Morgan Bespoke Commodity Indices
(dated April 22, 2016)

This Disclosure Supplement for the J.P. Morgan Bespoke Commodity Indices, dated April 22, 2016 (the "Disclosure Supplement"), supplements and should be read in conjunction with the General Disclosure Statement ("General Disclosure Statement") and the Disclosure Annex for Commodity Derivatives (the "Commodities Disclosure Annex"), each dated April 26, 2013, published by the International Swaps & Derivatives Association Inc. ("ISDA") and the Disclosure Annex For Commodity Index Derivative Transactions, dated April 22, 2016 (the "Commodity Index Disclosure Annex"), published by JPMorgan Chase Bank, National Association. NOTHING IN THIS SUPPLEMENT AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions in this Disclosure Supplement of the operation of Commodity Index Derivative Transactions (as defined below) and the consequences of various events are in all cases subject to the actual terms of a Commodity Index Derivative Transaction executed between you and us and its governing documentation.

When we refer to a "Commodity Index Derivative Transaction", we are referring to Transactions in which the underlying(s) is/are an index/indices that reference(s) physical commodities or contracts for the future delivery of physical commodities. The terms of a Commodity Index Derivative Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Commodity Index Derivative Transaction and its governing documentation. Before entering into a Commodity Index Derivative Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under the Commodity Index Derivative Transaction, its value and its appropriateness for your particular objectives.

To the extent you enter into a Commodity Index Derivative Transaction that references a Bloomberg Commodity Index or GSCI Index, in whole or in part, or another index that references a Bloomberg Commodity Index or GSCI Index, as one of its constituents, you should carefully review the disclosure set forth herein. This Disclosure Supplement, together with the rules for a particular index ("Index Rules"), the documents governing your Commodity Index Derivative Transaction, the disclosure annexes referenced above and any other disclosure delivered by us to you related to your specific Commodity Index Derivative Transaction, constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Commodity Index Derivative Transaction. You should carefully consider all of these documents prior to entering into a Commodity Index Derivative Transaction.

General

The J.P. Morgan Bespoke Commodity Indices (each, a "Bespoke Commodity Index" and collectively, the "Bespoke Commodity Indices") are developed and will be maintained and calculated by J.P. Morgan Securities plc (which we refer to as "JPMS plc"). Each Bespoke Commodity Index is a notional rules-based proprietary commodity index of JPMS plc composed of one or more components (each, an "Index Component," and collectively, the "Index Components"), and each Index Component will consist of a single commodity index or two commodity indices (each such commodity index, an "Constituent" and, collectively, the "Constituents"). We refer to any Constituent that underlies a synthetic long position as a "Long

Constituent" and to any Constituent that underlies a synthetic short position as a "Short Constituent."

This is a description of the J.P. Morgan Bespoke Commodity Index Standard Terms formulated by JPMS plc (which we refer to as the "Standard Terms") that describe general terms relating to the J.P. Morgan Bespoke Commodity Indices. The Standard Terms are supplemented by an Index Supplement, which formulated by JPMS plc (which we refer to as an "Index Supplement") and describes the specific terms that apply to the relevant Bespoke Commodity Index. The Index Supplement, when read together with the Standard Terms, constitutes the index rules (the "Index Rules"). Any description is qualified by the full text of the Index Rules. The Index Rules, and not this description, will govern the calculation and constitution of the Bespoke Commodity Indices and other decisions and actions related to their maintenance. The Index Rules are the intellectual property of JPMS plc, and JPMS plc reserves all rights with respect to its ownership of the Bespoke Commodity Indices. This general disclosure on Bespoke Commodity Indices will be supplemented more fully with specific disclosure on the applicable Bespoke Commodity Index.

The Bespoke Commodity Indices are rebalanced periodically on the Rebalancing Date (as defined below). If a Bespoke Commodity Index includes one or more Index Components that consist of a Long Constituent and a Short Constituent, the Index Supplement may specify that Volatility Matching applies with respect to any or all such Index Components. Volatility Matching is a mechanism used to adjust the weight given to the Short Constituent within a Component, with the intention of accounting for a difference in volatility between the Short Constituent and the Long Constituent in that Component. In addition, the Index Supplement may specify that Volatility Targeting applies with respect to a Bespoke Commodity Index. Volatility Targeting is a mechanism that adjusts the overall leverage of the Bespoke Commodity Index, with the intention of targeting a certain level of realized volatility of the Bespoke Commodity Index. The Index Supplement may specify additional strategies that apply with respect to the relevant Bespoke Commodity Index.

Each Bespoke Commodity Index will either be an excess return or total return index, as specified in the Index Supplement. The Index Supplement will specify the Constituents. The Bespoke Commodity Indices may have limited or no historical performance. The Index Supplement will specify the date on which the relevant Bespoke Commodity Index was set equal to its inception level (typically 100.0000) (the "Index Inception Date").

Each Bespoke Commodity Index is described as a "notional" or "synthetic" portfolio or basket because its reported value does not represent the value of any actual assets held by any person and there is no actual portfolio of assets in which any person has any ownership interest. The level of each Bespoke Commodity Index at any point is the return of the hypothetical uncollateralized[19] portfolio of the Index Components. In addition, the value for each Bespoke Commodity Index at any point may be adjusted by an adjustment factor (the "Replication Adjustment Factor") as specified in the Index Supplement, calculated and deducted daily.

[19] In the case of any Index other than a Total Return Index.

Calculation and Publication of the Index Level

JPMS plc, or any affiliate or subsidiary designated by it, will act as calculation agent for each Bespoke Commodity Index (the "Index Calculation Agent"). Subject to the occurrence or existence of a Market Disruption Event affecting a Constituent or a futures contract underlying such Constituent, the Index Calculation Agent will calculate and publish the level (the "Index Level") of a Bespoke Commodity Index on each Calculation Day, reported to four (4) decimal places, on the Bloomberg ticker page identified for the Bespoke Commodity Index in the Index Supplement.

Bespoke Commodity Index Rebalancing

Each Bespoke Commodity Index will be rebalanced on each Rebalancing Date to adjust the synthetic exposure of each Constituent to account for the performance of the Bespoke Commodity Index and the Constituents and the effects, if applicable, of Volatility Matching and/or Volatility Targeting since the immediately preceding Rebalancing Date. The rebalancing will reset the exposure to the Constituents and, if applicable, change (a) the leverage of a Short Constituent for which Volatility Matching is applicable (as described below under "— Volatility Matching") and (b) the leverage of the Bespoke Commodity Index if Volatility Targeting is applicable (as described below under "— Volatility Targeting").

A "Rebalancing Date" is a specific Calculation Day within each Rebalancing Period, as specified in the Index Supplement. For example, the Index Supplement may specify that the second Calculation Day of each Rebalancing Period is a Rebalancing Date.

A "Calculation Day" is any day on which the New York Stock Exchange is scheduled to be open for trading for its regular trading session, without regard to after hours trading or any other trading outside of the regular trading session hours.

A "Rebalancing Period" is the period from but excluding the Index Inception Date to and including the following Rebalancing Determination Date, and with respect to any subsequent Rebalancing Period, the period from but excluding the Rebalancing Determination Date to and including the following Rebalancing Determination Date.

A "Rebalancing Determination Date" is a day determined as described in the Index Supplement. The Rebalancing Determination Dates may occur periodically (*e.g.*, the first of the month) or upon any external or definable event (*e.g.*, the crossing of two moving averages), as described in the Index Supplement.

The Index Level for an Excess Return Index

The Index Level for an excess return index is determined in respect of each Calculation Day. The Index Level is calculated by adjusting the Index Level as of the immediately preceding Rebalancing Date to reflect (a) the weighted average performance of each Index Component since such Rebalancing Date, taking into account Index Leverage (if applicable) and (b) the applicable Replication Adjustment Factor. If a Market Disruption Event occurred with respect to any Constituent on the Rebalancing Date immediately preceding any Calculation Day or if a Market Disruption Event has occurred or is continuing with respect to any Constituent on such Calculation Day, the Index Level for such Calculation Day will be determined as described below, subject to the modifications described under "Market Disruptions" below.

The Index Level on the Initial Index Day will be equal to 100. With respect to each Calculation Day following the Initial Index Day, the Index Calculation Agent will calculate the Index Level for an excess return index in accordance with the following formula:

$$Index_{ER}(t) = \left[Index_{ER}(RD_{n-1}) + Index_{ER}(RD_{n-1}) \times IndexLeverage(RD_{n-1}) \times \sum_{i=1}^{NS} W_i \times PTDCP_i(t) \right] \times (1 - RAF_t);$$

where:

$Index_{ER}(t)$	means the Index Level on Calculation Day t.
$Index_{ER}(RD_{n-1})$	means, with respect to Calculation Day t, the Index Level on the Rebalancing Date immediately preceding Calculation Day t, rounded to 4 decimals.
$IndexLeverage(RD_{n-1})$	means, with respect to Calculation Day t, the Index Leverage on the Rebalancing Date immediately preceding Calculation Day t, determined as described below under "— Volatility Targeting."
NS	means the total number of Index Components.
W_i	means the Component Weight of the i-th component, determined as described below under "— Component Weights."
$PTDCP_i(t)$	means the Period-To-Date Component Performance for the i-th Index Component on Calculation Day t, determined as described below under "— Period-To-Date Component Performance."
RAF_t	means the Replication Adjustment Factor with respect to Calculation Day t, determined as described below under "— Replication Adjustment Factor."

The Index Level for a Total Return Index

The Index Level for a total return index is determined in respect of each Calculation Day. The Index Level is calculated by adjusting the Index Level as of the immediately preceding Calculation Day to reflect (a) the weighted average performance of each Index Component since such immediately preceding Calculation Day, taking into account Index Leverage (if applicable), (b) the return associated with synthetic exposure to three month U.S. Treasury bills, as represented by the T-Bill Rate, and (c) the applicable Replication Adjustment Factor. With respect to any Calculation Day, if a Market Disruption Event has occurred with respect to any Constituent on any Calculation Day from and including the Rebalancing Date immediately preceding such Calculation Day to and including such Calculation Day, the Index Level for such Calculation Day will be determined as described below, subject to the modifications described under "Market Disruptions" below.

The "T-Bill Rate" on any Calculation Day is the three month weekly Auction High Discount Rate for United States Treasury bills on such Calculation Day, as reported on the Bloomberg® index USB3MTA; *provided, however* if such rate is not available at the applicable Bloomberg page, the rate will be determined in as described under "Market Disruptions — The T-Bill Rate" below.

The Index Level on the Initial Index Day will be equal to 100. With respect to each Calculation Day following the Initial Index Day, the Index Calculation Agent will calculate the Index Level for a total return index in accordance with the following formula:

$$Index_{TR}(t) = Index_{TR}(t-1) \times \left[\frac{\left[1 + IndexLeverage(RD_{n-1}) \times \sum_{i=1}^{NS} W_i \times PTDCP_i(t)\right]}{\left[1 + IndexLeverage(RD_{n-1}) \times \sum_{i=1}^{NS} W_i \times \delta(t-1) \times PTDCP_i(t-1)\right]} + TBR_t \right] \times \left(1 + TBR_t\right)^{A(t)} \times (1 - RAF_t)$$

where:

$Index_{TR}(t)$	means the Index Level on Calculation Day t.
$Index_{TR}(t-1)$	means the Index Level on Calculation Day t-1.
$IndexLeverage(RD_{n-1})$	means, with respect to Calculation Day t, the Index Leverage on the Rebalancing Date immediately preceding Calculation Day t, determined as described below under "— Volatility Targeting."
NS	means the total number of Index Components.
W_i	means the Component Weight of the i-th component, determined as described below under "— Component Weights."
$PTDCP_i(t)$	means the Period-To-Date Component Performance for the i-th Index Component on Calculation Day t, determined as described below under "— Period-To-Date Component Performance."
$PTDCP_i(t-1)$	means the Period-To-Date Component Performance for the i-th Index Component on Calculation Day t-1, determined as described below under "— Period-To-Date Component Performance."
$\delta(t-1)$	is equal to 0 if Calculation Day t-1 is a Rebalancing Date, otherwise 1
TBR_t	means, with respect to Calculation Day t, the return associated with the T-Bill Rate on Calculation Day t, calculated using the following formula: $\left((1 - \frac{91}{360} \times TBILL_{t-1})^{\frac{-1}{91}}\right) - 1$
$TBILL_{t-1}$	means the T-Bill Rate on Calculation Day t-1.
$A(t)$	means the number of calendar days that are not Calculation Days from (and excluding) Calculation Day t-1 to (and including) Calculation Day t.
RAF_t	means the Replication Adjustment Factor with respect to Calculation Day t, determined as described below under "—Replication Adjustment Factor."

Component Weights

The Component Weight with respect to each Index Component will be a percentage determined as specified in the Index Supplement. The Index Supplement may specify fixed percentages for the Component Weights or may specify a formula or formulas to be used to determine the Components Weights. The sum of the Component Weights need not be 100%. In addition, one or more Component Weights may be negative. If a Long Constituent has a negative Component Weight, the Bespoke Commodity Index will experience synthetic short exposure to such Long Constituent, and if a Short Constituent has a negative Component Weight, the Bespoke Commodity Index will experience synthetic long exposure to such Short Constituent.

Period-To-Date Component Performance

For each Index Component, the "Period-To-Date Performance" on any Calculation Day represents the net return of such Index Component from the Rebalancing Date immediately preceding such Calculation Day.

Accordingly, the Index Calculation Agent will calculate the Period-To-Date Performance for each Index Component with respect to each Calculation Day in accordance with the following formula:

$$PTDCP_i(t) = \left(\frac{Level_{Long}(t)}{Level_{Long}(RD_{n-1})} - 1 \right) - SCL_i(RD_{n-1}) \left(\frac{Level_{Short}(t)}{Level_{Short}(RD_{n-1})} - 1 \right)$$

where:

$PTDCP_i(t)$	means the Period-To-Date Performance for the i-th Index Component on Calculation Day t.
$Level_{Long}(t)$	is 100 if the i-th Component has no Long Constituent; otherwise, the U.S. Dollar Level of the Long Constituent of the i-th Index Component on Calculation Day t.
$Level_{Short}(t)$	is 100 if the i-th Component has no Short Constituent; otherwise, the U.S. Dollar Level of the Short Constituent of the i-th Index Component on Calculation Day t.
$Level_{Long}(RD_{n-1})$	is 100 if the i-th Component has no Long Constituent; otherwise, the U.S. Dollar Level of the Long Constituent of the i-th Index Component on the Rebalancing Date immediately preceding Calculation Day t.
$Level_{Short}(RD_{n-1})$	is 100 if the i-th Component has no Short Constituent; otherwise, the U.S. Dollar Level of the Short Constituent of the i-th Index Component on the Rebalancing Date immediately preceding Calculation Day t.
$SCL(RD_{n-1})$	is 0 if the i-th Component has no Short Constituent; otherwise, the Short Constituent Leverage for the Rebalancing Date immediately preceding Calculation Day t, determined as described below under "— Volatility Matching."

With respect to a Constituent and a Calculation Day, the "U.S. Dollar Level" means (a) the official closing level of the Underlying Index of such Constituent as published by the relevant Index Sponsor; *provided, however* that if the Index Calculation Agent determines that such official closing level reflects manifest error on the part of the relevant Index Sponsor, the Index Calculation Agent will determine the closing level of the Underlying Index in good faith and in a commercially reasonable manner or (b) in such circumstances as set out in the definition of Non-Publication Event (as defined below under "Market Disruptions — Market Disruption Events") relating to the calculation of a Proxy Calculated Level (as defined below under "Market Disruptions — Market Disruption Events"), the U.S. Dollar Level will be the Proxy Calculated Level.

"Underlying Index" means, with respect to each Constituent, the commodity index underlying such Constituent.

"Index Sponsor" means, with respect to each Constituent, the corporation or other entity that (a) is responsible for setting and reviewing the rules and procedures and the methods of calculation and adjustments, if any, related to the Constituent and (b) announces (directly or through an agent) the level of the Constituent on a regular basis; and with respect to any Bespoke Commodity Index, JPMS plc or its successors or assigns.

Volatility Matching

If the Bespoke Commodity Index includes one or more Index Components that consist of a Long Constituent and a Short Constituent, the Index Supplement may specify that Volatility Matching applies with respect to any or all such Index Components. "Volatility Matching" is a mechanism used to adjust the weight given to the Short Constituent within a Component, with the intention of accounting for a difference in volatility between the Short Constituent and the Long Constituent in that Component.

With respect to each Rebalancing Date, the Index Calculation Agent will determine the Short Constituent Leverage for any Index Component to which Volatility Matching applies. As set forth below, for each such Index Component, the Index Calculation first determines the volatility ratio between the realized volatility of the Long Constituent and the realized volatility of the Short Constituent over a period preceding such Rebalancing Date (the "Volatility Matching Period"), as specified in the Index Supplement. The Short Constituent Leverage for such Index Component will be equal to the volatility ratio, subject to any Maximum Short Constituent Leverage and/or Minimum Short Constituent Leverage specified in the Index Supplement. The Short Constituent for such Index Component on such Rebalancing Date will be used to calculate the Period-To-Date Performance for such Index Component.

Accordingly, the Index Calculation Agent will calculate the Short Constituent Leverage for any Index Component to which Volatility Matching applies in accordance with the following formula:

$$SCL(RD_{n-1}) = Min\big(MaxLeverage, Max(MinLeverage, VolRatio(RD_{n-1})\big)$$

where:

$SCL(RD_{n-1})$ means, in respect of any Calculation Day, the Short Constituent Leverage for the immediately preceding Rebalancing Date.

MaxLeverage means the Maximum Short Constituent Leverage, as specified in the Index Supplement, if applicable.

MinLeverage means the Minimum Short Constituent Leverage, as specified in the Index Supplement, if applicable.

VolRatio(RD_{n-1}) is equal to 1 with respect to any Index Component to which Volatility Matching does not apply and is otherwise calculated in accordance with the following formula:

$$VolRatio(RD_{n-1}) = \frac{\sqrt{\frac{252}{m-1} \times \sum_{j=1}^{m} \left(Rtn_{Long}(j) - \frac{1}{m} \sum_{k=1}^{m} Rtn_{Long}(k) \right)^2}}{\sqrt{\frac{252}{m-1} \times \sum_{j=1}^{m} \left(Rtn_{Short}(j) - \frac{1}{m} \sum_{k=1}^{m} Rtn_{Short}(k) \right)^2}}$$

where:

m means the Volatility Matching Lookback, as specified in the Index Supplement, if applicable.

Rtn_{Long}(j) means the return of the Long Constituent on the j-th day of the Volatility Matching Period(RD_{n-1}), defined as follows:

$$Rtn_{Long}(j) = \frac{LookbackLevel_{Long}(j)}{LookbackLevel_{Long}(j-1)} - 1$$

$Rtn_{Long}(k)$ means the return of the Long Constituent on the k-th day of the Volatility Matching Period(RD_{n-1}), defined as follows:

$$Rtn_{Long}(k) = \frac{LookbackLevel_{Long}(k)}{LookbackLevel_{Long}(k-1)} - 1$$

$Rtn_{Short}(j)$ means the return of the Short Constituent on the j-th day of the Volatility Matching Period(RD_{n-1}), defined as follows:

$$Rtn_{Short}(j) = \frac{LookbackLevel_{Short}(j)}{LookbackLevel_{Short}(j-1)} - 1$$

$Rtn_{Short}(k)$ means the return of the Short Constituent on the k-th day of the Volatility Matching Period(RD_{n-1}), defined as follows:

$$Rtn_{Short}(k) = \frac{LookbackLevel_{Short}(k)}{LookbackLevel_{Short}(k-1)} - 1$$

where:

$LookbackLevel_{Long}(j)$	means the U.S. Dollar Level of the Long Constituent on the j-th day of the Volatility Matching Period(RD_{n-1}).
$LookbackLevel_{Long}(k)$	means the U.S. Dollar Level of the Long Constituent on the k-th day of the Volatility Matching Period(RD_{n-1}).
$LookbackLevel_{Short}(j)$	means the U.S. Dollar Level of the Short Constituent on the j-th day of the Volatility Matching Period (RD_{n-1}).
$LookbackLevel_{Short}(k)$	means the U.S. Dollar Level of the Short Constituent on the k-th day of the Volatility Matching Period(RD_{n-1}).
$LookbackLevel_{Long}(j-1)$	means the U.S. Dollar Level of the Long Constituent on the (j-1)th day of the Volatility Matching Period(RD_{n-1}).
$LookbackLevel_{Long}(k-1)$	means the U.S. Dollar Level of the Long Constituent on the (k-1)th day of the Volatility Matching Period(RD_{n-1}).
$LookbackLevel_{Short}(j-1)$	means the U.S. Dollar Level of the Short Constituent on the (j-1)th day of the Volatility Matching Period(RD_{n-1}).
$LookbackLevel_{Short}(k-1)$	means the U.S. Dollar Level of the Short Constituent on the (k-1)th day of the Volatility Matching Period(RD_{n-1}).

If the Short Constituent exhibits greater volatility over any Volatility Matching Period than the Long Constituent, exposure to the Short Constituent will be smaller than 100%, *provided* that the Short Constituent Leverage will not be less than any applicable Minimum Short Constituent Leverage. If the Short Constituent exhibits lesser volatility over any Volatility Matching Period than the Long Constituent, exposure to the Short Constituent will be greater than 100%, *provided* that the Short Constituent Leverage will not be greater than any applicable Maximum Short Constituent Leverage.

Volatility Targeting

The Index Supplement may specify that Volatility Targeting applies with respect to the Bespoke Commodity Index. "Volatility Targeting" is a mechanism that adjusts the overall leverage of the Bespoke Commodity Index, with the intention of targeting a certain level of realized volatility of the Bespoke Commodity Index. If the relevant Index Supplement specifies that Volatility Targeting does not apply to a Bespoke Commodity Index, the Index Leverage with respect to each Rebalancing Date with be equal to 1.

If the relevant Index Supplement specifies that Volatility Targeting applies to a Bespoke Commodity Index, the Index Calculation Agent will determine the Index Leverage with respect to each Rebalancing Date. As set forth below, the Index Calculation Agent first determines index volatility based on the hypothetical realized volatility of a Non-Volatility Targeted Index over two periods preceding such Rebalancing Date (each, a "Volatility Targeting Period"), as specified in the Index Supplement. The "Non-Volatility Targeted Index" is a hypothetical index identical to the Bespoke Commodity Index, except that the Index Leverage is set equal to 100% for all prior Rebalancing Dates and the Replication Adjustment Rate is set equal to 0.0%. The Index Leverage will be equal to a percentage equivalent to a fraction, the numerator of which is the Target Index Volatility, as specified in the Index Supplement, and the denominator of which is the index volatility from Volatility Targeting Period with the greater index volatility, subject to any Maximum Index Leverage and/or Minimum Index Leverage specified in the Index Supplement.

Accordingly, the Index Calculation Agent will calculate the Index Leverage for any Bespoke Commodity Index to which Volatility Targeting applies in accordance with the following formula:

$$IndexLeverage(RD_{n-1}) = Max\left(Min\left(\frac{TargetVol}{IndexVol(RD_{n-1})}, MaxLeverage \right), MinLeverage \right)$$

where:

IndexLeverage(RD_{n-1}) means, in respect of any Calculation Day, the Index Leverage for the immediately preceding Rebalancing Date, which will equal 100% if Volatility Targeting is not applicable to the Bespoke Commodity Index.

MinLeverage means the Minimum Index Leverage, as specified in the Index Supplement, if applicable.

MaxLeverage means the Maximum Index Leverage, as specified in the Index Supplement, if applicable.

TargetVol means the Target Index Volatility, as specified in the Index Supplement, if applicable.

$$IndexVol(RD_{n-1}) = Max(VolMeasure_1(RD_{n-1}), VolMeasure_2(RD_{n-1}))$$

where:

$$VolMeasure_1(RD_{n-1}) = \sqrt{\frac{252}{m_1 - 1} \times \sum_{j=1}^{m_1} \left(Rtn_{Long}(j,1,n-1) - \frac{1}{m_1} \sum_{k=1}^{m_1} Rtn_{Long}(k,1,n-1) \right)^2}$$

$$VolMeasure_2(RD_{n-1}) = \sqrt{\frac{252}{m_2 - 1} \times \sum_{j=1}^{m_2} \left(Rtn_{Long}(j,2,n-1) - \frac{1}{m_2} \sum_{k=1}^{m_2} Rtn_{Long}(k,2,n-1) \right)^2}$$

where:

m_1 means Volatility Targeting Lookback 1, as specified in the Index Supplement, if applicable.

m_2 means Volatility Targeting Lookback 2, as specified in the Index Supplement, if applicable.

Rtn(j,1,n-1) means the return of the Non-Volatility Targeted Index on the j-th day of the Volatility Targeting Period 1(RD_{n-1}), defined as follows:

$$Rtn(j,1,n-1) = \frac{NVTIndex(j,1,n-1)}{NVTIndex(j-1,1,n-1)} - 1$$

Rtn(j,2,n-1) means the return of the Non-Volatility Targeted Index on the k-th day of the Volatility Targeting Period 2(RD_{n-1}), defined as follows:

$$Rtn(j,2,n-1) = \frac{NVTIndex(j,2,n-1)}{NVTIndex(j-1,2,n-1)} - 1$$

Rtn(k,1,n-1) means the return of the Non-Volatility Targeted Index on the j-th day of the Volatility Targeting Period 1(RD_{n-1}), defined as follows:

$$Rtn(k,1,n-1) = \frac{NVTIndex(k,1,n-1)}{NVTIndex(k-1,1,n-1)} - 1$$

Rtn(k,2,n-1) means the return of the Non-Volatility Targeted Index on the k-th day of the Volatility Targeting Period 2(RD_{n-1}), defined as follows:

$$Rtn(k,2,n-1) = \frac{NVTIndex(k,2,n-1)}{NVTIndex(k-1,2,n-1)} - 1$$

where:

NVTIndex(j,1,n-1) means the Non-Volatility Targeted Index Level of the Long Constituent on the j-th day of Volatility Targeting Period 1(RD_{n-1}).

NVTIndex(j,2,n-1) means the Non-Volatility Targeted Index Level of the Long Constituent on the j-th day of Volatility Targeting Period 2(RD_{n-1}).

NVTIndex(j-1,1,n-1) means the Non-Volatility Targeted Index Level of the Short Constituent on the (j-1)th day of the Volatility Targeting Period 1(RD_{n-1}).

NVTIndex(j-1,2,n-1) means the Non-Volatility Targeted Index Level of the Short Constituent on the (j-1)th day of the Volatility Targeting Period 2(RD_{n-1}).

NVTIndex(k,1,n-1) means the Non-Volatility Targeted Index Level of the Long Constituent on the k-th day of the Volatility Targeting Period 1(RD_{n-1}).

NVTIndex(k,2,n-1) means the Non-Volatility Targeted Index Level of the Long Constituent on the k-th day of the Volatility Targeting Period 2(RD_{n-1}).

NVTIndex(k-1,1,n-1) means the Non-Volatility Targeted Index Level of the Short Constituent on the (k-1)th day of the Volatility Targeting Period 1(RD_{n-1}).

NVTIndex(k-1,2,n-1) means the Non-Volatility Targeted Index Level of the Short Constituent on the (k-1)th day of the Volatility Targeting Period 2(RD_{n-}

$_1$).

If the volatility of the Non-Volatility Targeted Index over any Volatility Targeting Period is greater than the Target Index Volatility, exposure to the Bespoke Commodity Index will be smaller than 100%, *provided* that the Index Leverage will not be less than any applicable Minimum Index Leverage. If the volatility of the Non-Volatility Targeted Index over any Volatility Targeting Period is less than the Target Index Volatility, exposure to the Bespoke Commodity Index will be greater than 100%, *provided* that the Index Leverage will not be greater than any applicable Maximum Index Leverage.

The Replication Adjustment Rate

The Index Level for any excess return index or total return index may be calculated and published net of an adjustment based on the Replication Adjustment Factor, which is calculated and deducted daily. The Index Calculation Agent will calculate the Replication Adjustment Factor in accordance with the following formula:

$$RAF_t = 1 - (1 - RAR)^{\frac{\text{CalendarDays}}{360}}$$

where:

RAR	is the Replication Adjustment Rate, as specified in the Index Supplement, if applicable. The Replication Adjustment Rate will be equal to 0.00% if not specified in the Index Supplement.
CalendarDays	is the number of calendar days from and including the Rebalancing Date immediately preceding Calculation Day t to but excluding Calculation Day t.

If the Replication Adjustment Factor applies to the Bespoke Commodity Index, the level of the Bespoke Commodity Index will trail the value of a hypothetical identically constituted synthetic portfolio from which no Replication Adjustment Factor applies is deducted. Accordingly, the Replication Adjustment Factor is a drag on Bespoke Commodity Index performance.

Publication of the Index Level

With respect to each Calculation Day, the Index Calculation Agent will endeavor to publish the Index Level for such Calculation Day before, at or around 12:00 p.m. London time on the following Calculation Day. The Index Level will be published on a Bloomberg page and the Bloomberg website at the pages indicated by the Index Ticker specified in the Index Supplement. The Index Level will be published to 4 decimal places.

Although the Index Calculation Agent will endeavor to publish the Index Level even with respect to a Calculation Day that is a Disrupted Day, the Index Calculation Agent is not obligated to publish the Index Level with respect to any Calculation Day that is a Disrupted Day. The Index Level published with respect to any Calculation Day that is a Disrupted Day will be considered solely indicative and is not intended to provide information regarding "tradable levels." The Index Calculation Agent generally will not revise a published Index Level once published. However, where the Index Level on subsequent Calculation Days depends on the Index Level on prior Calculation Days (*e.g.*, the Index Level on the previous Rebalancing Date), the Index Calculation Agent will apply the Adjusted Index Level, which is different from the published level. See "Market Disruptions — Effect of a Disrupted Day on Later Calculations" below.

The Index Calculation Agent will calculate, but not publish, an Adjusted Index Level for any Calculation Day that is a Disrupted Day. Upon request, the Index Calculation Agent will provide such Adjusted Index Level, as calculated on any succeeding Calculation Day. The Adjusted Index Level with respect to a Disrupted Day, as calculated on a succeeding Calculation Day, is calculated in the same manner as the Index Level on such Disrupted Day, except that the Index Calculation Agent will use the Adjusted U.S. Dollar Level with respect to such Disrupted Day, as calculated on such succeeding Calculation Day, instead of the U.S. Dollar Level on such Disrupted Day, for each Disrupted Constituent. See "Market Disruptions — Effect of a Disrupted Day on Later Calculations" below.

Market Disruptions

The following sections summarize the effects that a Market Disruption Event has on the calculation of the Bespoke Commodity Index. For a complete description of the manner in which the Index Calculation Agent will calculate the Bespoke Commodity Index upon the occurrence of a Market Disruption Event, please refer to the Standard Terms.

Calculation of the Index Level on a Disrupted Day

If, with respect to any Calculation Day, a Market Disruption Event has occurred or is continuing (such day, a "Disrupted Day"), the Index Calculation Agent will calculate the Index Level in the manner described in "Calculation and Publication of the Index Level" above (as modified by "— Effect of a Disrupted Day on Later Calculations" below, if applicable), unless a Non-Publication Event has occurred or is continuing with respect to any Constituent on such Disrupted Day (such day, a "Non-Publication Day"). If such Disrupted Day is a Non-Publication Day with respect to any Constituent, for purposes of calculating the Index Level on such Disrupted Day, the U.S. Dollar Level of such Constituent will be equal to the U.S. Dollar Level of such Constituent on the immediately preceding Calculation Day that was not a Non-Publication Day with respect to such Constituent.

Effect of a Disrupted Day on Later Calculations

As described under "Calculation and Publication of the Index Level" above, when calculating the Index Level on any Calculation Day, the Index Calculation Agent references the Index Level and the U.S. Dollar Levels of the Constituents on one or more prior Calculation Days. With respect to an excess return index, the Index Calculation Agent references the Index Level and the U.S. Dollar Levels of the Constituents on the immediately preceding Rebalancing Date. With respect to a total return index, the Index Calculation Agent references the Index Level and the U.S. Dollar Levels of the Constituents on each Calculation Day from and including the immediately preceding Rebalancing Date, to and including the immediately preceding Calculation Day. We refer to each of these prior Calculation Days as a "Prior Date."

If, with respect to any Calculation Day, any Prior Date was a Disrupted Day, the Index Calculation Agent will calculate the Index Level for such Calculation Day in the manner described in "Calculation and Publication of the Index Level" above (as modified by "— Calculation of the Index Level on a Disrupted Day" above, if applicable), with the following exceptions:

- with respect to any Disrupted Constituent, the Index Calculation Agent will use the Adjusted U.S. Dollar Level with respect to such Prior Date, as calculated on such Calculation Day, instead of the U.S. Dollar Level on such Prior Date for such Constituent; and

- with respect to any Prior Date that was a Disrupted Day, the Index Calculation Agent will use the Adjusted Index Level with respect to such Prior Date, as calculated on such Calculation Day, instead of the Index Level calculated on such Prior Date; *provided* that, with respect to a total return index, the Index Calculation Agent will use the Index Level calculated on such Prior Date if such Prior Date is the immediately preceding Calculation Date.

With respect to any Calculation Day, a Constituent is a "Disrupted Constituent" if either (a) a Market Disruption Event with respect to such Constituent has occurred or is continuing on such Calculation Day or (b) with respect to any Constituent underlying an Index Component that includes two Constituents, a Market Disruption Event with respect to either Constituent underlying such Index Component has occurred or is continuing on such Calculation Day.

With respect to any Disrupted Constituent for which the Underlying Index consists of a single commodity, the Adjusted U.S. Dollar Level on a Prior Date, as calculated on a Calculation Day, will generally be the U.S. Dollar Level of such Disrupted Constituent on the first Calculation Day following such Prior Date that is not a Disrupted Day with respect to such Disrupted Constituent; *provided* that, if each of the five Calculation Days immediately succeeding the Prior Date are Disrupted Days with respect to such Disrupted Constituent, the Index Calculation Agent will determine the Adjusted U.S. Dollar Level in good faith and in a commercially reasonable manner. With respect to a Calculation Day that is fewer than five Calculation Days after the Prior Date, if each Calculation Day from the Prior Date to and including such Calculation Day is a Disrupted Day with respect to such Disrupted Constituent, the Adjusted U.S. Dollar Level on such Prior Date, as calculated on such Calculation Day, will be equal to the U.S. Dollar Level on such Calculation Day.

With respect to any Disrupted Constituent for which the Underlying Index consists of more than one commodity, the Adjusted U.S. Dollar Level on a Prior Date, as calculated on a Calculation Day, will be calculated by the Index Calculation Agent in good faith and in a commercially reasonable manner, using the prices described below:

- with respect to each commodity underlying such Disrupted Constituent that is not affected by a Market Disruption Event (each, a "Non-Disrupted Commodity"), the Index Calculation Agent will use the official settlement price of the applicable futures contact(s) on such Prior Day; and

- with respect to each commodity underlying such Disrupted Constituent that is affected by a Market Disruption Event (each, a "Disrupted Commodity"),

  - if any Calculation Day from the Prior Date to and including such Calculation Day is not a Disrupted Day with respect to such Disrupted Commodity, the Index Calculation Agent will use the official settlement price of the applicable futures contract(s) on the first Calculation Day following such Prior Date that is not a Disrupted Day with respect to such Disrupted Commodity;

- if such Calculation Day is fewer than five Calculation Days after the Prior Date and each Calculation Day from the Prior Date to and including such Calculation Day is a Disrupted Day with respect to such Disrupted Commodity, the Index Calculation Agent will use the official settlement price of the applicable futures contract(s) on such Calculation Day; *provided* that if such official settlement price is unavailable, the Index Calculation Agent will determine the applicable price in good faith and in a commercially reasonable manner; or
- if each of the five Calculation Days immediately succeeding the Prior Date are Disrupted Days with respect to such Disrupted Commodity, the Index Calculation Agent will determine the applicable price in good faith and in a commercially reasonable manner.

The Adjusted Index Level with respect to a Prior Date, as calculated on a Calculation Day, is calculated in the same manner as the Index Level on such Prior Date, except that the Index Calculation Agent will use the Adjusted U.S. Dollar Level with respect to such Prior Date, as calculated on such Calculation Day, instead of the U.S. Dollar Level on such Prior Date, for each Disrupted Constituent.

For additional information regarding the calculation of the Adjusted U.S. Dollar Level and the Adjusted Index Level, please refer to the Standard Terms. For the avoidance of doubt, the Index Calculation Agent will not update any Short Constituent Leverage or Index Leverage (each, if applicable) once they are calculated with respect to a Rebalancing Date to reflect Adjusted Index Levels or Adjusted U.S. Dollar Levels determined after such Rebalancing Date.

Market Disruption Events

"Market Disruption Event" means, with respect to any Calculation Day,

- a material limitation, suspension, discontinuation or disruption of trading in one or more options or futures contracts on a relevant commodity or commodities related to the Underlying Index of a Constituent, which results in failure by the Relevant Exchange on which such option(s) and/or futures contract(s) is/are traded to report an official settlement price for such option(s) and/or futures contract(s) on the day on which such event occurs or any succeeding day on which it continues;
- a limitation, suspension or disruption of trading in one or more options or futures contracts on a relevant commodity or commodities related to the Underlying Index of a Constituent, by reason of movements exceeding "limit up" or "limit down" levels permitted by the Relevant Exchange and which, in the opinion of the Index Calculation Agent, is material to trading volume and market conditions in such option(s) or futures contract(s) on such Calculation Day;
- publication by the Relevant Exchange of a "limit price" as the official settlement price for any futures contract on the relevant commodity or commodities related to the Underlying Index of a Constituent (by reason of movements exceeding "limit up" or "limit down" levels permitted by the relevant exchange);
- the occurrence of a Non-Publication Event; or

- the Relevant Exchange for futures contracts on the relevant commodity or commodities related to the Underlying Index of a Constituent is not open for trading during its regular trading session, regardless of whether any such exchange closes prior to its scheduled closing time (a "Non-Commodity Business Day").

A Market Disruption Event for a Constituent will also constitute (a) a Market Disruption Event for any Component of which that Constituent is a part and (b) a Market Disruption Event for any Index that includes any Component of which that Constituent is a part. Any Calculation Day on which a Market Disruption Event occurs or is continuing for a Constituent will be a Disrupted Day for that Constituent and a Disrupted Day for any Component of which that Constituent is a part and a Disrupted Day for any Index that includes any Component of which that Constituent is a part.

"Non-Publication Event" means the failure by the Relevant Exchange, Index Sponsor or other price source to announce publicly or publish the following (or the information necessary for determining the following): (a) the official settlement price for any relevant futures contract on the relevant commodity or commodities related to the Underlying Index of a Constituent or (b) the closing level of the Underlying Index of a Constituent, in either case by noon (London time) on the immediately following Calculation Day; *provided, however* that the occurrence of such an event will not constitute a "Non-Publication Event" in the case of clause (b) hereof if the Index Calculation Agent determines in its sole discretion by noon (London time) on such immediately following Calculation Day that the information necessary for determining the closing level of the relevant Underlying Index of a Constituent has been announced publicly or published by the Relevant Exchange, Index Sponsor or other price source in which case the Index Calculation Agent will determine the U.S. Dollar Level of such Constituent (the U.S. Dollar Level so determined being a "Proxy Calculated Level") in good faith and in a commercially reasonable manner.

"Relevant Exchange" means, with respect to any Underlying Commodity of a Constituent, the applicable commodities futures exchange on which the future contracts for that Underlying Commodity trade as determined by the index rules or methodology of the Underlying Index related to the applicable Constituent.

"Underlying Commodity" means, with respect to each Constituent, the commodity (or commodities) referenced by the Underlying Index of such Constituent as determined in accordance with the Index Rules.

The T-Bill Rate

With respect to a Bespoke Commodity Index that is a total return index, if on any Calculation Day the T-Bill Rate for such Calculation Day does not appear on Bloomberg® ticker USB3MTA (or any official successor page thereto), the T-Bill Rate for such Calculation Day will be the bond equivalent yield of the rate displayed in H.15 Daily Update, currently http://www.federalreserve.gov/releases/h15/update/, or any official successor page thereto, or such other recognized electronic source used for the purpose of displaying such 3-month T-bill rate for that day under the caption "U.S. Government Securities/Treasury bills/Auction high" converted by the Index Calculation Agent in a commercially reasonable manner to bank discount basis such that it is expressed in the same manner as the T-Bill Auction High Rate. Information contained in the Federal Reserve website is not incorporated by reference in, and should not be considered a part of, this Disclosure Supplement or the Index Supplement.

If such rate for such date does not appear on Bloomberg® ticker USB3MTA (or any official successor page thereto) and such 3-month rate is not displayed in the H.15 Daily Update under the caption "U.S. Government securities/Treasury bills/Auction high" or another recognized electronic source, the T-Bill Rate for such Calculation Day will be the bond equivalent yield of the auction rate for those treasury bills as announced by the United States Department of Treasury, converted by the Index Calculation Agent in a commercially reasonable manner to bank discount basis such that it is expressed in the same manner as the T-Bill Auction High Rate.

If the rate for United States 3-month Treasury bills is still not available, the T-Bill Rate will be determined by the Index Calculation Agent in good faith and in a commercially reasonable manner.

- **Extraordinary Events Affecting the Index Components or Underlying Indices**

Successor Index Component or Underlying Index

If any Index Component or Underlying Index is (a) not calculated and announced by the Index Sponsor but is calculated and announced by a successor sponsor acceptable to the Index Calculation Agent or (b) replaced by a successor index using, in the determination of the Index Calculation Agent, the same or substantially similar formula for and method of calculation as used in the calculation of such Index Component or Underlying Index, then such index will be deemed to be the index so calculated and announced by that successor index sponsor or that successor index, as the case may be.

Material Change in the Method or Formula of Calculating a Constituent

If on or prior to any Calculation Day on which the Index Calculation Agent is determining the Index Level, the Index Sponsor makes a material change in the formula for or the method of calculating a relevant Index Component or Underlying Index (other than a modification prescribed in that formula or method to maintain such index in the Constituent or prescribed routine events) that affects the ability of the Index Calculation Agent to calculate the Index Level, then the Index Calculation Agent will, in good faith, make such adjustment(s) that it determines to be appropriate to any variable, calculation, methodology or detail in the specified in the Index Rules or any other input in relation to the Bespoke Commodity Index to account for such modification.

Non-Publication of a Constituent as a result of Cancellation of the Index Component or Underlying Index

On or prior to any Calculation Day on which the Index Calculation Agent is determining the Index Level, if an Index Sponsor permanently cancels an Index Component or Underlying Index, and no successor index exists, the Index Calculation Agent will, in good faith, either:

- continue to calculate the Index Level of the relevant Index using the latest terms specified in the Index Supplement at the time the Index Component or Underlying Index was cancelled; or

- make such adjustment(s) that it determines to be appropriate to any variable, calculation, methodology, valuation terms or any other rule in relation to the relevant Bespoke Commodity Index to account for such cancellation, including but not limited to excluding or substituting a relevant Index Component or Underlying Index.

Change in Law Event

Without prejudice to the ability of the Index Calculation Agent to amend the Index Rules, the Index Calculation Agent may, acting in good faith and in a commercially reasonable manner:

- exclude; or
- substitute,

any Index Component or Underlying Index following the occurrence (and/or continuation) of a Change in Law or in circumstances where it considers it reasonably necessary to do so to reflect the intention of the Bespoke Commodity Index, including (without prejudice to the generality of the foregoing) any perception among market participants generally that the published price of the relevant Index Component or Underlying Index is inaccurate (and the Relevant Exchange fails to correct such level of the underlying futures contract or Index Sponsor fails to correct such level of the Index Component or Underlying Index), and if it so excludes or substitutes any Index Component or Underlying Index, then the Index Calculation Agent may adjust the Index Rules as it determines in good faith to be appropriate to account for such exclusion or substitution on such date(s) selected by the Index Calculation Agent. The Index Calculation Agent is under no obligation to continue the calculation and publication of any Index upon the occurrence or existence of a Change in Law; and the Index Calculation Agent may decide to cancel any Index if it determines, acting in good faith, that the objective of the relevant Bespoke Commodity Index can no longer be achieved.

"Change in Law" means:

- due to:
  - the adoption of, or any change in, any applicable law, regulation or rule (including, without limitation, any tax law); or
  - the promulgation of, or any change in, the interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, as implemented by the U.S. Commodity and Futures Trading Commission or any exchange or trading facility),

in either case, the Index Calculation Agent determines in good faith that (a) it is contrary to such law, rule, regulation or order for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) any Index Component or Underlying Index of the relevant Bespoke Commodity Index, any transaction referencing the Index Component or Underlying Index or any component of the Index Component or Underlying Index (including without limitation, commodities futures contracts) or, (b) holding a position in any Constituent of the relevant Bespoke Commodity Index, any transaction referencing the Index Component or Underlying Index or any component of the Index Component or Underlying Index (including without limitation, commodity futures) is (or, but for the consequent disposal or termination thereof, would otherwise be) in excess of any allowable position limit(s) applicable to any market participants that are brokers or financial intermediaries (individually or collectively) under any such law, rule, regulation in relation to such Index Component or Underlying Index, transaction referencing the Index Component or Underlying Index or component of the Index Component or Underlying Index traded on any exchange(s) or other trading facility (including, without limitation, any relevant exchange); or

- the occurrence or existence of any:
  - suspension or limitation imposed on trading futures contracts (relating to any Index Component or Underlying Index, any transaction referencing the Index Component or Underlying Index or any component of the Index Component or Underlying Index) including without limitation, commodities futures contracts; or
  - any other event that causes trading in futures contracts (relating to any Index Component or Underlying Index, any transaction referencing the Index Component or Underlying Index or any component of the Index Component or Underlying Index) to cease including without limitation, commodities futures contracts.

Cancellation of an Index License relating to an Index Component or Underlying Index

With respect to any Bespoke Commodity Index, if, at any time, the license granted to the Index Calculation Agent (or its affiliates) to use any Constituent for the purposes of the Bespoke Commodity Index terminates, or the Index Calculation Agent's rights to use any Constituent for the purpose of the Bespoke Commodity Index is otherwise disputed, impaired or ceases (for any reason), the Index Calculation Agent may (a) remove such Constituent from the Bespoke Commodity Index or (b) replace such Constituent and may make such adjustments to the Index Rules as it determines in good faith to be appropriate to account for such event on such dates as selected by the Index Calculation Agent.

Additional Terms

Amendments

The Index Rules may be amended from time to time at the discretion of the Index Calculation Agent and will be re-published (in a manner determined by the Index Calculation Agent from time to time) no later than thirty calendar days following such amendment. The Index Rules are intended to be comprehensive; however, ambiguities may arise. If an ambiguity does arise, the Index Calculation Agent will resolve such ambiguities and, if necessary, amend the Index Rules to reflect such resolution.

No Investment Advice and No Fiduciary Duty

The Index Calculation Agent and its affiliates, officers, agents or employees (a) have not rendered legal, regulatory, investment, tax, accounting or other advice to an investor in relation to any product that is linked to or references a Bespoke Commodity Index and (b) are not fiduciaries under applicable law governing such product or in the jurisdiction in which any investor purchases a product that is linked to or references a Bespoke Commodity Index. Each investor should make its own investment decision based on its own judgment and on its own examination of the Bespoke Commodity Index and the applicable product, and each investor should consult its own legal, regulatory, investment, tax, accounting and other professional advisers as it deems necessary in connection with the relevant transaction.

Index Calculation Agent; Index Calculation Standards and Index Calculation Determinations

J.P. Morgan Securities plc or any affiliate or subsidiary designated by it will act as calculation agent in connection with each Bespoke Commodity Index. The Index Calculation Agent will act in good faith and in a commercially reasonable manner with respect to determinations made by it pursuant to the Index Rules for a Bespoke Commodity Index.

All determinations of the Index Calculation Agent pursuant to the Index Rules and interpretation of the Index Rules will be final, conclusive and binding and no person will be entitled to make any claim against the Index Calculation Agent or any of the Relevant Persons in respect thereof. Neither the Index Calculation Agent nor any Relevant Person will:

- be under any obligation to revise any determination or calculation made or action taken for any reason in connection with the Index Rules or a Bespoke Commodity Index; or

- have any responsibility to any person (whether as a result of negligence or otherwise) for any determinations made or anything done (or omitted to be determined or done) with respect to a Bespoke Commodity Index or with respect to the publication of any Index Level (or failure to publish such level) or any use to which any person may put a Bespoke Commodity Index or the Index Levels.

"Relevant Persons" means JPMS plc, any of its affiliates or subsidiaries or their respective directors, officers, employees, representatives, delegates or agents.

Corrections

With respect to any Bespoke Commodity Index,

- if the level of a Constituent, variable or other input that is used for any calculation relevant to the Index Level for any Calculation Day is subsequently corrected and the correction is published by the relevant Index Sponsor or relevant publication source; or

- if the Index Calculation Agent identifies an error or omission in any of its calculations or determinations with respect to the Bespoke Commodity Index for any Calculation Day,

then, the Index Calculation Agent may, if practicable and it considers such correction material, adjust or correct the Index Level for such Calculation Day and/or each subsequent affected Calculation Day. The Index Calculation Agent will publish (in such manner determined by the Index Calculation Agent) corrected Index Level(s) as soon as reasonably practicable.

Index Cancellation

If the Index Calculation Agent determines that any adjustment that can be made with respect to any of the events discussed above in "Extraordinary Events Affecting the Constituents" cannot or would not produce a commercially reasonable result, then the Index Calculation Agent may cease calculating and publishing the Bespoke Commodity Index from the date of such determination by the Index Calculation Agent.

Disclaimer

Neither J.P. Morgan Securities plc nor any of its Relevant Persons make any representation or warranty, whatsoever, express or implied, as to the results that may be obtained through the use of the Index Rules or the Bespoke Commodity Index strategy. Each Relevant Person hereby expressly disclaims all warranties of accuracy, completeness, merchantability, or fitness for a particular purpose with respect to any information contained in the Index Rules and no Relevant Person will have any liability (direct or indirect, special, punitive consequential or otherwise) to any person even if notified of the possibility of any such damages.

The Index Calculation Agent is under no obligation to continue the calculation, publication and dissemination of the Bespoke Commodity Index, or of any indices or strategies that may be potential components of the Bespoke Commodity Index. The Index Calculation Agent need not publish the index level(s), Index Level(s) or similar information related to the Bespoke Commodity Index if the relevant Bloomberg ticker (as identified in the relevant Index Supplement) is subject to any delay in or interruptions of publication for any reason including the occurrence of an Extraordinary Event (as defined herein).

No one may reproduce or disseminate the information contained in the Index Rules without the prior written consent of the Index Calculation Agent. The Index Rules are not intended for distribution to, or use by, any person in a jurisdiction where such distribution is prohibited by law or regulation.

RISK FACTORS RELATING TO THE BESPOKE COMMODITY INDICES

The following risk factors relate solely to Bespoke Commodity Indices and supplements the other risk factors set forth in the accompanying disclosures related to any Commodity Index Derivatives Transaction between you and us. These risk factors should be read together with the risk factors set forth in the General Disclosure Statement, the Commodity Disclosure Annex, the Commodity Index Disclosure Annex and any other disclosure annex. ***You should carefully review these risk factors (including the risk factors relating to potential conflicts of interest) prior to making your investment decision to enter into a Commodity Index Derivatives Transaction.***

There may be potential conflicts between your interests and those of JPMorgan Chase & Co., the Index Calculation Agent, the Index Sponsor and other affiliates of JPMorgan Chase & Co.

JPMorgan Chase & Co. and JPMorgan Chase & Co.'s affiliates play a variety of roles in connection with Commodity Index Derivative Transactions linked to the Bespoke Commodity Indices, including acting Index Calculation Agent and the sponsor of the relevant Bespoke Commodity Index (the "**Index Sponsor**") and hedging JPMorgan Chase & Co.'s obligations under such Commodity Index Derivative Transactions. In performing these duties, the economic interests of JPMorgan Chase & Co, the Index Calculation Agent, the Index Sponsor and other affiliates of JPMorgan Chase & Co. would be potentially adverse to your interests as a counterparty in such Commodity Index Derivative Transactions. Additionally, JPMorgan Chase & Co. and JPMorgan Chase & Co.'s affiliates may from time to time develop other indices or products that may take positions that are contrary to your economic interests.

The Index Calculation Agent has discretion in relation to any relevant Bespoke Commodity Index and is under no obligation to consider your interests as a counterparty to a Commodity Index Derivative Transaction.

Unless otherwise specified, JPMS plc, one of JPMorgan Chase & Co.'s affiliates, acts as the Index Calculation Agent and sponsor of any relevant Bespoke Commodity Index and is responsible for calculating and maintaining that Bespoke Commodity Index and developing the guidelines and policies governing its composition and calculation. JPMS plc is entitled to exercise discretion in relation to any relevant Bespoke Commodity Index, including but not limited to, the determination of the level to be used in the event of market disruptions that affect its ability to calculate and publish that Bespoke Commodity Index and the interpretation of rules governing that Bespoke Commodity Index. In addition, JPMS plc has discretion, acting in good faith and in a commercially reasonable manner, to include, exclude or substitute any Underlying Index or to amend the rules governing any relevant Bespoke Commodity Index upon the occurrence of certain extraordinary events. Unlike other indices, the maintenance of the Bespoke Commodity Indices is not governed by an independent committee. Although judgments, policies and determinations concerning the Index are made by JPMS plc, JPMorgan Chase & Co., as the parent company of JPMS plc, ultimately controls JPMS plc.

Although JPMS plc will make all determinations and take all action in relation to the Bespoke Commodity Indices acting in good faith, it should be noted that such discretion could have an impact, positive or negative, on the level of any relevant Bespoke Commodity Index and the value of your Commodity Index Derivative Transaction. JPMS plc is under no obligation to consider your interests in taking any actions that might affect the value of the Commodity Index Derivative Transaction. Furthermore, the inclusion of the Underlying Indices in any relevant

Bespoke Commodity Index is not an investment recommendation by us or JPMS plc of the Underlying Indices or the futures contracts underlying the Underlying Indices.

A Bespoke Commodity Index comprises notional assets.

The exposures to the commodity futures contracts underlying the Underlying Indices are purely notional. There is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. Consequently, you will not have any claim against any of the commodity futures contracts underlying the Constituents.

A Bespoke Commodity Index may not be successful and may not outperform any alternative strategy that might be employed with respect to the commodity futures contracts underlying the Constituents.

A Bespoke Commodity Index will follow a proprietary strategy that operates on the basis of pre-determined rules. No assurance can be given that the investment strategy on which the Bespoke Commodity Index is based will be successful or that such Bespoke Commodity Index will outperform any alternative strategy that might be employed with respect to the commodity futures contracts underlying the Constituents.

A Bespoke Commodity Index may have a limited operating history and may perform in unanticipated ways.

A Bespoke Commodity Index may have limited historical performance. Any back-testing or similar analysis in respect of a Bespoke Commodity Index must be considered illustrative only and may be based on estimates or assumptions not used by the Index Calculation Agent when determining the level of such Bespoke Commodity Index. Past performance should not be considered indicative of future performance.

The reported level of a Bespoke Commodity Index may include the deduction of an adjustment factor.

One way in which a Bespoke Commodity Index may differ from a typical index is that its daily reported level may include a deduction from the aggregate performance of the Index Component of an adjustment factor assessed at an annual rate specified in the relevant terms supplement. If applicable, this adjustment factor will be deducted daily and calculated based on an actual/360 accrual basis. As a result of the deduction of this amount, the level of such Bespoke Commodity Index will trail the value of a hypothetical identically constituted synthetic portfolio from which no such amount is deducted.

The Constituents may be changed in certain extraordinary events.

Following the occurrence of certain extraordinary events with respect to a Constituent as described under "Extraordinary Events Affecting the Constituents," the affected Constituent may be excluded or replaced by a substitute index. You should realize that the changing of a Constituent may affect the performance of a Bespoke Commodity Index, and therefore, the value of the Commodity Index Derivative Transaction, as the replacement index may perform significantly better or worse than the affected Constituent.

There may be increased volatility due to the use of leverage.

A Bespoke Commodity Index and some Index Components may use leverage to increase or decrease the volatility of the Bespoke Commodity Index or a short Constituent included in an Index Component, as applicable. Where a Bespoke Commodity Index or a Constituent is leveraged, any price movements in such Bespoke Commodity Index or Constituent, as applicable, may result in greater changes in the level of such Bespoke Commodity Index or Constituent, as applicable, than if leverage was not used. In particular, the use of leverage will magnify any negative performance of a Bespoke Commodity Index or Constituents, as applicable.

If a Bespoke Commodity Index employs a volatility targeting strategy, the volatility targeting strategy may not achieve its intended results.

Volatility targeting is a mechanism that adjusts the overall leverage of an index in order to target a certain level of realized volatility of the index. If a Bespoke Commodity Index employs a volatility targeting strategy, no assurance can be given that the strategy will be successful or that such Bespoke Commodity Index will outperform any alternative strategy that might be employed. Furthermore, no assurance can be given that such Bespoke Commodity Index will achieve its target volatility. The actual realized volatility of such Bespoke Commodity Index may be greater or less than the target volatility.

For any Index Components that employ a long-short strategy, your payment at maturity depends on the net performance of the applicable Constituents, not on the absolute performance of such Constituents.

An Index Component may consist of the net return of a synthetic long position in one Constituent and a synthetic short position in a different Constituent. This technique is generally known as a “long-short” strategy. Your return on a the Commodity Index Derivative Transaction attributable to any Index Components that employ a long-short strategy is dependent on the performance of the Constituent that has a notional long position (*i.e.*, to which the relevant Index Component has long exposure) minus the performance of the Constituent that has a notional short position (*i.e.*, to which such Constituent has short exposure). The absolute performance of the levels of the long and short Constituents is not relevant to the return on your Commodity Index Derivative Transaction.

If a Bespoke Commodity Index employs a volatility matching strategy with respect to long-short Index Components, the volatility matching strategy may not achieve its intended results.

A Bespoke Commodity Index may employ a volatility matching strategy with respect to long-short Index Components in order to limit realized volatility. Volatility matching attempts to match the volatility of the short Constituent to the volatility of the long Constituent by adjusting the leverage of the short Constituent to reduce exposure to the short Constituent where the volatility of the short Constituent is greater than the volatility of the long Constituent based on their past historical realized volatility and by adjusting the leverage of the short Constituent to increase exposure to the short Constituent where the volatility of the short Constituent is less than the volatility of the long Constituent based on their past historical realized volatility. A Bespoke Commodity Index may also include a minimum and/or maximum leverage for the short Constituent. The volatility matching mechanism seeks to maximize the offsetting effect of the long Constituent and the short Constituent. Because the long Constituent and the short Constituent may not be sufficiently correlated to achieve the desired offsetting effect and because past historical realized volatility may not be a good estimate of future realized volatility, there can be no guarantee that the volatility matching mechanism will achieve its intended results.

For any Index Component that includes a synthetic short position on a Constituent, there is unlimited loss exposure to the short Constituent, and that exposure may result in a significant drop in the level of that Index Component.

Any Index Component that includes a synthetic short position on a Constituent will suffer from a positive return in the short Constituent when the level of the short Constituent increases. The maximum increase of the value of any short exposure is limited to the loss of the entire value of the short Constituent, and the maximum decrease in value of such short exposure is unlimited. Because there is no limit to possible increases in the level of the short Constituent, the losses that may result from short exposure are potentially unlimited.

A Bespoke Commodity Index may not be a fully diversified portfolio.

Diversification is generally considered to reduce the amount of risk associated with generating returns. A Bespoke Commodity Index will be concentrated in commodities generally and may be concentrated in a few particular commodities only. There can be no assurance that a Bespoke Commodity Index will be sufficiently diversified at any time.

You will be exposed to the risks associated with each Constituent.

You will be exposed to the risks associated with each Constituent underlying any Bespoke Commodity Index to which a Commodity Index Derivative Transaction is linked.

Disclosure Supplement G for the J.P. Morgan Commodity Indices
(dated April 22, 2016)

This Disclosure Supplement for the J.P. Morgan Commodity Indices, dated April 22, 2016 (the "Disclosure Supplement"), supplements and should be read in conjunction with the General Disclosure Statement ("General Disclosure Statement") and the Disclosure Annex for Commodity Derivatives (the "Commodities Disclosure Annex"), each dated April 26, 2013, published by the International Swaps & Derivatives Association Inc. ("ISDA") and the Disclosure Annex For Commodity Index Derivative Transactions, dated April 22, 2016 (the "Commodity Index Disclosure Annex"), published by JPMorgan Chase Bank, National Association. NOTHING IN THIS SUPPLEMENT AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION. Accordingly, descriptions in this Disclosure Supplement of the operation of Commodity Index Derivative Transactions (as defined below) and the consequences of various events are in all cases subject to the actual terms of a Commodity Index Derivative Transaction executed between you and us and its governing documentation.

When we refer to a "Commodity Index Derivative Transaction", we are referring to Transactions in which the underlying(s) is/are an index/indices that reference(s) physical commodities or contracts for the future delivery of physical commodities. The terms of a Commodity Index Derivative Transaction may incorporate standard definitions, annexes thereto and other market standard terms. Such terms may in turn be amended or customized pursuant to the terms of the Commodity Index Derivative Transaction and its governing documentation. Before entering into a Commodity Index Derivative Transaction, you should obtain and review carefully any such materials incorporated by reference as their content could materially affect your rights and obligations under the Commodity Index Derivative Transaction, its value and its appropriateness for your particular objectives.

To the extent you enter into a Commodity Index Derivative Transaction that references a Bloomberg Commodity Index or GSCI Index, in whole or in part, or another index that references a Bloomberg Commodity Index or GSCI Index, as one of its constituents, you should carefully review the disclosure set forth herein. This Disclosure Supplement, together with the rules for a particular index ("Index Rules"), the documents governing your Commodity Index Derivative Transaction, the disclosure annexes referenced above and any other disclosure delivered by us to you related to your specific Commodity Index Derivative Transaction, constitute our disclosure to you of the material economic terms, the material risks and potential conflicts of interests associated with your specific Commodity Index Derivative Transaction. You should carefully consider all of these documents prior to entering into a Commodity Index Derivative Transaction.

General

The J.P. Morgan Commodity Indices (each, a "J.P. Morgan Commodity Index" and collectively, the "J.P. Morgan Commodity Indices") are developed and will be maintained and calculated by J.P. Morgan Securities plc (which we refer to as "JPMS plc"). Each J.P. Morgan Commodity Index is a notional rules-based proprietary commodity index of JPMS plc composed of one or more underlying indices (each, an "Underlying Index" or the "Underlying Indices", as applicable). In the case of long-short indices, each Underlying Index that underlies a synthetic long position is refered to as a "Long Underlying Index" and any Underlying Index that underlies a synthetic short position as a "Short Underlying Index."

This is a description of the general terms relating to the J.P. Morgan Commodity Indices. The specific composition of methodology to be applied to any J.P. Morgan Commodity Index will be described in the index rules for such J.P. Morgan Commodity Index (the “Index Rules”). Any description is qualified by the full text of the Index Rules. The Index Rules, and not this description, will govern the calculation and constitution of the J.P. Morgan Commodity Indices and other decisions and actions related to their maintenance. The Index Rules are the intellectual property of JPMS plc, and JPMS plc reserves all rights with respect to its ownership of the J.P. Morgan Commodity Indices. Where applicable, this general disclosure on J.P. Morgan Commodity Indices will be supplemented more fully with specific disclosure on the applicable J.P. Morgan Commodity Index.

The J.P. Morgan Commodity Indices are rebalanced periodically on the Rebalancing Date (as defined below). If a J.P. Morgan Commodity Index includes Long Underlying Indices and Short Underlying Indices, the Index Supplement may specify that Volatility Matching applies with respect to any or all such Underlying Indices. Volatility Matching is a mechanism used to adjust the weight given to the Short Underlying Index, with the intention of accounting for a difference in volatility between the Short Underlying Index and the corresponding Long Underlying Index. In addition, the Index Supplement may specify that Volatility Targeting applies with respect to a J.P. Morgan Commodity Index. Volatility Targeting is a mechanism that adjusts the overall leverage of the J.P. Morgan Commodity Index, with the intention of targeting a certain level of realized volatility of the J.P. Morgan Commodity Index. The Index Supplement may specify additional strategies that apply with respect to the relevant J.P. Morgan Commodity Index.

Each J.P. Morgan Commodity Index will either be an excess return or total return index, as specified in the Index Rules. The Index Rules will specify the Underlying Indices. The J.P. Morgan Commodity Indices may have limited or no historical performance. The Index Supplement will specify the date on which the relevant J.P. Morgan Commodity Index was set equal to its inception level (typically 100.0000).

Each J.P. Morgan Commodity Index is described as a “notional” or “synthetic” portfolio or basket because its reported value does not represent the value of any actual assets held by any person and there is no actual portfolio of assets in which any person has any ownership interest. The level of each J.P. Morgan Commodity Index at any point is the return of the hypothetical uncollateralized[20] portfolio of the Underlying Indices. In addition, the value for each J.P. Morgan Commodity Index at any point may be adjusted by an adjustment factor as specified in the Index Rules, calculated and deducted daily (or as otherwise specified in the Index Rules).

Calculation and Publication of the Index Level

JPMS plc, or any affiliate or subsidiary designated by it, will act as calculation agent for each J.P. Morgan Commodity Index (the “Index Calculation Agent”). Subject to the occurrence or existence of a Market Disruption Event affecting an Underlying Index or a futures contract referencing such Underlying Index, the Index Calculation Agent will calculate and publish the level (the “Index Level”) of a J.P. Morgan Commodity Index on each Calculation Day, reported to seven (7) significant figures (unless otherwise specified in the Index Rules), on the Bloomberg ticker page identified for the J.P. Morgan Commodity Index in the Index Rules.

[20] In the case of any Index other than a Total Return Index.

J.P. Morgan Commodity Index Rebalancing

Each J.P. Morgan Commodity Index will be rebalanced on each Rebalancing Date to adjust the synthetic exposure of each Underlying Index to account for the performance of the J.P. Morgan Commodity Index and the Underlying Indices and the effects, if applicable, of Volatility Matching and/or Volatility Targeting since the immediately preceding Rebalancing Date. The rebalancing will reset the exposure to the Underlying Indices and, if applicable, change (a) the leverage of a Short Underlying Index for which Volatility Matching is applicable (as described in the Index Rules) and (b) the leverage of the J.P. Morgan Commodity Index if Volatility Targeting is applicable (as described in the Index Rules).

A "Rebalancing Date" is a specific Calculation Day, as specified in the Index Rules. For example, the Index Supplement may specify that the second Calculation Day of each Rebalancing Period is a Rebalancing Date. Rebalancing Dates may be associated with a rebalancing period, which will be further described in the Index Rules, if applicable.

A "Calculation Day" is any day on which the J.P. Morgan Commodity Index may be calculated, subject to certain discruptions, as specified in the Index Rules. For example, the Index Rules may specify that Calculation Days include days on which New York Stock Exchange is scheduled to be open for trading for its regular trading session, without regard to after hours trading or any other trading outside of the regular trading session hours.

A "Rebalancing Determination Date" is a day determined as described in the Index Rules. The Rebalancing Determination Dates may occur periodically (*e.g.*, the first of the month) or upon any external or definable event (*e.g.*, the crossing of two moving averages), as described in the Index Supplement.

J.P. Morgan Commodity Index Methodology

The Index Rules for each J.P. Morgan Commodity Index will set forth specifics related to that index in Section 3 (or any other applicable section of the Index Rules), including information such as the source on which index levels will be published, the date on which the index was first calculated on a live basis, index Rebalancing Dates and the degree of specificity to which the index will be calculated. Such Section 3 (or any other applicable section of the Index Rules) amy also include a listing of the components that will comprise the index, or set out a universe of potential components from which the index will be constructed by application of the index methodology. Section 5 (or any other applicable section of the Index Rules) will outline the particular methodology to be applied in the case of any J.P. Morgan Commodity Index and may include, as applicable, descriptions of how the constituents and composition of the index are determined, what (if any) selection methodology will be applied to the universe of potential constituents to determine the index composition and constituent weightings on any Rebalancing Date or Calculation Day, how index constituents will be weighted on any such Rebalancing Date or Calculation Day and how the index level will determined on any non-disrupted Rebalancing Date or Calculation Day. For example, Section 5 of the Index Rules may describe the application of ranking methodologies, weighting constraints, backwardation metrics or correlation or performance thresholds to potential consitutents, on the basis of which such constituents may be excluded from the index for purposes of calculating the relevant index levels. Similarly, weighting formulae, methodologies or constraints (such as weighting caps applicable to a constituent or group of constituents) may be applied, subject to which the constituent weightings in respect of a particular Rebalancing Date or Calculation Day will be determined.

The Index Level for a J.P. Morgan Commodity Index

The Index Level for a J.P. Morgan Commodity Index is determined in respect of each Calculation Day in accordance with Section 5 (or any other applicable section) of the Index Rules. If a Market Disruption Event occurred with respect to any Underlying Index on the Rebalancing Date immediately preceding any Calculation Day or if a Market Disruption Event has occurred or is continuing with respect to any Underlying Index on such Calculation Day, the Index Level for such Calculation Day will be determined as described in Section 6 (or any other applicable section) of the Index Rules, subject to the modifications described under "Market Disruptions" outlined in Section 12 (or any other applicable section) of the Index Rules.

In the case of a total return index, the Index Level is calculated by adjusting the Index Level as of the immediately preceding Calculation Day to reflect (a) the weighted average performance of each Underlying Index since such immediately preceding Calculation Day, taking into account leverage (if applicable), (b) the return associated with synthetic exposure to three month U.S. Treasury bills, as represented by the T-Bill Rate, and (c) the applicable adjustment factor (such as the Replication Adjustment Factor, as defined in the Index Rules or such other adjustment factor, as specified in the Index rules).

Underlying Index Weights

The Underlying Index Weight with respect to each Underlying Index will be a percentage determined as specified in the Index Rules (in Section 5 or any other applicable Section of the Index Rules). The Index Rules may specify fixed percentages for the Underlying Index Weights or may specify a formula or formulas to be used to determine such weights. The sum of the Underlying Index Weights need not be 100%. In addition, one or more Underlying Index Weights may be negative. For example, if a Long Underlying Index has a negative Underlying Index Weight, the J.P. Morgan Commodity Index will experience synthetic short exposure to such Long Underlying Index, and if a Short Underlying Index has a negative Underlying Index Weight, the J.P. Morgan Commodity Index will experience synthetic long exposure to such Short Underlying Index.

Period-To-Date Underlying Index Performance

For each Underlying Index, the "Period-To-Date Performance" on any Calculation Day represents the net return of such Underlying Index from the Rebalancing Date immediately preceding such Calculation Day and will be calculated in accordance with the Index Rules.

Volatility Matching

If the J.P. Morgan Commodity Index includes one or more pairs consisting of a Long Underlying Index and a Short Underlying Index, the Index Supplement may specify that Volatility Matching applies with respect to any or all such pairs. "Volatility Matching" is a mechanism used to adjust the weight given to the Short Underlying Index within a pair, with the intention of accounting for a difference in volatility between the Short Underlying Index and the Long Underlying Index.

With respect to each Rebalancing Date, the Index Calculation Agent will determine the Short Underlying Index Leverage in any instance in which Volatility Matching applies. As set forth in the Index Rules, for each such Underlying Index, the Index Calculation first determines the volatility ratio between the realized volatility of the Long Underlying Index and the realized volatility of the Short Underlying Index over a period preceding such Rebalancing Date (the "Volatility Matching Period"). The Short Underlying Index leverage will be equal to the volatility ratio, subject to any maximum Short Underlying Index leverage and/or minimum Short Underlying Index leverage specified in the Index Rules. The Short Underlying Index on such Rebalancing Date will be used to calculate the Period-To-Date Performance for the relevant Underlying Index pair.

If the Short Underlying Index exhibits greater volatility over any Volatility Matching Period than the Long Underlying Index, exposure to the Short Underlying Index will be smaller than 100%, *provided* that the Short Underlying Index leverage will not be less than any applicable Minimum Short Underlying Index leverage. If the Short Underlying Index exhibits lesser volatility over any Volatility Matching Period than the Long Underlying Index, exposure to the Short Underlying Index will be greater than 100%, *provided* that the Short Underlying Index Leverage will not be greater than any applicable maximum Short Underlying Index leverage.

Volatility Targeting

The Index Rules may specify that Volatility Targeting applies with respect to the J.P. Morgan Commodity Index. "Volatility Targeting" is a mechanism that adjusts the overall leverage of the J.P. Morgan Commodity Index, with the intention of targeting a certain level of realized volatility of the J.P. Morgan Commodity Index. If the relevant Index Supplement specifies that Volatility Targeting applies to a J.P. Morgan Commodity Index, the Index Calculation Agent will determine the Index Leverage (as defined in the Index Rules) with respect to each Rebalancing Date. As set forth in the Index Rules, the Index Calculation Agent first determines index volatility based on the hypothetical realized volatility of a "Non-Volatility Targeted Index" (as defined in the Index Rules) over two periods preceding such Rebalancing Date (each, a "Volatility Targeting Period"), as specified in the Index Rules. The "Non-Volatility Targeted Index" is a hypothetical index identical to the J.P. Morgan Commodity Index, except that the Index Leverage is set equal to 100% for all prior Rebalancing Dates and the Replication Adjustment Rate (as defined in the Index Rules) is set equal to 0.0%. The Index Leverage will be equal to a percentage equivalent to a fraction, the numerator of which is the "Target Index Volatility", as specified in the Index Rules, and the denominator of which is the index volatility from Volatility Targeting Period with the greater index volatility, subject to any maximum Index Leverage and/or minimum Index Leverage specified in the Index Rules.

Accordingly, the Index Calculation Agent will calculate the Index Leverage for any J.P. Morgan Commodity Index to which Volatility Targeting applies as set forth in the Index Rules. If the volatility of the Non-Volatility Targeted Index over any Volatility Targeting Period is greater than the Target Index Volatility, exposure to the J.P. Morgan Commodity Index will be smaller than 100%, *provided* that the Index Leverage will not be less than any applicable minimum Index Leverage. If the volatility of the Non-Volatility Targeted Index over any Volatility Targeting Period is less than the Target Index Volatility, exposure to the J.P. Morgan Commodity Index will be greater than 100%, *provided* that the Index Leverage will not be greater than any applicable maximum Index Leverage.

The Replication Adjustment Rate

The Index Level for any J.P. Morgan Commodity Index may be calculated and published net of an adjustment based on the "Replication Adjustment Factor" or such other adjustment factor as described in the relevant Index Rules, which will be calculated and deducted daily. The Index Calculation Agent will calculate the Replication Adjustment Factor in accordance with the Index Rules.

If a Replication Adjustment Factor (or similar adjustment factor) is specified in the Index Rules for a particulary J.P. Morgan Commodity Index, the level of that J.P. Morgan Commodity Index will trail the value of a hypothetical identically constituted synthetic portfolio from which no Replication Adjustment Factor (or similar adjustment factor) is deducted. Accordingly, a Replication Adjustment Factor (or similar adjustment factor), if applicable, is a drag on J.P. Morgan Commodity Index performance.

Publication of the Index Level

Unless otherwise stated in the Index Rules, with respect to each Calculation Day, the Index Calculation Agent will endeavor to publish the Index Level for such Calculation Day before, at or around 12:00 p.m. London time on the following Calculation Day. The Index Level will be published on a Bloomberg page and the Bloomberg website at the pages indicated by the Index Ticker specified in the Index Rules. Unless otherwise stated in the Index Rules, the Index Level will be published to 7 significant figures.

Although the Index Calculation Agent will endeavor to publish the Index Level even with respect to a Calculation Day that is a Disrupted Day, the Index Calculation Agent is not obligated to publish the Index Level with respect to any Calculation Day that is a Disrupted Day. The Index Level published with respect to any Calculation Day that is a Disrupted Day will be considered solely indicative and is not intended to provide information regarding "tradable levels." The Index Calculation Agent generally will not revise a published Index Level once published. However, where the Index Level on subsequent Calculation Days depends on the Index Level on prior Calculation Days (*e.g.*, the Index Level on the previous Rebalancing Date), the Index Calculation Agent will apply the Adjusted Index Level, which is different from the published level. See "Market Disruptions — Effect of a Disrupted Day on Later Calculations" below.

The Index Calculation Agent will calculate, but not publish, an Adjusted Index Level for any Calculation Day that is a Disrupted Day. Upon request, the Index Calculation Agent will provide such Adjusted Index Level, as calculated on any succeeding Calculation Day. The Adjusted Index Level with respect to a Disrupted Day, as calculated on a succeeding Calculation Day, is calculated in the same manner as the Index Level on such Disrupted Day, except that the Index Calculation Agent will use the Adjusted U.S. Dollar Level with respect to such Disrupted Day, as calculated on such succeeding Calculation Day, instead of the U.S. Dollar Level on such Disrupted Day, for each Disrupted Underlying Index. See "Market Disruptions — Effect of a Disrupted Day on Later Calculations" below.

Market Disruptions

Certain market disruption events with respect to the Underlying Indices which could, among other things, interfere with the ability of market participants generally to transact in positions with respect to the options or futures relating to such Underlying Indices may affect the calculation of the Index Level for the relevant J.P. Morgan Commodity Index. Such events are further described in the Index Rules and are referred to as "Market Disruption Events". Upon the occurrence of a Market Disruption Event, the Index Calculation Agent shall calculate the Index Level pursuant to the methodology set forth in Section 6 (or any other applicable section) of the Index Rules.

If a Market Disruption Event has occurred or is continuing on any Calculation Day, the Index Calculation Agent will apply the provisions relating to Market Disruption Event in accordance with the Index Rules.

If:

(a) Calculation Day is a Disrupted Day (including if such Calculation Day is a Rebalancing Date); and/or

(b) in respect of a particular Calculation Day, the Rebalancing Date immediately preceding such Calculation Day was a Disrupted Day (regardless of whether or not such Calculation Day is a Disrupted Day),

then, in respect of such Calculation Day, the Index Calculation Agent will calculate a level of the Index (each, an "**Adjusted Index Level**") as of each Adjusted Calculation Day (as defined below) pursuant to Section 6 (or any other applicable section) of the Index Rules, where:

"Adjusted Calculation Day" means, in respect of a Calculation Day, each Calculation Day in the Adjusted Calculation Period (as defined below).

"Adjusted Calculation Period" means:

(A) in respect of a Calculation Day that is a Disrupted Day (regardless of whether the Rebalancing Date immediately preceding such Calculation Day was a Disrupted Day), the period from and including such Calculation Day to and including the earlier of (1) the Calculation Day upon which the last First Non-Disrupted Calculation Day (as defined below) in respect of such Calculation Day falls, and (2) the Calculation Day falling five Calculation Days from and including such Calculation Day_t;

(B) in respect of a Calculation Day_t that is not a Disrupted Day but in respect of which Rebalancing Date_{t-1} was a Disrupted Day and where both (i) the last First Non-Disrupted Calculation Day in respect of Rebalancing Date_{t-1} does not occur on or prior to Calculation Day_t and (ii) the Calculation Day_t falls prior to the Calculation Day falling five Calculation Days from and including Rebalancing Date_{t-1}, the period from and including such Calculation Day_t to and including the earlier of (1) the Calculation Day upon which the last First Non-Disrupted Calculation Day in respect of Rebalancing Date_{t-1} falls, and (2) the Calculation Day falling five Calculation Days from and including Rebalancing Date_{t-1}; and

(C) in respect of a Calculation Day_t that is not a Disrupted Day but in respect of which Rebalancing Date_{t-1} was a Disrupted Day and where either (i) the last First Non-Disrupted Calculation Day in respect of Rebalancing Date_{t-1} occurs on or prior to Calculation Day_t or (ii) Calculation Day_t falls on or after the Calculation Day falling five Calculation Days from and including such Rebalancing $Date_{t-1}$, such Calculation Day_t.

"**First Non-Disrupted Calculation Day**" means, in respect of a Calculation Day_t and in respect of a Related Futures Contract (as defined below) for which a Market Disruption Event occurs or exists in respect of such Calculation Day_t, the first Calculation Day on which no Market Disruption Event occurs or is continuing in respect of any Related Futures Contract.

In respect of the first Adjusted Calculation Day in the Adjusted Calculation Period, the Adjusted Index Level (the "**First Adjusted Index Level**") will be determined by the Index Calculation Agent based on the levels available on the first Adjusted Calculation Day and will be published by the Index Calculation Agent in respect of such day.

In respect of each other Adjusted Calculation Day in the Adjusted Calculation Period up to and including the last Adjusted Calculation Day in the Adjusted Calculation Period, the Adjusted Index Level (in respect of the last Adjusted Calculation Day in the Adjusted Calculation Period, the "**Final Adjusted Index Level**" or "**Index Level**") will be based on the levels available on such Adjusted Calculation Day and not be published by the Index Calculation Agent. The Final Adjusted Index Level will be available upon request. If the Adjusted Calculation Period is only one Calculation Day (as set out above), the First Adjusted Index Level and the Final Adjusted Index Level shall be the same level and will be published in respect of the relevant Calculation Day_t by the Index Calculation Agent.

If a Market Disruption Event has occurred or is continuing in respect of a Related Futures Contract of an Underlying Commodity, then a Market Disruption Event shall have been deemed to have occurred or be continuing for each Underlying Index or constituent thereof relating to the Underlying Commodity referenced by such Related Futures Contract; as a result, in respect of such Underlying Indices, the Adjusted Index Level will be based on the official settlement price(s) of such Related Futures Contract(s) determined as of the applicable Adjusted Calculation Day as described in Section 6 (or any other applicable section of) the Index Rules.

Accordingly, in respect of each Adjusted Calculation Day, the Index Calculation Agent will calculate the Adjusted Index Level for a Calculation Day_t in accordance with Section 6 (or any other applicable section of) the Index Rules.

"**Related Futures Contract**" means, in respect of an Underlying Index, an Underlying Commodity and a Calculation Day, each futures contract referenced by such Underlying Index, or constituent thereof, on such Calculation Day and relating to such Underlying Commodity.

"**Relevant Exchange**" means, in respect of any Underlying Commodity in respect of an Underlying Index, the applicable commodities futures exchange on which the future contracts for that Underlying Commodity trade as determined by the index rules or methodology of such Underlying Index.

Market Disruption Events

"**Market Disruption Event**" will be defined in the Index Rules for each J.P. Morgan Commodity Index and may include, with respect to any Calculation Day,

(i) A material limitation, suspension, discontinuation or disruption of trading in any Related Futures Contract, which results in failure by the Relevant Exchange on which such futures contract(s) is/are traded to report an official settlement price for such futures contract(s) on the day on which such event occurs or any succeeding day on which it continues;

(ii) a limitation, suspension or disruption of trading in one or more Related Futures Contracts, by reason of movements exceeding "limit up" or "limit down" levels permitted by the Relevant Exchange and which, in the determination of the Index Calculation Agent, is material to trading volume and market conditions in such futures contract(s) on such Calculation Day;

(iii) publication by the Relevant Exchange of a "limit price" as the official settlement price for any Related Futures Contract (by reason of movements exceeding "limit up" or "limit down" levels permitted by the Relevant Exchange);

(iv) the occurrence of a Non-Publication Event; or

(v) the relevant exchange for Related Futures Contracts is not open for trading during its regular trading session, regardless of whether any such exchange closes prior to its scheduled closing time.

Notwithstanding anything to the contrary, in respect of any Calculation Day, if:

(a) an Underlying Index has an Underlying Index Weight equal to zero; or
(b) a Related Futures Contract (referenced by an Underlying Index) has a zero weight in the Underlying Index and each constituent thereof; and

one of the events specified in clauses (i) to (v) of this definition have occurred or is continuing in respect of an

Underlying Index or a Related Futures Contract (referenced by an Underlying Index or constituent thereof) that has a zero weight, then such event shall not be deemed to be a Market Disruption Event in respect of such Underlying Index and/or Relevant Futures Contract (as the case may be).

"**Non-Publication Event**" means, the failure by the Relevant Exchange, underlying index sponsor or other price source to announce publicly or publish (or the information necessary for determining) (a) the official settlement price for any relevant futures contract on the Underlying Commodity referenced by an Underlying Index or (b) the Closing Level of an Underlying Index by noon (London time) on the immediately following Calculation Day, provided, however that (1) the occurrence of such an event shall not constitute a "Non-Publication Event" in the case of clause (b) if the Index Calculation Agent determines by noon (London time) on such immediately following Calculation Day that the information necessary for determining the closing level of the relevant Underlying Index has been announced publicly or published by the Relevant Exchange, underlying index sponsor or other price source, in which case the Index Calculation Agent shall determine the Closing Level of such Underlying Index (the Closing Level so determined being a "**Proxy Calculated Level**").

"**Underlying Commodity**" means, with respect to each Underlying Index, the commodity (or commodities) referenced by such Underlying Index as determined in accordance with the Index Rules.

The T-Bill Rate

With respect to a J.P. Morgan Commodity Index that is a total return index, if on any Calculation Day the T-Bill Rate for such Calculation Day does not appear on Bloomberg® ticker USB3MTA (or any official successor page thereto), the T-Bill Rate for such Calculation Day will be the bond equivalent yield of the rate displayed in H.15 Daily Update, currently http://www.federalreserve.gov/releases/h15/update/, or any official successor page thereto, or such other recognized electronic source used for the purpose of displaying such 3-month T-bill rate for that day under the caption "U.S. Government Securities/Treasury bills/Auction high" converted by the Index Calculation Agent in a commercially reasonable manner to bank discount basis such that it is expressed in the same manner as the T-Bill Auction High Rate. Information contained in the Federal Reserve website is not incorporated by reference in, and should not be considered a part of, this Disclosure Supplement or the Index Supplement.

If such rate for such date does not appear on Bloomberg® ticker USB3MTA (or any official successor page thereto) and such 3-month rate is not displayed in the H.15 Daily Update under the caption "U.S. Government securities/Treasury bills/Auction high" or another recognized electronic source, the T-Bill Rate for such Calculation Day will be the bond equivalent yield of the auction rate for those treasury bills as announced by the United States Department of Treasury, converted by the Index Calculation Agent in a commercially reasonable manner to bank discount basis such that it is expressed in the same manner as the T-Bill Auction High Rate.

If the rate for United States 3-month Treasury bills is still not available, the T-Bill Rate will be determined by the Index Calculation Agent in good faith and in a commercially reasonable manner.

- **Extraordinary Events Affecting the Underlying Indices**

Successor Underlying Indices

If any Underlying Index or reference item (e.g., any indicator), as applicable, is (a) not calculated and announced by the underlying index sponsor or the sponsor of the applicable reference item but is calculated and announced by a successor sponsor acceptable to the Index Calculation Agent or (b) replaced by a successor index using, in the determination of the Index Calculation Agent, the same or substantially similar formula for and method of calculation as used in the calculation of such Underlying Index or reference item, then such index or reference item will be deemed to be the index Underlying Index or reference item so calculated and announced by that successor index or reference item sponsor or that successor index or reference item, as the case may be.

Material Change in the Method or Formula of Calculating an Underlying Index

On any Calculation Day, if any underlying index sponsor or other non-affiliated third party person with control over an item referenced by the Index (e.g., a futures contract) makes a material change in the formula for or the method of calculating an Underlying Index or reference item, which affects the ability of the Index Calculation Agent to calculate the Index Level, then the Index Calculation Agent may make such adjustment(s) that it determines to be appropriate to any variable, calculation, methodology or detail in these Index Rules to account for such modification. For the avoidance of doubt, such adjustment may occur prior to, on or after the date of such material change, depending on when such change is announced and when the Index Calculation Agent becomes aware of such change.

Non-Publication of an Underlying Index as a result of Cancellation

On or prior to any Calculation Day on which the Index Calculation Agent is determining the Index Level, if an an underlying index sponsor or the sponsor of the applicable reference item permanently cancels a constituent of the Index, and no successor constituent exists, the Index Calculation Agent will, in good faith, either:

- continue to calculate the Index Level of the relevant Index using the latest terms specified in the Index Supplement at the time the Underlying Index other reference item was cancelled; or

- make such adjustment(s) that it determines to be appropriate to any variable, calculation, methodology, valuation terms or any other rule in relation to the relevant J.P. Morgan Commodity Index to account for such cancellation, including but not limited to excluding or substituting a relevant Underlying Index or other reference item.

Such adjustment may occur prior to, on or after the date of such cancellation, depending on when such change is announced and when the Index Calculation Agent becomes aware of such change.

Change in Law Event

Without prejudice to the ability of the Index Calculation Agent to amend the Index Rules, the Index Calculation Agent may, acting in good faith and in a commercially reasonable manner:

- exclude; or
- substitute,

any Underlying Index or other reference item following the occurrence (and/or continuation) of a Change in Law or in circumstances where it considers it reasonably necessary to do so to reflect the intention of the J.P. Morgan Commodity Index, including (without prejudice to the generality of the foregoing) any perception among market participants generally that the published price of the relevant Underlying Index or other reference item is inaccurate (and the Relevant Exchange fails to correct such level of the underlying futures contract or the underlying index sponsor or the sponsor of the applicable reference item fails to correct such level of the Underlying Index or other reference item), and if it so excludes or substitutes any Underlying Index or other reference item, then the Index Calculation Agent may adjust the Index Rules as it determines in good faith to be appropriate to account for such exclusion or substitution on such date(s) selected by the Index Calculation Agent. The Index Calculation Agent is under no obligation to continue the calculation and publication of any Index upon the occurrence or existence of a Change in Law; and the Index Calculation Agent may decide to cancel any Index if it determines, acting in good faith, that the objective of the relevant J.P. Morgan Commodity Index can no longer be achieved.

"**Change in Law**" means:

- due to:
  - the adoption of, or any change in, any applicable law, regulation or rule (including, without limitation, any tax law); or
  - the promulgation of, or any change in, the interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, as implemented by the U.S. Commodity and Futures Trading Commission or any exchange or trading facility),

in either case, the Index Calculation Agent determines in good faith that (a) it is contrary to such law, rule, regulation or order for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) any Underlying Index or other reference item of the relevant J.P. Morgan Commodity Index, any transaction referencing such Underlying Index or other reference item or any component thereof (including without limitation, commodities futures contracts) or, (b) holding a position in any Underlying Index or other reference item of the relevant J.P. Morgan Commodity Index, any transaction referencing the Underlying Index or other reference item or any component thereof (including without limitation, commodity futures) is (or, but for the consequent disposal or termination thereof, would otherwise be) in excess of any allowable position limit(s) applicable to any market participants that are brokers or financial intermediaries (individually or collectively) under any such law, rule, regulation in relation to such Underlying Index or other reference item, transaction referencing the Underlying Index or other reference item or any component thereof traded on any exchange(s) or other trading facility (including, without limitation, any relevant exchange); or

- the occurrence or existence of any:
  - suspension or limitation imposed on trading futures contracts (relating to any Underlying Index or other reference item or any component thereof, any transaction referencing the Underlying Index or other reference item or any component thereof) including without limitation, commodities futures contracts; or
  - any other event that causes trading in futures contracts (relating to any Underlying Index or other reference item, any transaction referencing the Underlying Index or other reference item or any component thereof) to cease including without limitation, commodities futures contracts.

Cancellation of an Index License relating to an Underlying Index

With respect to any J.P. Morgan Commodity Index, if, at any time, the license granted to the Index Calculation Agent (or its affiliates) to use any reference item used to calculate the Index or its Underlying Indices (including but not limited to any price, level or value used in calculating the Index or its Underlying Indices or other reference items) terminates, or the Index Calculation Agent's rights to use any reference item used to calculate the Index or its Underlying Indices (including but not limited to any price, level or value used in calculating such Index or its Underlying Indices) is otherwise disputed, impaired or ceases (for any reason), the Index Calculation Agent may remove such reference item or replace such reference item with a successor that is the same or substantially similar and/or may make such adjustments to these Index Rules as it determines to be appropriate to account for such event on such dates as the Index Calculation Agent determines is appropriate.

Additional Terms

Amendments

The Index Rules may be amended from time to time at the discretion of the Index Calculation Agent and will be re-published (in a manner determined by the Index Calculation Agent from time to time) no later than thirty calendar days following such amendment. The new version of the Index Rules will include the effective date of such amendment. The Index Rules are intended to be comprehensive; however, ambiguities may arise. If an ambiguity does arise, the Index Calculation Agent will resolve such ambiguities and, if necessary, amend the Index Rules to reflect such resolution.

No Investment Advice and No Fiduciary Duty

The Index Calculation Agent and its affiliates, officers, agents or employees (a) have not rendered legal, regulatory, investment, tax, accounting or other advice to an investor in relation to any product that is linked to or references a J.P. Morgan Commodity Index and (b) are not fiduciaries under applicable law governing such product or in the jurisdiction in which any investor purchases a product that is linked to or references a J.P. Morgan Commodity Index. Each investor should make its own investment decision based on its own judgment and on its own examination of the J.P. Morgan Commodity Index and the applicable product, and each investor should consult its own legal, regulatory, investment, tax, accounting and other professional advisers as it deems necessary in connection with the relevant transaction.

Index Calculation Agent; Index Calculation Standards and Index Calculation Determinations

J.P. Morgan Securities plc or any affiliate or subsidiary designated by it (as specified in the Index Rules) will act as calculation agent in connection with each J.P. Morgan Commodity Index. The Index Calculation Agent will act in good faith and in a commercially reasonable manner with respect to determinations made by it pursuant to the Index Rules for a J.P. Morgan Commodity Index.

All determinations of the Index Calculation Agent pursuant to the Index Rules and interpretation of the Index Rules will be final, conclusive and binding and no person will be entitled to make any claim against the Index Calculation Agent or any of the Relevant Persons in respect thereof. Neither the Index Calculation Agent nor any Relevant Person will:

- be under any obligation to revise any determination or calculation made or action taken for any reason in connection with the Index Rules or a J.P. Morgan Commodity Index; or

- have any responsibility to any person (whether as a result of negligence or otherwise) for any determinations made or anything done (or omitted to be determined or done) with respect to a J.P. Morgan Commodity Index or with respect to the publication of any Index Level (or failure to publish such level) or any use to which any person may put a J.P. Morgan Commodity Index or the Index Levels.

"Relevant Persons" means JPMS plc, any of its affiliates or subsidiaries or their respective directors, officers, employees, representatives, delegates or agents.

Corrections

With respect to any J.P. Morgan Commodity Index,

- if the level of an Underlying Index or other reference item or any component thereof, variable or other input that is used for any calculation relevant to the Index Level for any Calculation Day is subsequently corrected and the correction is published by the relevant index sponsor or relevant publication source; or

- if the Index Calculation Agent identifies an error or omission in any of its calculations or determinations with respect to the J.P. Morgan Commodity Index for any Calculation Day,

then, the Index Calculation Agent may, if practicable and if it considers such correction material, adjust or correct the Index Level for such Calculation Day and/or each subsequent affected Calculation Day. The Index Calculation Agent will publish (in such manner determined by the Index Calculation Agent) corrected Index Level(s) as soon as reasonably practicable.

Index Cancellation

If the Index Calculation Agent determines that any adjustment that can be made with respect to any of the events discussed above in "Extraordinary Events Affecting the Underlying

Indices" cannot or would not produce a commercially reasonable result, then the Index Calculation Agent may cease calculating and publishing the J.P. Morgan Commodity Index from the date of such determination by the Index Calculation Agent.

Cancellation of relevant license or dispute, impairment or cessation that affects rights

If, at any time, any license granted (if required) to the index sponsor or the Index Calculation Agent (or any of their affiliates) to use any price, level or value (each, an "**Affected Underlying Index**") reference by the Index or any of its Underlying Indices or other reference items terminates, or the rights of the sponsor of the Index (the "**Index Sponsor**") or the Index Calculation Agent (or any of their affiliates) to use an Affected Underlying Index for the purposes of such Index or any of its Underlying Indices or other reference items is otherwise disputed, impaired or ceases (for any reason), then the Index Calculation Agent may (i) exclude the Affected Underlying Index from the Index or substitute another price, level or value for the Affected Underlying Index in the Index, and in either case may adjust the Index Rules as it determines to be appropriate to account for such event including, without limitation, in the case of substitution selecting (a) a replacement futures contract, options contract and/or index having characteristics similar to the Affected Underlying Index and (b) the date such replacement is effective or (ii) cease publication of the Index or its Affected Underlying Index on such date as is determined by the Index Calculation Agent.

Hypothetical Back-Tested Historical Levels

The hypothetical back-tested historical levels of any J.P. Morgan Commodity Index should not be taken as an indication of future performance, and no assurance can be given as to the levels or performance of the Index on a future date. Any hypothetical back-tested historical levels related to the Index may not have been verified by an independent third party, and such results have inherent limitations. Back-tested results are achieved by means of a retroactive application of a back-tested model designed with the benefit of hindsight. The Index Calculation Agent, in calculating hypothetical back-tested historical index levels, may have applied the disruption provisions set forth in the Index Rules differently than it otherwise would have applied such provisions in a "live" calculation scenario. Additionally, the precision and rounding of index levels (or other calculated values) may differ from the methodology applied on a going forward basis. No representation is made that any investment that references the Index will or is likely to achieve returns similar to any hypothetical back-tested historical returns. Alternative modelling techniques or assumptions might provide different results. Finally, hypothetical back-tested results of past performance are neither an indicator nor a guarantee of future performance or returns. Actual results may vary from such hypothetical back-tested levels.

Disclaimer

Neither J.P. Morgan Securities plc nor any of its Relevant Persons make any representation or warranty, whatsoever, express or implied, as to the results that may be obtained through the use of any J.P. Morgan Commodity Index strategy or its associated Index Rules. Each Relevant Person expressly disclaims all warranties of accuracy, completeness, merchantability, or fitness for a particular purpose with respect to any information contained in the Index Rules and no Relevant Person will have any liability (direct or indirect, special, punitive consequential or otherwise) to any person even if notified of the possibility of any such damages.

The Index Calculation Agent is under no obligation to continue the calculation, publication and dissemination of the J.P. Morgan Commodity Index, or of any indices or strategies that may be potential components of the J.P. Morgan Commodity Index. The Index Calculation Agent need not publish the index level(s), Index Level(s) or similar information related to the J.P. Morgan Commodity Index if the relevant Bloomberg ticker (as identified in the relevant Index Supplement) is subject to any delay in or interruptions of publication for any reason including the occurrence of an Extraordinary Event (as defined herein).

No one may reproduce or disseminate the information contained in the Index Rules without the prior written consent of the Index Calculation Agent. The Index Rules are not intended for distribution to, or use by, any person in a jurisdiction where such distribution is prohibited by law or regulation.

RISK FACTORS RELATING TO THE J.P. MORGAN COMMODITY INDICES

The following risk factors are examples of the types of risks inherent in a Commodity Index Derivative Transaction that references a J.P. Morgan Commodity Index. A full list of risk factors is contained in the governing documents of a particular Commodity Index Derivative Transaction linked to a particular J.P. Morgan Commodity Index. Counterparties should not enter into a Commodity Index Derivative Transaction purely on the basis of this document, which should be read in conjunction with the governing documents for the particular transaction.

The following risk factors relate solely to J.P. Morgan Commodity Indices and supplements the other risk factors set forth in the accompanying disclosures related to any Commodity Index Derivatives Transaction between you and us. These risk factors should be read together with the risk factors set forth in the General Disclosure Statement, the Commodity Disclosure Annex, the Commodity Index Disclosure Annex and any other disclosure annex. ***You should carefully review these risk factors (including the risk factors relating to potential conflicts of interest) prior to making your investment decision to enter into a Commodity Index Derivatives Transaction.***

Prior to making your investment decision to enter into a Commodity Index Derivative Transaction, you should carefully review the following risk considerations. The following risk factors are examples of the types of risks inherent in entering into a Commodity Index Derivative Transaction referencing a J.P. Morgan Commodity Index. The governing documents for the relevant Commodity Index Derivative Transaction will contain a more inclusive list of risk factors. Counterparties to Commodity Index Derivative Transactions should not base their decision to enter into a Commodity Index Derivative Transaction purely on the basis of this document, which should be read in conjunction with the governing documents for the particular Commodity Index Derivative Transaction.

No assurance can be given that any synthetic investment strategy on which a J.P. Morgan Commodity Index is based will be successful or that the Index will outperform any alternative strategy that might be employed in respect of the synthetic constituents referenced. The Index may go up or down and may fall to zero which may significantly adversely affect the value of any associated Commodity Index Derivative Transaction. Various market factors and circumstances at any time and/or over any period could cause the Index to perform differently than how it is expected to perform. Neither the Index Sponsor nor the Index Calculation Agent provides any assurance as to the expected results of the Index over any period of time.

There may be potential conflicts between your interests and those of of certain J.P. Morgan entities, including the calculation agent for a Commodity Index Derivative Transaction, the index sponsor and index calculation agent for a J.P. Morgan Commodity Index and other of JPMorgan Chase & Co and J.P. Morgan Securities plc.

JPMorgan Chase & Co., J.P. Morgan Chase Securities plc and their affiliates (collectively, "**J.P. Morgan**") play a variety of roles in connection with Commodity Index Derivative Transactions linked to the J.P. Morgan Commodity Indices, including acting as index calculation agent (the "**Index Calculation Agent**") and sponsor (the "**Index Sponsor**") of the relevant J.P. Morgan Commodity Index and hedging J.P. Morgan's obligations under such Commodity Index Derivative Transactions. In performing these duties, the economic interests of J.P. Morgan entities, including the Index Calculation Agent, the Index Sponsor and other J.P. Morgan affiliates would be potentially adverse to your interests as a counterparty in such Commodity Index Derivative Transactions. Additionally, J.P. Morgan may from time to time develop other indices or products that may take positions that are contrary to your economic interests.

The Index Calculation Agent has discretion in relation to any relevant J.P. Morgan Commodity Index, may make modifications and adjustments to such J.P. Morgan Commodity Index and is under no obligation to consider your interests as a counterparty to a Commodity Index Derivative Transaction.

Unless otherwise specified, JPMS plc, one of JPMorgan Chase & Co.'s affiliates, acts as the Index Calculation Agent and Index Sponsor of any relevant J.P. Morgan Commodity Index and is responsible for calculating and maintaining that J.P. Morgan Commodity Index and developing the guidelines and policies governing its composition and calculation. JPMS plc is entitled to exercise discretion in relation to any relevant J.P. Morgan Commodity Index, including but not limited to, the determination of the level to be used in the event of market disruptions that affect its ability to calculate and publish that J.P. Morgan Commodity Index and the interpretation of rules governing that J.P. Morgan Commodity Index. In addition, JPMS plc has discretion, acting in good faith and in a commercially reasonable manner, to include, exclude or substitute any Underlying Index or to amend the rules governing any relevant J.P. Morgan Commodity Index upon the occurrence of certain extraordinary events. Unlike other indices, the maintenance of the J.P. Morgan Commodity Indices is not governed by an independent committee. Although judgments, policies and determinations concerning the Index are made by JPMS plc, JPMorgan Chase & Co., as the parent company of JPMS plc, ultimately controls JPMS plc.

The index sponsor and/or the index calculation agent of each J.P. Morgan Commodity Index is entitled to exercise discretion in good faith and in a commercially reasonable manner in relation to that J.P. Morgan Commodity Index, including, but not limited to in:

- the interpretation of the rules governing that J.P. Morgan Commodity Index;
- the calculation of the level of that J.P. Morgan Commodity Index in the event of certain market disruptions and the determination of the values of one or more constituents in the event of market disruptions or as a result of manifest errors in, or unavailability of, certain values;
- the removal or replacement of a constituent of that J.P. Morgan Commodity Index upon the occurrence of certain extraordinary events, including changes in law, relating to that constituent; or
- the cancelation of that J.P. Morgan Commodity Index.

The index sponsor of a J.P. Morgan Commodity Index may also amend the rules governing that J.P. Morgan Commodity Index in its discretion. Although JPMS plc will make all determinations and take all actions in relation to the J.P. Morgan Commodity Indices in good faith, it should be noted that such discretion could have an impact, positive or negative, on the level of any relevant J.P. Morgan Commodity Index and the value of your Commodity Index Derivative Transaction. JPMS plc is under no obligation to consider your interests in taking any actions that might affect the value of the Commodity Index Derivative Transaction. Furthermore, the inclusion of the Underlying Indices in any relevant J.P. Morgan Commodity

Index is not an investment recommendation by us or JPMS plc of the Underlying Indices or the futures contracts underlying the Underlying Indices.

A J.P. Morgan Commodity Index comprises notional assets.

The exposures to the commodity futures contracts underlying the Underlying Indices are purely notional. There is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. Consequently, you will not have any claim against any of the commodity futures contracts underlying the Underlying Indices.

A J.P. Morgan Commodity Index may not be successful and may not outperform any alternative strategy that might be employed with respect to the commodity futures contracts underlying the Underlying Indices.

A J.P. Morgan Commodity Index will follow a proprietary strategy that operates on the basis of pre-determined rules. No assurance can be given that the investment strategy on which the J.P. Morgan Commodity Index is based will be successful or that such J.P. Morgan Commodity Index will outperform any alternative strategy that might be employed with respect to the commodity futures contracts underlying the Underlying Indices.

A J.P. Morgan Commodity Index may have a limited or no operating history and may perform in unanticipated ways.

A J.P. Morgan Commodity Index may have limited or no historical performance. Any back-testing or similar analysis in respect of a J.P. Morgan Commodity Index must be considered illustrative only and may be based on estimates or assumptions not used by the Index Calculation Agent when determining the level of such J.P. Morgan Commodity Index. Past performance should not be considered indicative of future performance.

The reported level of a J.P. Morgan Commodity Index may include the deduction of an adjustment factor.

One way in which a J.P. Morgan Commodity Index may differ from a typical index is that its daily reported level may include a deduction from the aggregate performance of the Underlying Indices of an adjustment factor assessed at an annual rate specified in the relevant Index Rules. If applicable, this adjustment factor will be deducted daily and calculated based on an actual/360 accrual basis, or as otherwise specified in the Index Rules. The Index Rules for a particular J.P. Morgan Commodity Index may also include further adjustments which will be described in greater detail therein, as applicable. As a result of the deduction of this/ese amount(s), the level of such J.P. Morgan Commodity Index will trail the value of a hypothetical identically constituted synthetic portfolio from which no such amount is deducted. Additional fees, adjustments or deductions may be assessed in relation to any overlying Commodity Index Derivative Transaction, as specified in the governing documentation for such Transaction.

The Underlying Indices may be changed upon the occurrence of certain extraordinary events.

Following the occurrence of certain extraordinary events with respect to an Underlying Index as described under "Extraordinary Events Affecting the Underlying Indices," the affected Underlying Index may be excluded or replaced by a substitute index. You should realize that the changing of an Underlying Index may affect the performance of a J.P. Morgan Commodity Index, and therefore, the value of the Commodity Index Derivative Transaction, as the replacement index may perform significantly better or worse than the affected Underlying Index.

There may be increased volatility due to the use of leverage.

A J.P. Morgan Commodity Index and some Underlying Indices may use leverage to increase or decrease the volatility of the J.P. Morgan Commodity Index or a Short Underlying Index, as applicable. Where a J.P. Morgan Commodity Index or a constituent is leveraged, any price movements in such J.P. Morgan Commodity Index or constituent, as applicable, may result in greater changes in the level of such J.P. Morgan Commodity Index or constituent, as applicable, than if leverage was not used. In particular, the use of leverage will magnify any negative performance of a J.P. Morgan Commodity Index or constituents, as applicable.

If a J.P. Morgan Commodity Index employs a volatility targeting strategy, the volatility targeting strategy may not achieve its intended results.

Volatility targeting is a mechanism that adjusts the overall leverage of an index in order to target a certain level of realized volatility of the index. If a J.P. Morgan Commodity Index employs a volatility targeting strategy, no assurance can be given that the strategy will be successful or that such J.P. Morgan Commodity Index will outperform any alternative strategy that might be employed. Furthermore, no assurance can be given that such J.P. Morgan Commodity Index will achieve its target volatility. The actual realized volatility of such J.P. Morgan Commodity Index may be greater or less than the target volatility.

For any Underlying Indices that employ a long-short strategy, your payment at maturity depends on the net performance of the applicable constituents, not on the absolute performance of such constituents.

An Underlying Index may consist of the net return of a synthetic long position in one underlying index and a synthetic short position in a different underlying index. This technique is generally known as a "long-short" strategy. Your return on a the Commodity Index Derivative Transaction attributable to any Underlying Index pairs that employ a long-short strategy is dependent on the performance of the Underlying Index that has a notional long position (*i.e.*, to which the relevant Underlying Index has long exposure) minus the performance of the Underlying Index that has a notional short position (*i.e.*, to which such Underlying Index has short exposure). The absolute performance of the levels of the long and short Underlying Indices is not relevant to the return on your Commodity Index Derivative Transaction.

If a J.P. Morgan Commodity Index employs a volatility matching strategy with respect to long-short Underlying Index pairs, the volatility matching strategy may not achieve its intended results.

A J.P. Morgan Commodity Index may employ a volatility matching strategy with respect to long-short Underlying Indices in order to limit realized volatility. Volatility matching attempts to match the volatility of the short Underlying Index to the volatility of the long Underlying Index Underlying Index by adjusting the leverage of the short Underlying Index to reduce exposure to the short Underlying Index where the volatility of the short Underlying Index is greater than the volatility of the long Underlying Index based on their past historical realized volatility and by adjusting the leverage of the short Underlying Index to increase exposure to the short Underlying Index where the volatility of the short Underlying Index is less than the volatility of the long Underlying Index based on their past historical realized volatility. A J.P. Morgan Commodity Index may also include a minimum and/or maximum leverage for the short Underlying Index. The volatility matching mechanism seeks to maximize the offsetting effect of the long Underlying Index and the short Underlying Index. Because the long Underlying Index and the short Underlying Index may not be sufficiently correlated to achieve the desired offsetting effect and because past historical realized volatility may not be a good estimate of future realized volatility, there can be no guarantee that the volatility matching mechanism will achieve its intended results.

For any Underlying Index with a synthetic short position, there is unlimited loss exposure , and that exposure may result in a significant drop in the level of that Underlying Index.

Any Underlying Index that includes a synthetic short position will suffer from a positive return in the short underlying index when the level of the short underlying index increases. The maximum increase of the value of any short exposure is limited to the loss of the entire value of the short underlying index, and the maximum decrease in value of such short exposure is unlimited. Because there is no limit to possible increases in the level of the short underlying index, the losses that may result from short exposure are potentially unlimited.

A J.P. Morgan Commodity Index may not represent a fully diversified portfolio.

Diversification is generally considered to reduce the amount of risk associated with generating returns. A J.P. Morgan Commodity Index will be concentrated in commodities generally and may be concentrated in a few particular commodities only. There can be no assurance that a J.P. Morgan Commodity Index will be sufficiently diversified at any time.

You will be exposed to the risks associated with each Underlying Index.

You will be exposed to the risks associated with each Underlying Index underlying any J.P. Morgan Commodity Index to which a Commodity Index Derivative Transaction is linked.

A J.P. Morgan Commodity Index does not provide constant exposure to futures contracts on all specified underlying commodities, and at any particular time may be more volatile and susceptible to price fluctuations of commodities than a broader commodity index.

A J.P. Morgan Commodity Index does not provide exposure to futures contracts on all of the Underlying Indices specified in the Index Rules at the same time. Rather, at any given time, a J.P. Morgan Commodity Index provides long-only or long/short exposure, to certain selected constituents based the application of the index methodology (which may include, among other things, calculation of correlations, volatility or performance of constituents or spreads over specified periods and/or application of pairing, backwardation, risk-adjustment and volatility-based metrics and thresholds, weighting caps and rankings, each as described in the applicable Index Rules). After application of the index methodology for a particular J.P. Morgan Commodity Index, certain Underlying Indices will be assigned a weighting of zero and therefore have no effect on the level of the index for the applicable rebalancing period. Futures contracts on commodities that are not represented in a J.P. Morgan Commodity Index at any given time could perform better, perhaps significantly, than the futures contracts that are represented in the J.P. Morgan Commodity Index at that time. In addition, price volatility in the futures contracts included in the J.P. Morgan Commodity Index will likely have a greater impact on the

J.P. Morgan Commodity Index than would be the case with a broader commodity index, and the index will be more susceptible to fluctuations and declines in value of the physical commodities included in the index. In addition, the J.P. Morgan Commodity Index may be less representative of the economy and commodity markets as a whole and might therefore not serve as a reliable benchmark for commodity market performance generally.

The Index may not represent a fully diversified portfolio.

Diversification is generally considered to reduce the amount of risk associated with generating returns. A J.P. Morgan Commodity Index will generally be concentrated in commodities and may be concentrated in a few particular commodities only. There can be no assurance that a J.P. Morgan Commodity Index will be sufficiently diversified at any time.

Correlation of performances among the Underlying Indices may affect and may reduce the payments under Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index.

If the index methodology for a J.P. Morgan Commodity Index specifies that a correlation metric is to be applied to the Underlying Indices, correlation among the Underlying Indices may significantly affect the composition and ultimate performance of the J.P. Morgan Commodity Index. For example, high positive correlation during periods of negative returns among the Underlying Indices could have an adverse effect on any payments on, and the value of, any associated Commodity Index Derivative Transactions.

Performances of the Underlying Indices associated with any J.P. Morgan Commodity Index may become highly correlated from time to time during the term of a particular Commodity Index Derivative Transaction, including, but not limited to, a period in which there is a substantial decline in the Underlying Indices. High correlation during periods of negative returns among the Underlying Indices could have an adverse effect on any payments under, and the value of, a particular Commodity Index Derivative Transaction.

Price movements in certain Underlying Indices with the same direction of synthetic exposure included in a J.P. Morgan Commodity Index may be moderated, or more than offset, by lesser increases or declines in the value of other such Underlying Indices with the same market position.

If a J.P. Morgan Commodity Index employs a backwardation metric as part of its methodology, there may be additional associated risks.

If a J.P. Morgan Commodity Index employs a backwardation metric as part of its methodology, index specifics, such as the index composition and weighting may depend on the degree of backwardation or relative backwardation associated with the Underlying Indices. For example, the Underling Index weights for such a J.P. Morgan Commodity Index may be determined by reference to the degree of backwardation or contango that exists among certain futures contracts associated with underlying commodities of the Underlying Indices referenced by such J.P. Morgan Commodity Index. In connection with each rebalancing, the ultimate exposure of each such J.P. Morgan Commodity Index may be allocated among a potentially very limited number of index components that have the highest degree of backwardation (or, in the absence of backwardation, the lowest degree of contango), while the weights of the remaining components are set to zero. No assurance can be given that the methodology for determining the backwardation (or contango) of each component will be successful or that any commodity that is in backwardation at the time it is selected will remain in backwardation during the period in which it is included the relevant J.P. Morgan Commodity Index. No assurance can be given that any J.P. Morgan Commodity Index that employs a backwardation metric as part of its methodology will outperform any alternative index that might be constructed from commodity indices that select components based on backwardation or contango characteristics.

"Backwardation" refers to the situation where the futures contracts for a commodity with a delivery month further in time have lower contract prices than futures contracts for the same commodity with a delivery month closer in time. "Contango" refers to the situation where the futures contracts for a commodity with a delivery month further in time have higher contract prices than futures contracts for the same commodity with a delivery month closer in time.

If a J.P. Morgan Commodity Index employs a seasonality metric as part of its methodology, there may be additional associated risks.

Unlike other commodity indices that maintain exposure to futures contracts at a specified maturity (often, the front-month contract), a J.P. Morgan Commodity Index whose methodology depends on a seasonal lookback seeks to track exposure only to one or more specified contracts, as applicable, over the course of each year. The contract or contracts referenced by each such J.P. Morgan Commodity Index are typically determined based on the historical trading characteristics of exchange-traded futures contracts on the relevant underlying commodities, taking into account liquidity and market practice, with the intention of creating an index that would outperform a comparable index that maintains exposure to front-month contracts. No assurance can be given that the investment strategy on which any such J.P. Morgan Commodity Index is based will be successful or that any such J.P. Morgan Commodity Index will outperform any alternative strategy that might be employed with respect to the relevant exchange-traded futures contracts.

The application of weight caps and other thresholds may result in a J.P. Morgan Commodity Index being underinvested.

If the index methodology for a J.P. Morgan Commodity Index specifies that a weighting cap or other threshold is to be applied to the Underlying Indices, or to their constituents or related commodities or sectors, such caps may affect the composition, level of diversification and ultimate performance of the J.P. Morgan Commodity Index. Consequently, a J.P. Morgan Commodity Index may be underinvested in the instance where the application of a weight cap has reduced the potential exposure to certain Underlying Indices, which may affect the value of any associated Commodity Index Derivative Transactions.

Changes in the value of the Underlying Indices may offset each other.

Price movements between the Underlying Indices may not correlate with each other. At a time when the value of one Underlying Index increases, the value of other Underlying Indices may not increase as much or may decline. Therefore, in calculating the level of the Index increases in the value of some of the Underlying Indices may be moderated, or more than offset, by lesser increases or declines in the value of other Underlying Indices.

The commodity futures contracts underlying an Underlying Index are subject to legal and regulatory regimes that may change in ways that could have a substantial adverse effect on the value of Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index.

Futures contracts and options on futures contracts markets, including the futures contracts underlying the Underlying Indices are subject to extensive regulation and margin requirements. The Commodity Futures Trading Commission, commonly referred to as the "**CFTC**," and the exchanges on which such futures contracts trade, are authorized to take extraordinary actions in the event of a market emergency, including, for example, the retroactive implementation of speculative position limits or higher margin requirements, the establishment of daily limits and the suspension of trading. Furthermore, certain exchanges have regulations that limit the amount of fluctuations in futures contract prices that may occur during a single five-minute trading period. These limits could adversely affect the market prices of relevant futures contracts and forward contracts. The regulation of commodity transactions in the U.S. is subject to ongoing modification by government and judicial action. In addition, various non-U.S. governments have expressed concern regarding the disruptive effects of speculative trading in the commodity markets and the need to regulate the derivative markets in general. The effect on the value of Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index of any future regulatory change is impossible to predict, but could be substantial and adverse to the interests of participants in such transactions.

Notably, with respect to agricultural and exempt commodities as defined in the Commodity Exchange Act (generally, physical commodities such as agricultural commodities, energy commodities and metals), the Dodd-Frank Act, which was enacted on July 21, 2010, provides the CFTC with authority to establish limits on the number of positions, other than bona fide hedge positions, that may be held by any person in a commodity through futures contracts, options on futures contracts and other related derivatives, such as swaps, that are economically equivalent to those contracts. The Dodd-Frank Act also provides the CFTC with authority to establish limits for each month, including related hedge exemption positions, on the aggregate number of positions in contracts based upon the same underlying commodity, as defined by the CFTC, that may be held by any person, including any group or class of traders. In addition, designated contract markets and swap execution facilities, as defined in the Dodd-Frank Act, are authorized to establish and enforce position limits or position accountability requirements on their own markets or facilities, which must be at least as stringent as the CFTC's where CFTC limits also apply.

On November 5, 2013, the CFTC proposed rules to establish position limits that would apply to twenty-eight (28) agricultural, metals and energy futures contracts and futures, options and swaps that are economically equivalent to those futures contracts. The limits would apply to a number of Commodity Futures Contracts and commodity futures contracts that may be included in an Index, such as CBOT Soybeans, Soybean Meal and Wheat futures; ICE Futures US Cotton No. 2, Sugar No. 11 and Sugar No. 16 futures; NYMEX Light Sweet Crude Oil, NY Harbor No. 2 Heating Oil, NY Harbor Gasoline Blendstock and Henry Hub Natural Gas futures; and

COMEX Gold, Silver and Copper futures and NYMEX Palladium and Platinum futures. The limits will apply to a person's combined position in futures, options and swaps on the same underlying commodity. The rules also would set new aggregation standards for purposes of these position limits and would specify the requirements for designated contract markets and swap execution facilitates to impose positionlimits on contracts traded on those markets. The rules, if enacted in their proposed form, may reduce liquidity in the exchange-traded market for those commodity-based futures contracts, which may, in turn, have an adverse effect on any payments under Commodity Index Derivative Transactions referencing such futures contracts.

Higher or lower future prices of commodities included in an Underlying Indices relative to their current prices may lead to a decrease in any payment due under Commodity Index Derivative Transactions referencing the Index.

An Underlying Index is composed of futures contracts on physical commodities. As the contracts that underlie an Underlying Index come to expiration, they are replaced by contracts that have a later expiration. For example, a contract purchased and held in August may specify an October expiration. As time passes, the contract expiring in October is replaced by a contract for delivery in November. This is accomplished by selling the October contract and purchasing the November contract. This process is referred to as "rolling." Excluding other considerations, if the market for these contracts is in "backwardation," where the prices are lower in the distant delivery months than in the nearer delivery months, the sale of the October contract would take place at a price that is higher than the price of the November contract, thereby creating a "roll yield." While many commodity futures contracts have historically exhibited consistent periods of backwardation, backwardation will most likely not exist at all times. Moreover, some of the commodity futures contracts have historically exhibited "contango" markets rather than backwardation. Contango markets are those in which prices are higher in more distant delivery months than in nearer delivery months. Commodities may also fluctuate between backwardation and contango markets. The presence of contango in the commodity markets with respect to an Underlying Index to which a J.P. Morgan Commodity Index provides long exposure or the presence of backwardation in the commodity markets with respect to an Underlying Index to which the Index provides short exposure could adversely affect the level of the Index and, accordingly, any amount payable under Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index.

The Underlying Indices do not offer direct exposure to physical commodities.

The Underlying Indices are each composed of futures contracts on a commodity. Accordingly, the levels of the Underlying Indices will reflect the return on those commodity futures contracts, not the return on the physical commodities underlying those commodity futures contracts. The price of a futures contract reflects the expected value of the commodity upon delivery in the future, whereas the spot price of a commodity reflects the immediate delivery value of the commodity. A variety of factors can lead to a disparity between the expected future price of a commodity and the spot price at a given point in time, such as the cost of storing the commodity for the term of the futures contract, interest charges incurred to finance the purchase of the commodity and expectations concerning supply and demand for the commodity. The price movements of a futures contract are typically correlated with the movements of the spot price of the reference commodity, but the correlation is generally imperfect and price movements in the spot market may not be reflected in the futures market (and vice versa). Accordingly, an Underlying Index may underperform a similar investment that reflects the return on physical commodities.

Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index are not regulated by the Commodity Futures Trading Commission.

Any proceeds generated by entering into Commodity Index Derivative Transactions referencing the Index will not be used to purchase or sell any commodity futures contracts or options on futures contracts for the benefit of counterparties to such transactions. Entering into Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index thus neither constitutes an investment in futures contracts, options on futures contracts nor a collective investment vehicle that trades in these futures contracts (*i.e.*, entering into a Commodity Index Derivative Transaction referencing the Index will not constitute a direct or indirect investment by the counterparty in the futures contracts), and counterparties will not benefit from the regulatory protections of the CFTC. Among other things, this means that JPMS plc and its affiliates are not registered with the CFTC as a futures commission merchant and counterparties will not benefit from the CFTC's or any other non-U.S. regulatory authority's regulatory protections afforded to persons who trade in futures contracts on a regulated futures exchange through a registered futures commission merchant. For example, the price a counterparty pays to enter into such transaction will not be subject to customer funds segregation requirements provided to customers that trade futures on an exchange regulated by the CFTC.

Suspension or disruptions of market trading in relevant commodity and related futures markets may adversely affect the value of Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index.

The commodity markets are subject to temporary distortions or other disruptions due to various factors, including lack of liquidity in the markets, the participation of speculators and government regulation and intervention. In addition, U.S. futures exchanges and some foreign exchanges have regulations that limit the amount of fluctuation in futures contract prices that may occur during a single day. These limits are generally referred to as "daily price fluctuation limits" and the maximum or minimum price of a contract on any given day as a result of these limits is referred to as a "limit price." Once the limit price has been reached for a particular contract, no trades may be made at a different price. Limit prices have the effect of precluding trading in a particular contract or forcing the liquidation of contracts at disadvantageous times or prices. These circumstances could adversely affect the level of any Underlying Index and, therefore, the value of any Commodity Index Derivative Transactions referencing the Index.

An increase in the margin requirements for any commodity futures contracts underlying an Underlying Index may adversely affect the value of Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index.

Futures exchanges require market participants to post collateral in order to open and keep open positions in futures contracts. If an exchange increases the amount of collateral required to be posted to hold positions in commodity futures contracts underlying any Underlying Index, market participants who are unwilling or unable to post additional collateral may liquidate their positions, which may cause the level of that Underlying Index to decline significantly. As a result, the value of Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index may be adversely affected.

An Underlying Index may be subject to pronounced risks of pricing volatility.

As a general matter, the risk of low liquidity or volatile pricing around the maturity date of a commodity futures contract is greater than in the case of other futures contracts because (among other factors) a number of market participants take physical delivery of the underlying commodities. Many commodities, like those in the energy and industrial metals sectors, have liquid futures contracts that expire every month. Therefore, these contracts are rolled forward every month. Contracts based on certain other commodities, most notably agricultural and livestock products, tend to have only a few contract months each year that trade with substantial liquidity. Thus, these commodities, with related futures contracts that expire infrequently, roll forward less frequently than every month, and can have further pronounced pricing volatility during extended periods of low liquidity. The risk of aberrational liquidity or pricing around the maturity date of a commodity futures contract is greater than in the case of other futures contracts because (among other factors) a number of market participants take delivery of the underlying commodities. In respect of an Underlying Index that represents energy, it should be noted that due to the significant level of continuous consumption, limited reserves and oil cartel controls, energy commodities are subject to rapid price increases in the event of perceived or actual shortages. These factors (when combined or in isolation) may affect the price of futures contracts and, as a consequence, the level of an Underlying Index.

Each Underlying Index is an excess return index and not a total return index.

Unless otherwise specified in the Index Rules for a particular J.P. Morgan Commodity Index, each Underlying Index is an excess return index and not a total return index. The return from investing in futures contracts derives from three sources: (a) changes in the price of the relevant futures contracts (which is known as the "**price return**"); (b) any profit or loss realized when rolling the relevant futures contracts (which is known as the "**roll return**"); and (c) any interest earned on the cash deposited as collateral for the purchase of the relevant futures contracts (which is known as the "**collateral return**").

Some commodity indices are excess return indices that measure the returns accrued from investing in uncollateralized futures contracts (*i.e.*, the sum of the price return and the roll return associated with an investment in futures contracts). By contrast, a total return index, in addition to reflecting those returns, also reflects interest that could be earned on funds committed to the trading of the underlying futures contracts (*i.e.*, the collateral return associated with an investment in futures contracts). If the Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index are linked to an Underlying Index that is an excess return index, then participating in such transactions may not generate the same return as would be generated from investing directly in the relevant futures contracts or in a total return index related to such futures contracts.

Prices for the physical commodities upon which the futures contracts underlying an Underlying Index are based may change unpredictably and affect the value of the interests of a counterparty to a Commodity Index Derivative Transactions referencing a J.P. Morgan Commodity Index in unanticipated ways.

A decrease in the price of any of the commodities upon which the futures contracts underlying an Underlying Index are based may have a material adverse effect on the value of a Commodity Index Derivative Transaction referencing a J.P. Morgan Commodity Index and on any payments under such transaction. The prices of such commodities tend to be highly volatile and may fluctuate rapidly based on numerous factors, including: changes in supply and demand relationships, governmental programs and policies, national and international political and economic events, changes in interest and exchange rates, speculation and trading activities in commodities and related contracts, general weather conditions, and trade, fiscal, monetary and exchange control policies. Many commodities are also highly cyclical. These factors, some of which are specific to the market for each such commodity, as discussed below, may cause the value of the different commodities upon which the futures contracts underlying an Underlying Index are based, as well as the futures contracts themselves, to move in inconsistent directions at inconsistent rates. This, in turn, will affect the level of an Underlying Index. It is not possible to predict the aggregate effect of all or any combination of these factors. The Underlying Indices provide one avenue for exposure to commodities. The high volatility and cyclical nature of commodity markets may render these investments inappropriate as the focus of an investment portfolio.

Agricultural Sector
Global prices of agricultural commodities, including cocoa, coffee, corn, cotton, soybeans, sugar and wheat, are primarily affected by the global demand for and supply of those commodities, but may also be significantly influenced by speculative actions and by currency exchange rates. In addition, prices for agricultural commodities are affected by governmental programs and policies regarding agriculture, as well as general trade, fiscal and exchange control policies. Extrinsic factors, such as drought, floods, general weather conditions, disease and natural disasters may also affect agricultural commodity prices. Demand for agricultural commodities, such as wheat, corn and soybeans, both for human consumption and as cattle feed, has generally increased with worldwide growth and prosperity.

Energy Sector
Global prices of energy commodities, including WTI crude oil, Brent crude oil, RBOB gasoline, heating oil, gasoil and natural gas, are primarily affected by the global demand for and supply of these commodities, but may also be significantly influenced by speculative actions and by currency exchange rates. In addition, prices for energy commodities are affected by governmental programs and policies, national and international political and economic events, changes in interest and exchange rates, trading activities in commodities and related contracts, trade, fiscal, monetary and exchange control policies, and with respect to oil, drought, floods, weather, government intervention, environmental policies, embargoes and tariffs. Demand for refined petroleum products by consumers, as well as the agricultural, manufacturing and transportation industries, affects the price of energy commodities. Sudden disruptions in the supplies of energy commodities, such as those caused by war, natural events, accidents or acts of terrorism, may cause prices of energy commodity futures contracts to become extremely volatile and unpredictable. Also, sudden and dramatic changes in the futures market may occur, for example, upon a cessation of hostilities that may exist in countries producing energy commodities, the introduction of new or previously withheld supplies into the market or the introduction of substitute products or commodities. In particular, supplies of crude oil may increase or decrease depending on, among other factors, production decisions by the

Organization of the Oil and Petroleum Exporting Countries ("**OPEC**") and other crude oil producers. Crude oil prices are determined with significant influence by OPEC, which has the capacity to influence oil prices worldwide because its members possess a significant portion of the world's oil supply. Crude oil prices are generally more volatile and subject to dislocation than prices of other commodities. Demand for energy commodities such as oil and gasoline is generally linked to economic activity, and will tend to reflect general economic conditions.

Industrial Metals Sector
Global prices of industrial metals commodities, including aluminum, tin, copper, lead, nickel and zinc, are primarily affected by the global demand for and supply of these commodities, but may also be significantly influenced by speculative actions and by currency exchange rates. Demand for industrial metals is significantly influenced by the level of global industrial economic activity. Prices for industrial metals commodities are affected by governmental programs and policies, national and international political and economic events, changes in interest and exchange rates, trading activities in commodities and related contracts, trade, fiscal, monetary and exchange control policies, general weather conditions, government intervention, embargoes and tariffs. An additional, but highly volatile, component of demand for industrial metals is adjustments to inventory in response to changes in economic activity and/or pricing levels, which will influence investment decisions in new mines and smelters. Sudden disruptions in the supplies of industrial metals, such as those caused by war, natural events, accidents, acts of terrorism, transportation problems, labor strikes and shortages of power, may cause prices of industrial metals futures contracts to become extremely volatile and unpredictable. The introduction of new or previously withheld supplies into the market or the introduction of substitute products or commodities will also affect the prices of industrial metals commodities.

Livestock Sector
Livestock commodities, including live cattle, feeder cattle and lean hogs, are "non-storable" commodities, and therefore may experience greater price volatility than traditional commodities. Global livestock commodity prices are primarily affected by the global demand for and supply of those commodities, but may also be significantly influenced by speculative actions and by currency exchange rates. In addition, prices for livestock commodities are affected by governmental programs and policies regarding livestock, as well as general trade, fiscal and exchange control policies. Extrinsic factors, such as drought, floods, general weather conditions, disease (*e.g.*, Bovine Spongiform Encephalopathy, or Mad Cow Disease), availability of and prices for livestock feed and natural disasters may also affect livestock commodity prices. Demand for livestock commodities has generally increased with worldwide growth and prosperity.

Precious Metals Sector
Global prices of precious metals commodities, including gold, silver, palladium and platinum, are primarily affected by the global demand for and supply of those commodities, but may also be significantly influenced by speculative actions and by currency exchange rates. Global prices of precious metals commodities, including gold, silver, platinum and palladium. Demand for precious metals is significantly influenced by the level of global industrial economic activity. Prices for precious metals are affected by governmental programs and policies, national and international political and economic events, expectations with respect to the rate of inflation, changes in interest and exchange rates, trading activities in commodities and related contracts, trade, fiscal, monetary and exchange control policies, government intervention, embargoes and

tariffs. Sudden disruptions in the supplies of precious metals, such as those caused by war, natural events, accidents, acts of terrorism, transportation problems, labor strikes and shortages of power, may cause prices of precious metals futures contracts to become extremely volatile and unpredictable. In addition, prices for precious metals can be affected by numerous other factors, including jewelry demand and production levels.

The list of risk factors set forth above does not purport to be a complete enumeration or explanation of all the risks associated with a transaction referencing a J.P. Morgan Commodity Index or its constituents. The above risk factors are intended to be read and considered in conjunction with any risk factors which may be contained in the Index Rules, the General Disclosure Statement, the Commodity Index Disclosure Annex, the transaction documents applicable to any particular Commodity Index Derivative Transaction any other risk factors which may be provided to you. In addition, any description of a J.P. Morgan Commodity Index contained in these risk factors is qualified entirely by the full text of the Index Rules. The Index Rules, and not any description of the J.P. Morgan Commodity Index in this Disclosure Supplement, govern the calculation and constitution of the particular J.P. Morgan Commodity Index and all other decisions and actions relating to its maintenance.

Disclaimer

All information provided in this document regarding the J.P. Morgan Commodity Indices is provided for informational purposes only and nothing in this document constitutes, or forms part of, an offer to issue or sell, or any solicitation of any offer to subscribe, purchase or sell any securities or other financial product or participate in any transaction. Furthermore, nothing in this document should be construed as a recommendation to adopt any investment strategy or as legal, tax, regulatory or accounting advice. J.P. Morgan expressly disclaims any responsibility for the veracity, currency, completeness or accuracy of any J.P. Morgan Commodity Index or any information provided in connection with a J.P. Morgan Commodity Index or any use to which such information is put.

This document is not intended to provide the full details of a J.P. Morgan Commodity Index and should be regarded as illustrative only. Persons interested in a J.P. Morgan Commodity Index should refer to the Index Rules for a complete description of the rules and operating methodology. No person should make an evaluation of the advantages and disadvantages of entering into any transaction referencing the Index on the basis of this document. Such evaluation should be made solely on the basis of the information contained in the relevant final transaction documents when available and the Index Rules. All persons should conduct their own investigations and consult with their own professional advisors when evaluating a J.P. Morgan Commodity Index without reliance on any J.P. Morgan nor any of its affiliates or subsidiaries or their respective directors, officers, employees, representatives or agents (each a "**Relevant Person**"). None of the Relevant Persons is a fiduciary or advisor to any person interested in gaining exposure to the Index.

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The J.P. Morgan
Futures Tracker Series

J.P.Morgan

16 November 2009 (as amended and restated 18 June 2010 and 21 June 2013)

THE J.P. MORGAN FUTURES TRACKER SERIES
RULES

PART A

1. Introduction

This document comprises the rules (the "**Rules**") of the J.P. Morgan Futures Tracker Series, a family of notional rule-based strategies (each such strategy a "**Futures Tracker**" and together, the "**Futures Trackers**"). The Rules may be amended from time to time at the discretion of J.P. Morgan Securities plc ("**JPMS**") in its capacity as Calculation Agent. The Rules will be re-published no later than one calendar month following amendment to reflect any such changes. Copies of the current Rules are available from JPMS upon request.

Part A of the Rules sets out general information applicable to each Futures Tracker, such as the calculation algorithms which are applicable to all Futures Trackers. Specific information pertaining to each Futures Tracker, including, for example, the name of the Base Underlying, Futures Tracker Currency, Tracker Business Days are set out in the appendices of Part B.

This document is published by JPMS of 25 Bank Street, Canary Wharf, London E14 5JP, UK in its capacity as Calculation Agent.

ALL PERSONS READING THIS DOCUMENT SHOULD REFER TO THE RISK FACTORS, DISCLAIMERS AND CONFLICTS SECTIONS BELOW AND CONSIDER THE INFORMATION CONTAINED IN THIS DOCUMENT IN LIGHT OF SUCH RISK FACTORS, DISCLAIMERS AND CONFLICTS.

NOTHING IN THESE RULES CONSTITUTES AN OFFER TO BUY OR SELL ANY SECURITIES, PARTICIPATE IN ANY TRANSACTION OR ADOPT ANY INVESTMENT STRATEGY OR LEGAL, TAX, REGULATORY OR ACCOUNTING ADVICE.

2. General Notes on each Futures Tracker

Each Futures Tracker is a notional dynamic strategy that aims to replicate the returns of a long position in the near month listed futures contract on a specific underlying (the "**Base Underlying**") traded on the Relevant Exchange (each futures contract on the Base Underlying traded on the Relevant Exchange being a "**Futures Contract**"). A futures contract is a standardized contract traded on an exchange to buy or sell a standard quantity of an asset at a specific date in the future (such date being its expiry date), at a price specified today. Each Futures Contract is identified by its expiry date.

On each Tracker Business Day, each Futures Tracker shall be notionally invested in the nearest listed expiry Futures Contract (the "**Near Futures Contract**"). It shall maintain this exposure until a day that is a specified number of Dealing Days before the expiry date of such Near Futures Contract or before such other date specified in Part B (such day, as set out in Part B, being the "**Re-weighting Date**" and the number of Dealing Days specified in the definition of Re-Weighting Date set out in Part B). After the Re-weighting Date, it shall then be notionally invested in the Futures Contract expiring next after the Near Futures Contract expiry date (the "**Far Futures Contract**"). For the avoidance of doubt, on any Tracker Business Day after the Near Futures Contract expiry date, the Far Futures Contract becomes the Near Futures Contract.

No assurance can be given that the investment strategy used to construct the Futures Tracker will be successful or that the Futures Tracker will outperform any alternative basket or strategy that might be constructed from the Futures Contracts.

Subject to the occurrence of Market Disruption Events, the level of the Futures Tracker (the "**Tracker Level**") will be calculated by the Calculation Agent on each Tracker Business Day to an accuracy of two decimal places, or more where so specified in the relevant Appendix. The Tracker Level is calculated in its relevant currency (the "**Futures Tracker Currency**") in accordance with the methodology set out in Section 7 (*the Futures Tracker Level*).

The Futures Tracker is described as a notional basket of assets because there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Futures Tracker merely

references certain assets, the performance of which will be used as a reference point for calculating the Tracker Level.

3. Calculation Agent

JPMS or any affiliate or subsidiary designated by it will act as calculation agent (the "**Calculation Agent**") for the Futures Tracker. The Calculation Agent's determinations in respect of the Futures Tracker and interpretation of these Rules are final. Further information is contained in the statement of responsibility set out in Section 11 (*Responsibility*) below.

4. The Futures Contracts

In respect of each Futures Tracker, there are typically 4 listed Futures Contracts per calendar year over the Base Underlying. The exact number of Futures Contracts per calendar year (the "**Number of Contracts p.a.**") is specified in Part B of the Rules.

Each Futures Contracts has a specific expiry date (the "**Expiry Date**" and together, the "**Expiry Dates**") specified in Part B.

5. Initial Composition of the Futures Tracker

Each Futures Tracker has a base date (the "**Base Date**") which is the date on which the Futures Tracker comprised a notional investment of one contract in the relevant Near Futures Contract in respect of such date.

The composition of each of the Futures Trackers has been and will be adjusted in accordance with the methodology described in the remainder of these Rules.

6. Futures Tracker Rebalancing

Unless a Market Disruption Event has occurred and is continuing, the Futures Tracker will be rebalanced on the relevant Re-weighting Date.

7. Futures Tracker Level

Unless a Market Disruption Event has occurred and is continuing, the Tracker Level will be calculated by the Calculation Agent on each Tracker Business Day.

On the Base Date, the Tracker Level was equal to the initial tracker level as specified in Part B (the "**Initial Tracker Level**") and the Exposure (E_0) was set at 1. Re-weighting Date k is the Re-weighting Date immediately preceding Tracker Business Day t. Re-weighting Date k+1 is the Re-weighting Date immediately following Re-weighting Date k. On each Tracker Business Day t from, but excluding, Re-weighting Date k to, and including, the next following Re-weighting Date k+1, the Tracker Level is calculated by the Calculation Agent in accordance with the following formula:

$$\mathrm{Tracker}_{k,t} = \mathrm{E}_k \times \mathrm{Future}_{k+1,t}$$

where:

$\mathrm{Tracker}_{k,t}$	means the Tracker Level for Tracker Business Day t;
$\mathrm{Future}_{k+1,t}$	means the Closing Price for Tracker Business Day t of the Futures Contract that expires on the first Expiry Date to occur following Re-weighting Date k+1; and
E_k	means the Exposure of the Futures Tracker for Re-weighting Date k immediately preceding Tracker Business Day t calculated as:

$$E_k = E_{k-1} \times \frac{\text{Future}_k - A}{\text{Future}_{k+1}}$$

where:

$Future_k$	means the Closing Price for Re-weighting Date k of the Futures Contract that expires on the first Expiry Date to occur following Re-weighting Date k;
$Future_{k+1}$	means the Closing Price for Re-weighting Date k of the Futures Contract that expires on the first Expiry Date to occur following Re-weighting Date k+1; and
A	is the Adjustment Factor (as specified in Part B)

Unless a Market Disruption Event has occurred and is continuing, the Tracker Level will be published in respect of each Tracker Business Day by the Calculation Agent on the relevant Price Source.

8. Market Disruption

8.1 On a Re-weighting Date

If any Re-weighting Date is a Disrupted Day in respect of any relevant Futures Contract (each such Futures Contract for these purposes, an "**Affected Futures Contract**"), then the relevant Re-weighting Date for the Affected Futures Contract shall be deemed to be the first following Dealing Day for the Affected Futures Contract which is not a Disrupted Day (and, if such first following Dealing Day occurs on or after the day on which a relevant Futures Contract effectively settles, the level of the Futures Tracker for such first following Dealing Day will be calculated using the settlement price at which the relevant Futures Contract effectively settles in place of the Closing Price), unless the four Dealing Days for an Affected Futures Contract immediately following the day originally scheduled to be the Re-weighting Date are Disrupted Days for such Affected Futures Contract, in which case the fourth Dealing Day following the day originally scheduled to be the relevant Re-weighting Date shall be deemed to be the relevant Re-weighting Date (notwithstanding that it is a Disrupted Day in respect of the Affected Futures Contract), and the Calculation Agent shall re-weight the Futures Tracker acting in good faith using such information and/or methods as it determines, in its reasonable discretion, are appropriate (and, if such fourth Dealing Day occurs on or after the day on which a relevant Futures Contract effectively settles, using the settlement price at which the relevant Futures Contract effectively settles in place of the Closing Price).

8.2 On a Tracker Business Day

Notwithstanding Section 8.1, if any Tracker Business Day is a Disrupted Day for any relevant Futures Contract, the Calculation Agent may either:

(a) calculate its good faith estimate of the Tracker Level for such Tracker Business Day, using its good faith estimate of the level of the Affected Futures Contract. Any such estimated level may be subject to correction on the first succeeding Tracker Business Day which is not a Disrupted Day in respect of any Affected Futures Contract; or

(b) suspend the calculation and publication of the Tracker Level until the first succeeding Tracker Business Day which is not a Disrupted Day in respect of any relevant Futures Contract.

9. Extraordinary Events

9.1 Successor Futures Contract

If any Futures Contract is:

(a) not calculated and quoted by the Relevant Exchange but by a successor exchange acceptable to the Calculation Agent; or

(b) replaced by a successor futures contract using, in the determination of the Calculation Agent, the same or substantially similar formula and method of calculation as used in the calculation of the relevant Futures Contract,

then in each case that successor futures contract (the "**Successor Futures Contract**") shall replace the relevant Futures Contract with effect from a date determined by the Calculation Agent who may make such adjustment to these Rules, as it determines in good faith is appropriate, to account for such change.

9.2 Material change to Futures Contracts

Without prejudice to the ability of the Calculation Agent to amend the Rules (see Section 1), the Calculation Agent may, acting in good faith and in a commercially reasonable manner:

(a) exclude; or

(b) substitute,

any Futures Contract following the occurrence (and/or continuation) of a Change in Law or in circumstances where it considers it reasonably necessary to do so to reflect the intention of the Futures Tracker, including (without prejudice to the generality of the foregoing) changes announced by the Relevant Exchange relating to the modification, exclusion, inclusion or substitution of any one Futures Contract or any perception among market participants generally that the published price of the relevant Futures Contract is inaccurate (and the Relevant Exchange fails to correct such level), and if it so excludes or substitutes for any Futures Contract, then the Calculation Agent may adjust the Rules as it determines in good faith to be appropriate to account for such exclusion or substitution on such date(s) selected by the Calculation Agent. The Calculation Agent is under no obligation to continue the calculation and publication of any Futures Tracker upon the occurrence or existence of a Change in Law; and the Calculation Agent may decide to cancel any Futures Tracker if it determines, acting in good faith, that the objective of the relevant Futures Tracker can no longer be achieved.

9.3 Cancellation or non-publication

If, at any time, any Relevant Exchange:

(a) announces that it will make a material change in the definition of any Futures Contract or in any other way materially modifies such contract (other than a modification prescribed in the definition of such contract); or

(b) (i) permanently cancels any Futures Contract and no Successor Futures Contract exists or (ii) is otherwise unable or unwilling to publish levels of the Futures Contract,

then the Calculation Agent may remove such futures contract from the Futures Tracker and may adjust the Rules as it determines in good faith to be appropriate to account for such change(s) (including, without limitation, selecting (a) a replacement underlying futures contract traded on an equivalent exchange and having similar characteristics to the Affected Futures Contract; and (b) the date of such replacement) on such date(s) as selected by the Calculation Agent.

10. Corrections

If (i) the Closing Price of any Futures Contract as of any date which is published or otherwise made available by or on behalf of the Relevant Exchange is subsequently corrected and such correction is published or otherwise made available by or on behalf of such Relevant Exchange; or (ii) the Calculation Agent identifies an error or omission in any of its calculations or determinations in respect of the Futures Tracker, then the Calculation Agent may, if practicable and the Calculation Agent determines acting in good faith that such correction, error or omission (as the case may be) is material, adjust or correct the relevant calculation or determination and/or the Tracker Level as of any Tracker Business Day to take into account such correction, if such correction is practicable.

11. Responsibility

The Calculation Agent shall act in good faith and in a commercially reasonable manner with respect to the performance of its obligations and the exercise of its discretions pursuant to these Rules.

Whilst these Rules are intended to be comprehensive, ambiguities may arise. In such circumstances, the Calculation Agent will resolve such ambiguities in a reasonable manner and, if necessary, amend these Rules to reflect such resolution.

Neither the Calculation Agent nor any or its affiliates or subsidiaries or any of their respective directors, officers, employees, representatives, delegates or agents (each a "**Relevant Person**") shall have any responsibility to any person (whether as a result of negligence or otherwise) for any determinations made or anything done (or omitted to be determined or done) in respect of the Futures Tracker and any use to which any person may put the Futures Tracker or the Tracker Level. All determinations of the Calculation Agent in respect of the Futures Tracker shall be final, conclusive and binding and no person shall be entitled to make any claim against any of the Relevant Persons in respect thereof. Once a determination or calculation is made or action taken by the Calculation Agent in respect of the Futures Tracker, neither the Calculation Agent nor any other Relevant Person shall be under any obligation to revise any determination or calculation made or action taken for any reason.

12. Information specified in Part B

In respect of each Futures Tracker, the following items are listed in Part B:

- Tracker Name
- Additional Risk Factors, if applicable
- The Adjustment Factor
- The Base Date
- The Expiry Date for each Futures Contract (and table)
- The Futures Tracker Currency
- The Initial Tracker Level
- The name of the Base Underlying
- The Number of Contracts p.a.
- The Official Settlement Price
- The Price Source
- The Relevant Exchange
- The Re-weighting Date
- Futures Contract

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Definitions

Terms not otherwise defined herein, shall have the following meanings:

"**Adjustment Factor**" see Part B;

"**Base Date**" see Part B;

"**Base Underlying**" see Part B;

"**Calculation Agent**" see Section 3;

"**Change in Law**" means:

(a) due to:

(i) the adoption of, or any change in, any applicable law, regulation or rule (including, without limitation, any tax law); or

(ii) the promulgation of, or any change in, the interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, as implemented by the U.S. Commodity and Futures Trading Commission or exchange or trading facility),

in each case, the Calculation Agent determines in good faith that (x) it is contrary to such law, rule, regulation or order for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) any Futures Contract or any transaction referencing any Futures Contract or, (y) holding a position in any Futures Contract or any transaction referencing any Futures Contract is (or, but for the consequent disposal or termination thereof, would otherwise be) in excess of any allowable position limit(s) applicable to any market participants that are brokers or financial intermediaries (individually or collectively) under any such law, rule, regulation in relation to such Futures Contract traded on any exchange(s) or other trading facility (including, without limitation, any relevant Exchange); or

(b) the occurrence or existence of any:

(i) suspension or limitation imposed on trading commodities futures contracts (including, without limitation the Futures Contracts); or

(ii) any other event that causes trading in commodity futures contracts (including, without limitation, the Futures Contracts) to cease;

"**Closing Price**" means, in respect of a Futures Contract and a Dealing Day, the Official Settlement Price;

"**Dealing Day**" means, in respect of a Futures Contract, a day upon which the Official Settlement Price for such Futures Contract is, or but for the occurrence of a Market Disruption Event would have been, scheduled to be calculated and published by the Relevant Exchange;

"**Disrupted Day**"	means, in respect of a Futures Contract, a Dealing Day on which a Market Disruption Event occurs or exists;
"**Early Closure**"	means the closure on any Tracker Business Day of the Relevant Exchange prior to its scheduled closing time unless such earlier closing time is announced by such exchange(s) at least one hour prior to the actual closing time for the regular trading session on such exchange(s) on such Tracker Business Day;
"**Exchange Disruption**"	means any event (other than an Early Closure) that disrupts or impairs (as determined by the Calculation Agent) the ability of market participants in general to effect transactions in, or obtain market values for, futures (including, without limitation, the Futures Contracts) or options contracts relating to the Base Underlying on any Relevant Exchange;
"**Expiry Date**"	see Part B;
"**Far Futures Contracts**"	see Section 2;
"**Futures Contracts**"	see Part B;
"**Futures Tracker Currency**"	means, in respect of a Futures Contract, the currency in which such Futures Contract is reported, as specified in respect of such Futures Contract in Part B;
"**JPMS**"	means J.P. Morgan Securities plc;
"**Market Disruption Event**"	means, in respect of a Futures Contract and a Dealing Day, a failure by the Relevant Exchange to calculate and publish the Closing Price for the Futures Contract on such Dealing Day, or any event that, in the determination of the Calculation Agent, disrupts or impairs the ability of market participants generally to effect transactions in or obtain market values for such Futures Contract. Such events may include, but not be limited to, the occurrence of any of a Trading Disruption, Exchange Disruption or Early Closure;
"**Near Futures Contract**"	see Section 2;
"**Number of Contracts p.a.**"	see Part B;
"**Official Settlement Price**"	see Part B;
"**Price Source**"	see Part B;
"**Relevant Exchange**"	see Part B;
"**Re-weighting Date**"	see Part B;
"**Rules**"	means this document, as may be supplemented, amended or restated from time to time;
"**Successor Futures Contract**"	see Section 9.1;
"**Tracker Business Day**"	means a day on which the Relevant Exchange is open for trading during its regular trading session;
"**Tracker Level**"	see Sections 2 and 7; and
"**Trading Disruption**"	means any suspension of or limitation imposed on trading by the Relevant Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the Relevant Exchange or otherwise in futures (including,

without limitation, the Futures Contracts) or options contracts relating to the Base Underlying on any Relevant Exchange.

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Risk Factors

The following list of risk factors does not purport to be a complete enumeration or explanation of all the risks associated with each of the Futures Trackers.

(a) Proprietary and Rules-Based Trading Strategy

The Futures Tracker follows a notional rules-based proprietary trading strategy that operates on the basis of pre-determined rules. Accordingly, potential investors in financial products which are linked to the performance of the Futures Tracker should determine whether those rules as described in the Rules of the Futures Tracker are appropriate in light of their individual circumstances and investment objectives.

No assurance can be given that the investment strategy on which the Futures Tracker is based will be successful or that the Futures Tracker will outperform any alternative strategy that might be employed in respect of the Futures Contracts.

(b) Notional Exposures

The Futures Tracker comprises notional assets and liabilities. The exposures to the Futures Contracts are purely notional and will exist solely in the records maintained by or on behalf of the Calculation Agent. Consequently, investors in financial products which are linked to the performance of the Futures Tracker will not have any claim against any of the reference assets which comprise the Futures Tracker. The Futures Tracker tracks returns of a Futures Contract and as such constitutes an unfunded investment.

(c) Lack of Operating History

The Futures Tracker is only recently established and therefore has no history to evaluate its likely performance. Any back-testing or similar analysis performed by any person in respect of the Futures Tracker must be considered illustrative only and may be based on estimates or assumptions not used by the Calculation Agent when determining the Tracker Level of the Futures Tracker.

Past performance should not be considered indicative of future performance.

(d) Market Risks

The performance of the Futures Tracker is dependent on the performance of the relevant Futures Contract. As a consequence, investors in financial products the return of which is linked to the Futures Tracker should appreciate that their investment is exposed to the price performance of the Futures Contracts.

A futures contract often displays on any given day considerably higher volatility than an index comprising equities such as the Base Underlying and investors should be willing to accept additional risks such as increased volatility, futures contract liquidity and supply and demand factors. These factors are likely to influence the Tracker Level, whereas such factors may not be relevant in respect of the level or volatility of the Base Underlying. The exposure of the Futures Tracker to the relevant Futures Contract is affected by the roll return. Additionally, the Tracker Level is affected by the magnitude of the Adjustment Factor.

Generally, futures contracts are often less liquid than the Base Underlying.

(e) Extraordinary Events

Following the occurrence of certain extraordinary events as described in Section 9 of the Rules, with respect to a Futures Contract, the affected Futures Contract may be replaced by a substitute Futures Contract. Such substitution may have a material effect on the economics of the Futures Tracker.

(f) Calculation Agent Discretion

The Rules of the Futures Tracker confer on the Calculation Agent discretion in making certain determinations and calculations from time to time. The exercise of such discretion in the making of calculations and determinations may adversely affect the performance of the Futures Tracker. Without limitation to the generality of the foregoing, the Calculation Agent has a discretion in relation to the calculation of the Tracker Level in the event of a Market Disruption Event.

(g) Potential Conflicts of Interest

Potential conflicts of interest may exist in the structure and operation of the Futures Tracker and in the course of the normal business activities of JPMS or any of its affiliates or subsidiaries or their respective directors, officers, employees, representatives, delegates or agents. Further information is set out in the disclaimer below.

The foregoing list of risk factors is not intended to be exhaustive. All persons should seek such advice as they consider necessary from their professional advisors, legal, tax or otherwise, without reliance on the Calculation Agent or any of its affiliates or subsidiaries or any of their respective directors, officers, employees, representatives, delegates or agents.

Notices, Disclaimers and Conflicts of Interest

These Rules have been prepared solely for informational purposes and nothing in these Rules constitutes an offer to buy or sell any securities, participate in any transaction or adopt any investment Index or as legal, tax, regulatory, financial or accounting advice. These Rules may change at any time without prior notice.

Neither the Calculation Agent nor any of its affiliates or subsidiaries or their respective directors, officers, employees, representatives, delegates or agents (each a "**Relevant Person**") make any representation or warranty, whatsoever, express or implied, as to the results that may be obtained through the use of this document or the Futures Tracker. Each Relevant Person hereby expressly disclaims, to the fullest extent permitted by law, all warranties of accuracy, completeness, merchantability, or fitness for a particular purpose with respect to any information contained in this document and no Relevant Person shall have any liability (direct or indirect, special, punitive, consequential or otherwise) to any person even if notified of the possibility of any such damages.

The Calculation Agent is under no obligation to continue the calculation, publication and dissemination of the Futures Tracker or the Tracker Level.

During the course of their normal business, the Calculation Agent or any of the other Relevant Persons may (i) enter into or promote, offer or sell transactions or investments (structured or otherwise) linked to the Futures Tracker. In addition, any Relevant Person may have, or may have had, interests or positions, or may buy, sell or otherwise trade positions in or relating to the Futures Tracker, or may invest or engage in transactions with other persons, or on behalf of such persons relating to such contracts. Such activity may or may not have an impact on the Tracker Level but all persons reading this document should be aware that a conflict of interest could arise where anyone is acting in more than one capacity, and such conflict may have an impact, positive or negative on the Tracker Level. Neither the Calculation Agent nor any other Relevant Person has any duty to consider the circumstances of any person when participating in such transactions or to conduct themselves in a manner that is favourable to anyone with exposure to the Futures Tracker.

The Rules have been developed with the possibility of the Calculation Agent or any of the other Relevant Persons entering into or promoting, offering or selling transactions or investments (structured or otherwise) linked to the Futures Tracker and hedging such transactions or investments in any manner that they see fit.

As mentioned above, the Futures Tracker is synthetic index because there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Futures Tracker merely identifies certain reference assets, the performance of which will be used as a reference point calculating the Tracker Level.

No one may reproduce or disseminate the information contained in this document or the Tracker Level of the Futures Tracker without the prior written consent of the Calculation Agent. This document is not intended for distribution to, or use by any person in, a jurisdiction where such distribution is prohibited by law or regulation.

The Rules shall be governed by and construed in accordance with the laws of England.

producing the J.P. Morgan Futures Tracker Series; the Futures Trackers within the J.P. Morgan Futures Tracker Series; the Tracker Levels in respect of such Futures Trackers; and these Rules. Such intellectual property rights must not be used without the prior written consent of the Calculation Agent (including in situations where a third party performs certain functions in relation to the Futures Trackers).

J.P. Morgan Asia Pacific Futures Tracker Series

Tracker Rules

5th Oct 2015

J.P.Morgan

Notices, Disclaimers and Conflicts

Capitalised terms used in this section but not otherwise defined have the meanings set out in other parts of the Rules.

Neither the Tracker Sponsor(s) nor the Tracker Calculation Agent(s) endorses or makes any representation or warranty, express or implied, in connection with any security, transaction, fund, structured deposit or other financial product or investment (each a "**Product**") that references the Futures Trackers including as to the advisability of purchasing or entering into a Product or the results to be obtained by any party using the Futures Trackers in connection with a Product. Furthermore, neither the Tracker Sponsor(s) nor the Tracker Calculation Agent(s) has any obligation or liability in connection with the administration, marketing or trading of any Product and is not obliged to enter into or promote Products.

The Futures Trackers are the exclusive property of the Tracker Sponsor(s) and the Tracker Sponsor(s) retains all proprietary rights in the Futures Trackers.

No one may reproduce, distribute or disseminate this document or the information contained in this document or a Tracker Level (as applicable) without the prior written consent of the relevant Tracker Sponsor. This document is not intended for distribution to, or use by, any person in a jurisdiction where such distribution is prohibited by law or regulation.

Neither the relevant Tracker Sponsor nor the Tracker Calculation Agent in their capacity as such has any liability whatsoever to any person who uses any of the Futures Trackers (or any Tracker Level) in any circumstances.

Potential conflicts of interest may exist between the structure and operation of the Futures Trackers, roles and responsibilities of the Tracker Sponsor(s) and Tracker Calculation Agent(s) and the normal business activities of the Tracker Sponsor(s), the Tracker Calculation Agent(s) or any Relevant Person.

During the course of their businesses, the Tracker Sponsor(s), the Tracker Calculation Agent(s) and any Relevant Person may enter into or promote, offer or sell transactions or investments (structured or otherwise) that reference any of the Futures Trackers or the Underlying Index. In addition, the Tracker Sponsor(s), the Tracker Calculation Agent(s) and any Relevant Person may have, or may have had, interests or positions, or may buy, sell or otherwise trade positions in or relating to the Futures Trackers, the Underlying Index or the Futures Contracts of the Underlying Index, or may invest or engage in transactions with other persons, or on behalf of such persons, relating to any of these. Such activity could give rise to a conflict of interest, and such conflict may have an impact, positive or negative, on the Tracker Level. The Tracker Sponsor(s), the Tracker Calculation Agent(s) and the Relevant Persons do not have any duty (a) to consider the circumstances of any person when participating in such transactions, or (b) to conduct themselves in a manner that is favourable to anyone with exposure to the Futures Trackers.

Neither the Tracker Sponsor(s) nor the Tracker Calculation Agent(s) is under any obligation to continue the calculation, publication or dissemination of the Futures Tracker. The Tracker Sponsor may at any time and without notice terminate the calculation, publication or dissemination of the Futures Tracker. The Tracker Sponsor may delegate or transfer to a third party some or all of its functions in relation to the Futures Tracker.

Except as provided in the following paragraph, neither the Tracker Sponsor(s) nor the Tracker Calculation Agent(s) gives any representation, warranty or undertaking, of any type (whether express or implied, statutory or otherwise) in relation to the Futures Trackers, as to (i) the condition, satisfactory quality, performance or fitness for purpose of the Futures Trackers, (ii) the results to be achieved by an investment in any Product, (iii) any data included in or omissions from the Futures Trackers, (iv) the use of the Futures Trackers in connection with a Product, (v) the level of the Futures Trackers at any time on any day, (vi) the veracity, currency, completeness or accuracy of the information on which the Futures Trackers is based (and without limitation, the Tracker Sponsor(s) and the Tracker Calculation Agent(s) accept no liability to any investor in a Product for any errors or omissions in that information or the results of any interruption to it and the Tracker Sponsor(s) and the Tracker Calculation Agent(s) shall be under no obligation to advise any person of any such error, omission or interruption), or (vii) any other matter. To the extent any such representation, warranty or undertaking could be deemed to have been given by the Tracker Sponsor(s) or the Tracker Calculation Agent(s), it is excluded save to the extent that such exclusion is prohibited by law.

To the fullest extent permitted by law, the Tracker Sponsor(s) and the Tracker Calculation Agent(s) shall have no liability or responsibility to any person or entity (including, without limitation, any investor in any Product) for any loss, damages, costs, charges, expenses or other liabilities howsoever arising, including, without limitation, liability for any special, punitive, indirect or consequential damages (including loss of business or loss of profit, loss of time and loss of goodwill), even if notified of the possibility of the same, arising in connection with the design, compilation, calculation, maintenance or sponsoring of the Futures Trackers or in connection with any Product.

The Tracker Sponsor(s) or the Tracker Calculation Agent(s) may make certain calculations based on information obtained from publicly available sources without independently verifying such information and accepts no responsibility or liability in respect of such calculations or information.

Notwithstanding anything to the contrary, nothing in these Rules should be construed to be investment advice or a recommendation to purchase a specific Product or enter into any transaction. Nothing in these Rules or any other communication between you and us should be deemed to or be construed as creating a “fiduciary relationship”. J.P. Morgan and its subsidiaries, officers, directors, employees and agents, are not your fiduciary. You should make your own investment decision based on your own judgment and on your own examination of the specific Product that you are purchasing or transaction you are entering into, and you should consult your own legal, regulatory, investment, tax, accounting and other professional advisers as you deem necessary in connection with any purchase of a financial product or entry into any transaction.

The foregoing notices, disclaimers and conflicts disclosure is not intended to be exhaustive. Anyone reading these Rules should seek such advice as they consider necessary from their professional advisors, legal, tax or otherwise, without reliance on the Tracker Sponsor(s), Tracker Calculation Agent(s) or any Relevant Person to satisfy them that they fully understand these Rules and the risks associated with the Futures Trackers.

These Rules have been developed with the possibility of one or more entities, with the written permission of the Tracker Sponsor(s), entering into or promoting, offering or selling Products (structured or otherwise) linked to the Futures Trackers and the hedging of such Products in any manner that they see fit.

 J. P. Morgan is the marketing name for JPMorgan Chase & Co. and its subsidiaries and affiliates worldwide. J.P. Morgan Securities (Asia Pacific) Limited is regulated by the Hong Kong Monetary Authority as a registered institution. With respect to a Futures Tracker, the Tracker Sponsor owns all intellectual property rights in: (i) the development of and methodology for producing the Futures Trackers, (ii) the Tracker Levels, and (iii) these Rules. Third parties shall not use the Tracker Sponsor’s intellectual property without the prior written consent of the Tracker Sponsor (including in situations where a third party performs certain functions in relation to the Futures Trackers).

THIS DOCUMENT IS IMPORTANT. YOU SHOULD NOT INVEST IN A PRODUCT LINKED TO THE FUTURES TRACKERS UNLESS YOU HAVE ENSURED THAT YOU FULLY UNDERSTAND THE NATURE OF SUCH AN INVESTMENT AND THE RISKS INVOLVED AND ARE SATISFIED THAT THE INVESTMENT IS SUITABLE AND APPROPRIATE FOR YOUR CIRCUMSTANCES AND OBJECTIVES. IF YOU ARE IN ANY DOUBT ABOUT THIS YOU SHOULD TAKE ADVICE FROM AN APPROPRIATELY QUALIFIED ADVISER. EVEN IF YOU ARE A HIGHLY SOPHISTICATED INVESTOR WHO REGULARLY TRANSACTS IN PRODUCTS LINKED TO FUTURES TRACKERS OF THIS TYPE, YOU ARE STRONGLY ADVISED TO TAKE SUCH ADVICE IN ANY EVENT.

PART A

General Rules

PART A

1. This Document

This document comprises the rules and methodology (the **"Rules"**) of the J.P. Morgan Asia Pacific Futures Tracker Series (the **"Futures Tracker"** and collectively, **"Futures Trackers"**).

Part A of the Rules sets out general information applicable to all Futures Trackers, such as the calculation algorithms which are applicable to all Futures Trackers. Specific information pertaining to each Futures Tracker, including, for example, details of the Futures Contracts, the name of the Underlying Index, etc are set out in Part B.

2. Introduction and Interpretation

2.1 Introduction

The Futures Tracker is a rules-based long only strategy that replicate synthetic position in certain futures contracts ("**Futures Contracts**") on a specific underlying (the "**Underlying Index**") traded on the Relevant Exchange, as specified in Part B. A futures contract is a standardized contract traded on an exchange to buy or sell a standard quantity of an asset at a specific date in the future (such date being its expiry date), at a price specified today. Each Futures Contract is identified by its expiry date.

On each Tracker Business Day, the Futures Tracker shall be notionally invested in the Near Futures Contract. It shall maintain this exposure until the first Re-weighting Date of the Re-weighting Period. After the Re-weighting Period, it shall then be notionally invested in the Far Futures Contract. For the avoidance of doubt, on any Tracker Business Day after the Near Futures Contract expiry date, the Far Futures Contract becomes the Near Futures Contract.

2.2 Interpretation

Capitalized terms not otherwise defined in these Rules have the meaning set out in Part A Section 11.

References to a determination calculated "in respect of" a certain date shall mean that such level may be calculated on such date or on a subsequent date but such calculation will be for the specific date referenced by such "in respect of" clause. Additionally, references to a level calculated "on" a certain date shall mean the actual calculation will occur on such date, but such calculation may be in respect of that date or a date that occurred in the past.

3. Futures Trackers Specifics

The Appendices in Part B sets out certain specific information pertaining to each of the Futures Tracker in the J.P. Morgan Asia Pacific Futures Tracker Series.

4. Methodology

4.1 Step 1: Determining the Return of the Futures Contract

(i) With respect to each Tracker Business Day (t) other than the Base Date or any Re-weighting Date, the return ("**Return_t**") is calculated by the Tracker Calculation Agent in accordance with the following formula:

$$\text{Return}_t = \frac{\text{Near Future}_t}{\text{Near Future}_{t-1}} - 1$$

Where:

Near Future_t means the Official Settlement Price of the Near Futures Contract on Tracker Business Day (t);

Near Future_{t-1} means the Official Settlement Price of the Near Futures Contract on the Tracker Business Day immediately preceding Tracker Business Day (t) ("**Tracker Business Day (t-1)**"), or if such Tracker Business Day (t-1) is a Disrupted Day, the Official Settlement Price of the Near Futures Contract on the immediately preceding Tracker Business Day that is not a Disrupted Day;

(ii) With respect of each Tracker Business Day (t) that is a Re-weighting Date, Return_t shall be calculated in accordance with the following formula:

$$\text{Return}_t = Weight_N \times \left(\frac{\text{Near Future}_t}{\text{Near Future}_{t-1}} - 1 \right) + Weight_F \times \left(\frac{\text{Far Future}_t}{\text{Far Future}_{t-1}} - 1 \right) - RAF \times \frac{1}{3}$$

Where:

RAF is the amount specified as the Roll Adjustment Factor for the Futures Tracker in Part B;

Far Future_t means the Official Settlement Price of the Far Futures Contract on Tracker Business Day (t);

Far Future_{t-1} means the Official Settlement Price of the Far Futures Contract on Tracker Business Day (t-1), or if such Tracker Business Day (t-1) is a Disrupted Day for either the Near Futures Contract or Far Futures Contract, the Official Settlement Price of the Far Futures Contract on the immediately preceding Tracker Business Day that is not a Disrupted Day for either the Near Futures Contract or Far Futures Contract;

Near Future_t means the Official Settlement Price of the Near Futures Contract on Tracker Business Day (t);

Near Future_{t-1} means the Official Settlement Price of the Near Futures Contract on Tracker Business Day (t-1), or if such Tracker Business Day (t-1) is a Disrupted Day for either the Near Futures Contract or Far Futures Contract, the Official Settlement Price of the Near Futures Contract on the immediately preceding Tracker Business Day that is not a Disrupted Day for either the Near Futures Contract or Far Futures Contract;

In respect of the Tracker Business Day that falls on the first day of a Re-weighting Period:

$$\textbf{Weight}_\textbf{N} = \textbf{1}$$

$$\textbf{Weight}_\textbf{F} = \textbf{0}$$

In respect of the Tracker Business Day that falls on the second day of a Re-weighting Period:

$$\textbf{Weight}_{\mathbf{N}} = \frac{2}{3}$$

$$\textbf{Weight}_{\mathbf{F}} = \frac{1}{3}$$

In respect of the Tracker Business Day that falls on the third day of a Re-weighting Period:

$$\textbf{Weight}_{\mathbf{N}} = \frac{1}{3}$$

$$\textbf{Weight}_{\mathbf{F}} = \frac{2}{3}$$

4.2 Step 2: Determining the Tracker Level

Subject to Clause 5 (*Market Disruption Events*), the Tracker Calculation Agent shall calculate the Tracker Level ("**Tracker Level$_t$**") for a Futures Tracker in respect of each Tracker Business Day (t) in accordance with the following:

$$\text{Tracker Level}_{\mathrm{t}} = \text{Tracker Level}_{\mathrm{t-1}} \times (1 + \mathrm{Re}\,turn_t)$$

where:

$\text{Tracker Level}_{\mathrm{t}}$	means the Tracker Level for Tracker Business Day (t);
Tracker Level_{0}	means the Initial Tracker Level on the Base Date as specified in in Part B;

5. Market Disruption Events

5.1 On a Re-weighting Date

If any Re-weighting Date is a Disrupted Day in respect of any relevant Futures Contract (each such Futures Contract for these purposes, an "**Affected Futures Contract**"), then the relevant Re-weighting Date for the Affected Futures Contract shall be deemed to be the first following Tracker Business Day which is not a Disrupted Day (and, if such first following Tracker Business Day occurs on or after the day on which a relevant Futures Contract effectively settles, the level of the Futures Tracker for such first following Tracker Business Day will be calculated using the settlement price at which the relevant Futures Contract effectively settles in place of the Official Settlement Price), unless the four Tracker Business Days immediately following the day originally scheduled to be the Re-weighting Date are all Disrupted Days for such Affected Futures Contract, in which case the fourth Tracker Business Day following the day originally scheduled to be the relevant Re-weighting Date shall be deemed to be the relevant Re-weighting Date (notwithstanding that it is a Disrupted Day in respect of the Affected Futures Contract), and the Calculation Agent shall re-weight the Futures Tracker acting in good faith using such information and/or methods as it determines, in its reasonable discretion, are appropriate (and, if such fourth Tracker Business Day occurs on or after the day on which a relevant Futures Contract effectively settles, using the settlement price at which the relevant Futures Contract effectively settles in place of the Official Settlement Price).

5.2 On a Tracker Business Day other than a Re-weighting Day

Notwithstanding Section 5.1, if any Tracker Business Day is a Disrupted Day for any relevant Futures Contract, the Calculation Agent may either:

(a) calculate its good faith estimate of the Tracker Level for such Tracker Business Day, using its good faith estimate of the level of the Affected Futures Contract. Any such estimated level may be subject to correction on the first succeeding Tracker Business Day which is not a Disrupted Day in respect of any Affected Futures Contract; or

(b) suspend the calculation and publication of the Tracker Level until the first succeeding Tracker Business Day which is not a Disrupted Day in respect of any relevant Futures Contract.

6. Extraordinary Events

6.1 Successor Futures Contract

If any Futures Contract is:

(a) not calculated and quoted by the Relevant Exchange but by a successor exchange acceptable to the Tracker Calculation Agent; or

(b) replaced by a successor futures contract using, in the determination of the Tracker Calculation Agent, the same or substantially similar formula and method of calculation as used in the calculation of the relevant Futures Contract,

then in each case that successor futures contract (the "**Successor Futures Contract**") shall replace the relevant Futures Contract with effect from a date determined by the Tracker Calculation Agent who may make such adjustment to these Rules, as it determines in good faith is appropriate, to account for such change.

6.2 Material change to Futures Contracts

Without prejudice to the ability of the Tracker Calculation Agent to amend the Rules (see Part A Section 8.2), the Calculation Agent may, acting in good faith and in a commercially reasonable manner:

(a) exclude; or

(b) substitute,

any Futures Contract following the occurrence (and/or continuation) of a Change in Law or in circumstances where it considers it reasonably necessary to do so to reflect the intention of the Futures Tracker, including (without prejudice to the generality of the foregoing) changes announced by the Relevant Exchange relating to the modification, exclusion, inclusion or substitution of any one Futures Contract or any perception among market participants generally that the published price of the relevant Futures Contract is inaccurate (and the Relevant Exchange fails to correct such level), and if it so excludes or substitutes for any Futures Contract, then the Tracker Calculation Agent may adjust the Rules as it determines in good faith to be appropriate to account for such exclusion or substitution on such date(s) selected by the Tracker Calculation Agent. The Tracker Calculation Agent is under no obligation to continue the calculation and publication of any Futures Tracker upon the occurrence or existence of a Change in Law; and the Tracker Calculation Agent may decide to cancel any Futures Tracker if it determines, acting in good faith, that the objective of the relevant Futures Tracker can no longer be achieved.

6.3 Cancellation or non-publication

If, at any time, any Relevant Exchange:

(a) announces that it will make a material change in the definition of any Futures Contract or in any other way materially modifies such contract (other than a modification prescribed in the definition of such contract); or

(b) (i) permanently cancels any Futures Contract and no Successor Futures Contract exists or (ii) is otherwise unable or unwilling to publish levels of the Futures Contract,

then the Calculation Agent may remove such futures contract from the Futures Tracker and may adjust the Rules as it determines in good faith to be appropriate to account for such change(s) (including, without limitation, selecting (a) a replacement underlying futures contract traded on an equivalent exchange and having similar characteristics to the Affected Futures Contract; and (b) the date of such replacement) on such date(s) as selected by the Tracker Calculation Agent.

7. Certain General Terms relating to the Futures Trackers

7.1 Publication and availability of the Rules

The Rules are published by the Tracker Sponsor(s).

Copies of the Rules may be obtained by holders or potential holders of investments linked to a Futures Tracker free of charge on request from the Tracker Sponsor at its principal office against such proof of status and upon such terms as the Tracker Sponsor may require in its reasonable discretion.

7.2 Amendments

The Rules may be amended from time to time at the discretion of the Tracker Sponsor(s) and will be re-published in a manner determined by the Tracker Sponsor(s) from time to time. The new version of the Rules will include the effective date of such amendment. The Tracker Sponsor(s) is/are under no obligation to inform any person about any amendments to the Futures Tracker (except as required by law).

Although the Rules are intended to be comprehensive, ambiguities may arise. If ambiguities arise, the relevant Tracker Calculation Agent (if necessary, in consultation with the relevant Tracker Sponsor) will resolve such ambiguities in its discretion and, if necessary, the Tracker Sponsor will amend the Rules to reflect such resolution.

7.3 No advice; Not a fiduciary

None of the Tracker Sponsor(s), the Tracker Calculation Agent(s) nor the Relevant Persons: (a) have rendered legal, regulatory, investment, tax, accounting or other advice to an investor in relation to any Product that is linked to or references the Futures Tracker; and (b) are, subject to any regulatory obligations of the Tracker Sponsor, Tracker Calculation Agent or Relevant Person, fiduciaries or accept any duty of care under applicable law governing such Product or in the jurisdiction in which any investor purchases a Product that is linked to or references the Futures Tracker or in the jurisdiction of the Tracker Sponsor, Tracker Calculation Agent or Relevant Person. Each investor in a Product that is linked to or references a Futures Tracker should make its own investment decision based on its own judgment and on its own examination of the Futures Tracker and the applicable Product, and each investor should consult its own legal, regulatory, investment, tax, accounting and other professional advisers as it deems necessary in connection with the relevant transaction.

7.4 Not an Offer to Sell or a Solicitation to Buy

The Rules do not constitute investment, taxation, legal, accounting or other advice.

These Rules do not constitute an offer to purchase or sell securities in whatever form in respect of any investment that may be linked to the Futures Trackers.

7.5 The Futures Trackers are synthetic

A Futures Tracker reference a "notional" or synthetic exposure to each of he Futures Contracts set out in Part B and there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Futures Tracker merely identifies the relevant Futures Contracts of the Underlying Index and references a synthetic allocation to such Futures Contracts in accordance with these Rules.

7.6 Futures Tracker Cancellation

The Tracker Sponsor may at any time and without notice, terminate the calculation, publication or dissemination of a Futures Tracker. Such termination may be due, but shall not be limited, to the occurrence or existence of an Extraordinary Event if the Tracker Calculation Agent determines the objective of the Futures Tracker cannot be achieved.

8 Tracker Sponsor and Tracker Calculation Agent

8.1 Identity and responsibilities

The sponsor of a Futures Tracker is specified in Part B (the "**Tracker Sponsor**", which expression includes any successor or assign in such capacity). The Tracker Sponsor is responsible for, among other things, the creation and design of the Futures Trackers, the documentation of the Rules, and the appointment of the calculation agent of such Futures Tracker (the "**Tracker Calculation Agent**"), which may be the Tracker Sponsor, a non-related third party or an affiliate or subsidiary of the Tracker Sponsor. The Tracker Calculation Agent will (unless it is the same entity) be an agent of the Tracker Sponsor and is specified in Part B.

The Tracker Sponsor of a Futures Tracker may at any time and for any reason terminate the appointment of the Tracker Calculation Agent and appoint an alternative entity as the replacement Tracker Calculation Agent.

The Tracker Calculation Agent is responsible for:

(a) calculating the Tracker Level in respect of each Tracker Business Day in accordance with the Rules; and

(b) determining (subject to the prior agreement of the Tracker Sponsor or at the direction of the Tracker Sponsor) if a Market Disruption Event, Disrupted Day, Extraordinary Event (or other similar event) has occurred and the related consequences and adjustments in accordance with the Rules.

The Tracker Sponsor may delegate and/or transfer any of its obligations or responsibilities in connection with the Futures Tracker to one or more entities (including a non-related third party) which it determines are appropriate. The Tracker Calculation Agent must obtain written permission from the Tracker Sponsor prior to any delegation or transfer of its responsibilities or obligations in connection with the Futures Tracker to a third party.

8.2 Tracker Sponsor and Tracker Calculation Agent standards

The Tracker Sponsor(s) and the Tracker Calculation Agent(s) shall act in good faith and in a commercially reasonable manner in respect of determinations, adjustments, amendments, interpretations and calculations made by it pursuant to the Rules.

8.3 Tracker Sponsor and Tracker Calculation Agent determinations

The exercise of (or failure to exercise) a Tracker Calculation Agent's discretions in relation to the Futures Tracker may have a detrimental effect on the Tracker Level and/or the volatility of the Futures Tracker.

The Tracker Sponsor(s) and/or Tracker Calculation Agent(s) may make certain calculations based on information obtained from publicly available sources without independently verifying such sources.

All determinations, adjustments, amendments, interpretations and calculations of the Tracker Sponsor(s) and the Tracker Calculation Agent(s) pursuant to the Rules shall be final, conclusive and binding absent manifest error and no person shall be entitled to make any claim against a Tracker Sponsor, a Tracker Calculation Agent or any Relevant Person. None of the Tracker Sponsor(s), the Tracker Calculation Agent(s) or any Relevant Person shall:

(a) be under any obligation to revise any determination, adjustment, amendment, interpretation or calculation made or action taken for any reason in connection with the Rules or the Futures Trackers; or

(b) have any responsibility to any person for any determination, adjustment, amendment, interpretation or calculation made or anything done (or omitted to be done) (whether as a result of negligence or otherwise) in respect of the Futures Trackers or in respect of the publication of the Tracker Level (or failure to publish such level) or any use to which any person may put the Futures Trackers or the Tracker Levels.

9 Tracker Levels

9.1 Publication of Tracker Levels

The Tracker Calculation Agent of a Futures Tracker shall calculate and publish the Tracker Level in respect of each Tracker Business Day as soon as reasonably practicable on or after such Tracker Business Day. The Tracker Level or any subsequent correction to a Tracker Level will be published on the Tracker Level Source as specified in Part B or on such other information source as the Tracker Calculation Agent may determine.

Notwithstanding anything to the contrary, the Tracker Sponsor may, at any time and without notice, change the frequency of publication of the Tracker Level, the place of publication of the Tracker Level or cease the calculation, publication or dissemination of the Tracker Level at any time and nothing in this document shall be construed as an agreement by the Tracker Sponsor or Tracker Calculation Agent to continue to calculate the Tracker Level if the Tracker Sponsor has elected to cease publication.

Neither the Tracker Sponsor(s) nor the Tracker Calculation Agent(s) will be liable to any person for publishing or omitting to publish a Tracker Level at any particular time or in accordance with any particular method.

9.2 Live Date

The Tracker Calculation Agent of a Futures Tracker has been calculating and publishing the Tracker Level in respect of each Tracker Business Day in accordance with the methodology set out in these Tracker Rules since the Live Date specified in Part B.

9.3 Hypothetical Back-Tested Levels

Any Tracker Level prior to the Live Date is a hypothetical, back-tested level. Such levels should not be taken as an indication of future performance, and no assurance can be given as to the levels or performance of the Futures Tracker on a future date. Back-tested results are achieved by means of a retroactive application of a back-tested model designed with the benefit of hindsight. The Tracker Calculation Agent, in calculating hypothetical back-tested tracker levels, may have applied the disruption provisions specified in these Rules differently than it otherwise would have applied such provisions in a "live" calculation scenario. Additionally, the precision and rounding of the levels of the Futures Trackers may differ from the methodology applied on a going forward basis. In calculating the hypothetical back-tested levels, the Tracker Calculation Agent may have made certain assumptions in respect of the timing surrounding the publication of certain indicators. These assumptions may have a material impact on the hypothetical back-tested levels. No representation is made that any investment that references the Futures Tracker will or is likely to achieve returns similar to any hypothetical back-tested returns. Alternative modelling techniques or assumptions might provide different results. Finally, hypothetical back-tested results of past performance are neither an indicator nor a guarantee of future performance or returns. Actual results and performance may vary compared to such hypothetical back-tested levels.

10 Corrections in respect of the Futures Trackers

With respect to a Future Tracker:

(a) if the Official Settlement Price of the Futures Contracts in respect of any Tracker Business Day is subsequently corrected and the correction is published by the Relevant Exchange; or

(b) if the Tracker Calculation Agent identifies an error or omission in any of its calculations or determinations in respect of the publication of a Tracker Level in respect of any Tracker Business Day,

then the Tracker Calculation Agent may, if practicable and it considers such correction material, correct the Tracker Level in respect of such Tracker Business Day and/or each subsequent affected Tracker Business Day. The Tracker Calculation Agent will publish corrected level(s) on the Tracker Level Source as specified in Part B or on such other information source as the Tracker Calculation Agent may determine.

11 Definitions

The following terms are defined as follows:

Base Date:	means the date on which the level of a Futures Tracker was set equal to the Initial Tracker Level.
Change in Law:	means, on or after the Live Date, due to (i) the adoption of, or any change in, any applicable law, regulation, order or rule (including, without limitation, any tax law or adoption or promulgation of new regulations authorized or mandated by existing statute) or (ii) the promulgation of, or any change in, the announcement or statement of a formal or informal interpretation, application, exercise or operation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, regulation, order or rule (including, without limitation, rules or regulations promulgated or implemented by the U.S. Commodity Futures Trading Commission, the U.S. Securities and Exchange Commission or any exchange or trading facility), the Tracker Calculation Agent determines that (x) it is contrary to such law, regulation, order or rule for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) the Futures Contracts any financial asset, transaction or interest in or relating to the Futures Contracts or (y) holding a position in the Futures Contracts or any financial asset, transaction or interest in or relating to the Futures Contracts (or, but for the consequent disposal or termination thereof, would otherwise be) in excess of any allowable position limit(s) applicable to any market participants that are brokers or financial intermediaries (individually or collectively) under any such law, regulation, order or rule.
Disrupted Day:	means, a day on which a Market Disruption Event has occurred or is continuing.
Early Closure:	means the closure on any Tracker Business Day of the Relevant Exchange prior to its scheduled closing time unless such earlier closing time is announced by such exchange(s) at least one hour prior to the actual closing time for the regular trading session on such exchange(s) on such Tracker Business Day;
Exchange Disruption:	means any event (other than an Early Closure) that disrupts or impairs (as determined by the Calculation Agent) the ability of market participants in general to effect transactions in, or obtain market values for, futures (including, without limitation, the Futures Contracts) or options contracts relating to the Underlying Index on any Relevant Exchange;
Extraordinary Event:	means each of the events given in Part A Section 6.
Far Futures Contract	means, in respect of each Tracker Business Day (t) of the relevant Re-weighting Period, the Futures Contract that expires on the first Expiry Date to occur immediately following the Expiry Date of the corresponding Near Futures Contract;
Futures Tracker:	shall have the meaning given in Part A Section 2.1.
Futures Tracker Currency:	means, in respect of a Futures Contract, the currency in which such Futures Contract is reported, as specified in respect of such Futures Contract in Part B.
Initial Tracker Level:	means the level of the Futures Tracker on the Base Date and which is specified in Part B.
Live Date:	as elaborated in Part A Section 9.2 and as specified in Part B.
Market Disruption Events:	means, in respect of a Futures Contract and Tracker Business Day, a failure by the Relevant Exchange to calculate and publish the Official Settlement Price for the Futures Contract on such Tracker Business Day, or any event that, in the determination of the Tracker Calculation Agent, disrupts or impairs the ability of

	market participants generally to effect transactions in or obtain market values for such Futures Contract. Such events may include, but not be limited to, the occurrence of any of a Trading Disruption, Exchange Disruption or Early Closure;
Near Futures Contract	means, in respect of a Tracker Business Day (t), the Futures Contract that will expire on the first Expiry Date to occur following the Re-weighting Date immediately after Tracker Business Day (t);
Product:	shall have the meaning given in the Notices, Disclaimers and Conflicts section.
Relevant Exchange:	shall have the meaning as set out in Part B.
Relevant Person:	means each of the respective affiliates and subsidiaries, directors, officers, employees, representatives, delegates and agents of the Tracker Sponsor(s) or Tracker Calculation Agent(s), as applicable.
Rules:	shall have the meaning given in Part A Section 1.
Tracker Business Day or Tracker Business Day (t):	means any day (other than a Saturday or Sunday) on which the Relevant Exchange (or any successor exchange) are scheduled to open for business.
Tracker Calculation Agent:	shall be the entity specified in Part A Section 9 or any of its successors or assigns.
Tracker Level or Tracker Level (t):	mean, the level of the Futures Tracker (in respect of Tracker Business Day (t)) as determined in accordance with Part A Section 4.
Tracker Sponsor:	as defined in Part A Section 9 and shall be the entity specified in Part B or any of its successors or assigns.
Trading Disruption:	means any suspension of or limitation imposed on trading by the Relevant Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the Relevant Exchange or otherwise in futures (including, without limitation, the Futures Contracts) or options contracts relating to the Underlying Index on any Relevant Exchange.
Underlying Index:	as defined in Part A Section 2 and as specified in Part B.

12 Versions of the Rules and Tracker Adjustments

Any amendment or adjustment to the Rules and the effective date of any such amendment or adjustment may but does not have to be reflected in a revised version of the Rules. Copies of the latest issue of the Rules and/or details of relevant adjustments (where not reflected in a revised version of the Rules) may be obtained free of charge on request to the Tracker Sponsor at its principal office.

Version	Date	Amendment
1.0	5th Oct 2015	Not Applicable (First Release)

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J.P. Morgan Asia Pacific Equity Futures Tracker Series

Tracker Rules

J.P.Morgan

February 2011 (as last updated January 23, 2019)

J.P. Morgan Asia Pacific Equity Futures Tracker Series - Tracker Rules

The J.P. Morgan Asia Pacific Equity Futures Tracker Series ("**AP Futures Tracker Series**") is a family of notional rule-based proprietary strategies that aim to replicate the returns of a long position in a relevant near month listed futures contract (each such strategy a "**Futures Tracker**").

The rules of each Futures Tracker ("**Tracker Rules**") are set out into the following sections of this document:

(a) **Notices, Disclaimers and Conflicts Disclosure** – contains important notices, disclaimers and disclosure of conflicts of interest relating to the Futures Tracker;

(b) **Part A: General Rules** – contains general rules relating to the operation of the Futures Tracker such as (without limitation) rules relating to: (i) amending the Tracker Rules; (ii) the Tracker Calculation Agent; (iii) corrections to the Futures Tracker; (iv) adjusting or terminating the Futures Tracker if the right to use an underlying component of the Futures Tracker is disputed, impaired or ceases; and (v) adjusting or terminating the Futures Tracker following certain changes in laws that impact trading in a component of the Futures Tracker;

(c) **Part B: Tracker Algorithm** – contains the algorithm used by the Tracker Calculation Agent to determine Tracker Levels and other related rules such as (without limitation) rules dealing with market disruption events and extraordinary events affecting a component of the Futures Tracker;

(d) **Part C: Tracker Details** – contains specific information about each Futures Tracker such as (without limitation):

- (i) The name of the Futures Tracker and Bloomberg Ticker;
- (ii) The Futures Tracker Currency;
- (iii) The Tracker Base Date;
- (iv) The Tracker Base Level;
- (v) The Tracker Business Days;
- (vi) The Futures Contracts;
- (vii) The expiry date for each Futures Contract (and table);
- (viii) The Re-weighting Dates and Re-weighting Periods;
- (ix) The Official Settlement Price;
- (x) The Adjustment Factor;and
- (xi) The Relevant Exchange.

ALL PERSONS READING THIS DOCUMENT SHOULD REFER TO THE NOTICES, DISCLAIMERS AND CONFLICTS DISCLOSURE ON PAGE 3 AND CONSIDER THE INFORMATION CONTAINED IN THIS DOCUMENT IN LIGHT OF SUCH NOTICES, DISCLAIMERS AND CONFLICTS DISCLOSURE.

Notices, Disclaimers and Conflicts Disclosure

THESE TRACKER RULES NEITHER CONSTITUTE AN OFFER TO PURCHASE NOR SELL SECURITIES, PARTICIPATE IN ANY TRANSACTION, NOR SPECIFIC ADVICE OF ANY FORM (TAX, LEGAL, ACCOUNTING OR REGULATORY) IN RESPECT OF THE TRACKER OR ANY INVESTMENT STRATEGY OR COMPONENT OF THE TRACKER.

J.P. Morgan Securities plc, in its capacity as sponsor of each Futures Tracker ("**Tracker Sponsor**") and Tracker Calculation Agent does not endorse or make any representation or warranty, express or implied, in connection with investments linked to a Futures Tracker ("**Product**"). Further, J.P. Morgan Securities plc, in its capacity as Tracker Sponsor and Tracker Calculation Agent, has no obligation or liability in connection with the administration, marketing or trading of any such Product.

No one may reproduce or disseminate the information contained in this document or a Tracker Level (as applicable) without the prior written consent of the Tracker Calculation Agent. This document is not intended for distribution to, or use by any person in, a jurisdiction where such distribution is prohibited by law or regulation.

Each Futures Tracker is the exclusive property of J.P. Morgan Securities plc and the Tracker Sponsor retains all proprietary rights therein.

Potential conflicts of interest may exist in the structure and operation of a Futures Tracker and the conduct of normal business activities for the Tracker Calculation Agent or any of its affiliates or subsidiaries or their respective directors, officers, employees, representatives, delegates or agents (a "**Relevant Person**").

During the course of their normal business, the Tracker Calculation Agent or any Relevant Person may enter into or promote, offer or sell transactions or investments (structured or otherwise) linked to a Futures Tracker or any component of a Futures Tracker. In addition, any Relevant Person may have, or may have had, interests or positions, or may buy, sell or otherwise trade positions in or relating to a Futures Tracker or any component of a Futures Tracker, or may invest or engage in transactions with other persons, or on behalf of such persons relating to any of these items. Such activity could give rise to a conflict of interest, and such conflict may have an impact, positive or negative, on the level of a Futures Tracker. Neither the Tracker Calculation Agent nor any Relevant Person has any duty to consider the circumstances of any person when participating in such transactions or to conduct themselves in a manner that is favourable to anyone with exposure to a Futures Tracker.

These Tracker Rules shall be governed by and construed in accordance with the laws of England.

The foregoing notices, disclaimers and conflicts disclosure is not intended to be exhaustive. Anyone reading these Tracker Rules should seek such advice as they consider necessary from their professional advisors, legal, tax or otherwise, without reliance on any Relevant Person to satisfy themselves that they fully understand these Tracker Rules and the risks associated with the relevant Futures Trackers.

PART A

General Rules

1. Tracker Rules

1.1 Publication

The Tracker Rules are published by J.P. Morgan Securities plc. of 25 Bank Street, London E14 5JP, in its capacity as Tracker Sponsor and Tracker Calculation Agent of each Futures Tracker.

1.2 Amendments

The Tracker Rules for a Futures Tracker may be amended from time to time at the discretion of the Tracker Calculation Agent and will be re-published (in a manner determined by the Tracker Calculation Agent from time to time) no later than one calendar month following such amendment.

Although the Tracker Rules for a Futures Tracker are intended to be comprehensive, ambiguities may arise. If so, the Tracker Calculation Agent will resolve such ambiguities and, if necessary, amend the Tracker Rules to reflect such resolution.

2. Synthetic strategies, no underlying component nor assets held

Each Futures Tracker is constructed on a "notional" Futures Contact and there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. Each Futures Tracker merely identifies a Futures Contract and a rules-based trading strategy, the performance of which is used as a reference point for the purposes of calculating Tracker Levels.

3. Tracker Calculation Agent

3.1 Identity

J.P. Morgan Securities plc. or any entity (including a non-related third party) designated by it from time to time will act as calculation agent in connection with each Futures Tracker (the **Tracker Calculation Agent**).

3.2 Tracker Calculation Agent standards

The Tracker Calculation Agent shall act in good faith and in a commercially reasonable manner in respect of determinations made by it pursuant to the Tracker Rules.

3.3 Tracker Calculation Agent determinations

All determinations of the Tracker Calculation Agent pursuant to the Tracker Rules and interpretation of the Tracker Rules shall be final, conclusive and binding and no person shall be entitled to make any claim against the Tracker Calculation Agent or any Relevant Person in respect thereof. Neither the Tracker Calculation Agent nor any Relevant Person shall:

(a) be under any obligation to revise any determination or calculation made or action taken for any reason in connection with the Tracker Rules or a Futures Tracker; or

(b) have any responsibility to any person (whether as a result of negligence or otherwise) for any determinations made or anything done (or omitted to be determined or done) in respect of a Futures Tracker or in respect of the publication of any Tracker Level (or failure to publish such level) or any use to which any person may put a Futures Tracker or the Tracker Levels.

4. Corrections in respect of a Futures Tracker

If:

(a) the level, price or rate of a Futures Contract, variable, input or other matter which is used for any calculation relevant to the Tracker Level for any Tracker Business Day is subsequently corrected; or

(b) the Tracker Calculation Agent identifies an error or omission in any of its calculations or determinations in respect of the Tracker Level for any Tracker Business Day,

then, the Tracker Calculation Agent may, if practicable and it considers such correction material, adjust or correct the Tracker Level for any relevant Tracker Business Day. The Tracker Calculation Agent shall publish (in such manner determined by the Tracker Calculation Agent) corrected Tracker Level(s) as soon as reasonably practicable.

5. Extraordinary Events

5.1 Cancellation of relevant licence

If, at any time, the licence granted (if required) to or the rights of the Tracker Calculation Agent (or its affiliates) to use or reference any Futures Contract, component of a Futures Tracker, input or other matter in connection with a Futures Tracker terminates, or is otherwise disputed, impaired or ceases (for any reason), the Tracker Calculation Agent may (i) exclude or substitute the Futures Contract or component of the relevant Futures Tracker; and/or (ii) make such adjustments to the Tracker Rules, each as it determines in good faith to be appropriate to account for such event on such dates as selected by the Tracker Calculation Agent.

5.2 Change in Law

Following the occurrence of a Change in Law as determined by the Tracker Calculation Agent, the Tracker Calculation Agent may, acting in good faith and in a commercially reasonable manner: (i) exclude or substitute the Futures Contract or any other component of a relevant Futures Tracker; and/or (ii) make such adjustments the Tracker Rules of a relevant Futures Tracker, each as it determines in good faith to be appropriate to account for the Change in Law on such dates selected by the Tracker Calculation Agent.

5.3 Tracker Cancellation

If the Tracker Calculation Agent determines that no exclusion, substitution or adjustment that it could make pursuant this section 5 in connection with any event set out in sections 5.1 or 5.2 will produce a commercially reasonable result in respect of a Futures Tracker, then the Tracker Calculation Agent may cease calculating and publishing each relevant Futures Tracker from a date determined by the Tracker Calculation Agent. Notwithstanding this section 5.3, the Tracker Calculation Agent is under no obligation to continue the calculation, publication and dissemination of a Futures Tracker.

6. General Definitions

Capitalised terms defined below shall have the following meanings in the Tracker Rules:

"Change in Law" means:

(a) due to:

(i) the adoption of, or any change in, any applicable law, regulation or rule (including, without limitation, any tax law); or

(ii) the promulgation of, or any change in, the interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, any exchange or trading facility),

in either case, the Tracker Calculation Agent determines in good faith that (x) it is contrary to such law, rule, regulation or order for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) any Futures Contract of the relevant Futures Tracker, any transaction referencing the Futures Contract or any component of the Futures Contract or, (y) holding a position in any Futures Contract of the relevant Futures Tracker, any transaction referencing the Futures Contract or any component of the Futures Contract is (or, but for the consequent disposal or termination thereof, would otherwise be) in excess of any allowable position limit(s) applicable to any market participants that are brokers or financial intermediaries (individually or collectively) under any such law, rule, regulation in relation to such Futures Contract, transaction referencing the Futures Contract or component of the Futures Contract traded on any exchange(s) or other trading facility (including, without limitation, any relevant exchange); or

(b) the occurrence or existence of any:

  (i) suspension or limitation imposed on trading futures contracts (relating to any Futures Contract, any transaction referencing the Futures Contract or any component of the Futures Contract) including without limitation, commodities and index futures contracts; or

  (ii) any other event that causes trading in futures contracts (relating to any Futures Contract, any transaction referencing the Futures Contract or any component of the Futures Contract) to cease including without limitation, commodities and index futures contracts;

Futures Contract means, in respect of a Futures Tracker, the futures contract specified as such in Part C: Tracker Details for the Futures Tracker;

Relevant Person means (i) any affiliate or subsidiary of the Tracker Calculation Agent, or (ii) any director, officer, employee, representative, delegate or agent of the Tracker Calculation Agent or any affiliate or subsidiary of the Tracker Calculation Agent;

Tracker Business Day means the business days specified as such in Part C: Tracker Detail;

Tracker Calculation Agent has the meaning given in section 3.1 of this Part A: General Rules;

Tracker Level means the level of the Tracker, as defined and calculated in accordance with Part B: Tracker Algorithm;

Tracker Rules means, in respect of a Futures Tracker, the rules of the Futures Tracker as set out in this document and which are comprised of the Notices, Disclaimers and Conflicts Disclosure, this Part A: General Rules, Part B: Tracker Algorithm and the applicable section of Part C: Tracker Details.

PART B

Tracker Algorithm

1. Tracker Levels

1.1 Tracker Base Date and Tracker Base Level

The Tracker Base Date and Tracker Base Level of the Futures Tracker are as specified in Part C: Tracker Details for the Futures Tracker. The Tracker Base Date is the date on which the Futures Tracker comprised a notional investment of one contract in the relevant Near Futures Contract in respect of such Tracker Base Date.

1.2 Calculation of Tracker Levels

Subject to section 2 of this Part B: Tracker Algorithm (*Market Disruption Events*), the Tracker Calculation Agent shall calculate the Tracker Level in respect of each Tracker Business Day_t (**Tracker Level_t**) in accordance with the following formula:

$$\text{Tracker Level}_t = \text{Tracker Level}_{t-1} \times (1 + \text{Return}_t)$$

where:

Tracker Level_t means the Tracker Level on Tracker Business Day t;

Tracker Level_0 means the Tracker Base Level on the Tracker Base Date as specified in in Part C: Tracker Details for the Futures Tracker;

In respect of each Tracker Business Day t (other than the Tracker Base Date or any Re-weighting Date (as defined in Part C: Tracker Details), Return t shall be calculated in accordance with the following formula:

$$\text{Return}_t = \frac{\text{Near Future}_t}{\text{Near Future}_{t-1}} - 1$$

Near Future_t means the Official Settlement Price (as defined in Part C: Tracker Details for the Futures Tracker) of the Near Futures Contract on Tracker Business Day t;

Near Future_{t-1} means the Official Settlement Price (as defined in Part C: Index Details) of the Near Futures Contract on Tracker Business Day_{t-1}, or if such Tracker Business Day_{t-1} is a Disrupted Day, the Official Settlement Price of the Near Futures Contract on the immediately preceding Tracker Business Day that is not a Disrupted Day;

Near Futures Contract means, in respect of a Tracker Business Day t, the Futures Contract that will expire on the first Expiry Date to occur following the Re-weighting Date immediately after Tracker Business Day t;

In respect of each Tracker Business Day t that is a Re-weighting Date, Return t shall be calculated in accordance with the following formula:

$$\text{Return}_t = \text{Weight}_N \times \left(\frac{\text{Near Future}_t}{\text{Near Future}_{t-1}} - 1 \right) + \text{Weight}_F \times \left(\frac{\text{Far Future}_t}{\text{Far Future}_{t-1}} - 1 \right) - \text{RAF} \times \frac{1}{3}$$

Where:

RAF is the amount specified as the rebalancing adjustment factor for the Futures Tracker in Part C: Tracker Details

Far Future_t	means the Official Settlement Price of the Far Futures Contract on Tracker Business Day t;
Far Future_{t-1}	means the Official Settlement Price (as defined in Part C: Index Details) of the Far Futures Contract on Tracker Business Day_{t-1}, or if such Tracker Business Day_{t-1} is a Disrupted Day, the Official Settlement Price of the Far Futures Contract on the immediately preceding Tracker Business Day that is not a Disrupted Day;

Near Futures Contract means, in respect of each Tracker Business Day t of the relevant Re-weighting Period, the Futures Contract that expires on the first Expiry Date to occur following the first Re-weighting Date of the Re-weighting Period;

Far Futures Contract means, in respect of each Tracker Business Day t of the relevant Re-weighting Period, the Futures Contract that expires on the first Expiry Date to occur immediately following the Expiry Date of the Near Futures Contract;

In respect of each Tracker Business Day that falls on the first day of a Re-weighting Period:

$$\mathbf{Weight_N = 1}$$

$$\mathbf{Weight_F = 0}$$

In respect of each Tracker Business Day that falls on the second day of a Re-weighting Period:

$$\mathbf{Weight_N = \frac{2}{3}}$$

$$\mathbf{Weight_F = \frac{1}{3}}$$

In respect of each Tracker Business Day that falls on the third day of a Re-weighting Period:

$$\mathbf{Weight_N = \frac{1}{3}}$$

$$\mathbf{Weight_F = \frac{2}{3}}$$

2. Market Disruption Events

2.1 On a Re-weighting Date

If any Re-weighting Date of the Re-weighting Period is a Disrupted Day in respect of any relevant Futures Contract (each such Futures Contract for these purposes, an "**Affected Futures Contract**"), then the portion of the roll which was scheduled to take place on that Re-weighting Date shall be postponed until the next following Tracker Business Day for the Affected Futures Contract which is not a Disrupted Day, irrespective of whether such day is already a day on which a portion of the roll is scheduled to take place. If any portion of the roll is postponed to, and including, the Expiry Date of the Affected Futures Contract and the Expiry Date is a Disrupted Day, then the Calculation Agent shall re-weight the Futures Tracker acting in good faith using such information and/or methods as it determines, in its reasonable discretion, are appropriate.

Example: if the first and third Re-weighting Dates are not Disrupted Days but the second Re-weighting Date of a Re-weighting Period is a Disrupted Day, then the "Weight" for each Re-weighting Date of the Re-weighting Period would be as shown in the table immediately below:

Re-weighting Period	$Weight_N$	$Weight_F$
First Re-weighting Date	1	0
Second Re-weighting Date	1	0

Third Re-weighting Date	1/3	2/3

2.2 On a Tracker Business Day

Notwithstanding Section 2.1, if any Tracker Business Day is a Disrupted Day for any relevant Futures Contract, the Calculation Agent may either:

(a) calculate its good faith estimate of the Tracker Level for such Tracker Business Day, using its good faith estimate of the level of the Affected Futures Contract. Any such estimated level may be subject to correction on the first succeeding Tracker Business Day which is not a Disrupted Day in respect of any Affected Futures Contract; or

(b) suspend the calculation and publication of the Tracker Level until the first succeeding Tracker Business Day which is not a Disrupted Day in respect of any relevant Futures Contract.

3. Extraordinary Events

3.1 Successor Futures Contract

If any Futures Contract is:

(a) not calculated and quoted by the Relevant Exchange but by a successor exchange acceptable to the Tracker Calculation Agent; or

(b) replaced by a successor futures contract using, in the determination of the Tracker Calculation Agent, the same or substantially similar formula and method of calculation as used in the calculation of the relevant Futures Contract,

then in each case that successor futures contract (the **Successor Futures Contract**) shall replace the relevant Futures Contract with effect from a date determined by the Tracker Calculation Agent who may make such adjustment to these Tracker Rules, as it determines in good faith is appropriate, to account for such change.

3.2 Cancellation or non-publication

If, at any time, any Relevant Exchange:

(a) announces that it will make a material change in the definition of any Futures Contract or in any other way materially modifies such contract (other than a modification prescribed in the definition of such contract); or

(b) (i) permanently cancels any Futures Contract and no Successor Futures Contract exists or (ii) is otherwise unable or unwilling to publish levels of the Futures Contract,

then the Tracker Calculation Agent may remove such futures contract from the Futures Tracker and may adjust the Tracker Rules as it determines in good faith to be appropriate to account for such change(s) (including, without limitation, selecting (a) a replacement underlying futures contract traded on an equivalent exchange and having similar characteristics to the affected Futures Contract; and (b) the date of such replacement) on such date(s) as selected by the Tracker Calculation Agent.

4. Definitions

Capitalised terms defined below shall have the following meanings in the Tracker Rules:

"Disrupted Day" means, in respect of a Futures Contract, a Tracker Business Day on which a Market Disruption Event occurs or exists;

"Early Closure" means the closure on any Tracker Business Day of the Relevant Exchange prior to its scheduled closing time unless such earlier closing time is announced by such exchange(s) at least one hour prior to the actual closing time for the regular trading session on such exchange(s) on such Tracker Business Day;

"Exchange Disruption" means any event (other than an Early Closure) that disrupts or impairs (as determined by the Tracker Calculation Agent) the ability of market participants in general to effect transactions in, or obtain market values for, futures (including, without limitation, the Futures Contracts) or options contracts relating to the Base Underlying on any Relevant Exchange;

"Market Disruption Event" means, in respect of a Futures Contract and a Tracker Business Day, a failure by the Relevant Exchange to calculate and publish the Official Settlement Price for the Futures Contract on such Tracker Business Day, or any event that, in the determination of the Tracker Calculation Agent, disrupts or impairs the ability of market participants generally to effect transactions in or obtain market values for such Futures Contract. Such events may include, but not be limited to, the occurrence of any of a Trading Disruption, Exchange Disruption or Early Closure;

"Trading Disruption" means any suspension of or limitation imposed on trading by the Relevant Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the Relevant Exchange or otherwise in futures (including, without limitation, the Futures Contracts) or options contracts relating to the Base Underlying (as specified in Part C: Tracker Details) on any Relevant Exchange.

Summary Description of Equity Index Component Underlyings

MSCI Europe Growth Net Total Return USD Index

According to publicly available information, the MSCI Europe Growth Net Total Return USD Index (the "Index") captures large and mid-cap securities exhibiting overall growth style characteristics across the 15 developed markets countries in Europe. The growth investment style characteristics for index construction are defined using five variables: long-term forward EPS growth rate, short-term forward earnings per share (“EPS”) growth rate, current internal growth rate and long-term historical EPS growth trend and long-term historical sales per share growth trend. The Index is calculated and published daily in USD. For further information on the Index, see www.msci.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

MSCI Europe Value Net Total Return EUR Index

According to publicly available information, the MSCI Europe Value Net Total Return EUR Index (the "Index") captures large and mid-cap securities exhibiting overall value style characteristics across the 15 developed markets countries in Europe. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield. The Index is calculated and published daily in EUR. For further information on the Index, see www.msci.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

MSCI Europe Small Cap Net Return EUR Index

According to publicly available information, the MSCI Europe Small Cap Net Return EUR Index (the "Index") captures large and mid-cap securities exhibiting overall value style characteristics across the 15 developed markets countries in Europe. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield. The Index is calculated and published daily in EUR. For further information on the Index, see www.msci.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

MSCI Europe Barra Momentum Index

According to publicly available information, the MSCI Europe Barra Momentum Index (the "Index") is an index that seeks to optimize the MSCI Europe Index to achieve a specified high level of exposure to the Momentum style factor and very low exposure to all other style, industry and country factors, and low tracking error to a benchmark index, which is the MSCI Europe Momentum Index. For further information on the Index, see www.msci.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

MSCI Europe Barra Low Volatility Net Total Return EUR Index

According to publicly available information, the MSCI Europe Barra Low Volatility Net Total Return EUR Index (the "Index") is an index that seeks to optimize the MSCI Europe Index to achieve a specified high level of exposure to the Volatility style factor and very low exposure to all other style, industry and country factors, and low tracking error to a benchmark index, which is the MSCI Europe Low Volatility Net Total Return EUR Index. For further information on the Index, see www.msci.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Factor Free Cash Flow/Invested Capital Trend Long Only Index

According to publicly available information, the FTSE US Risk Premium Factor Free Cash Flow/Invested Capital Trend Long Only Index (the "Index") includes US large/mid cap stocks with high free cash flow profitability and maximizes industry participation providing both diversification and quality. In each industry, a profitability ratio trend is calculated by generating each stock's free cash flow / invested capital ("FCF/IC") as of the calculation date and subtracting the average of the prior four quarters' FCF/IC then dividing by the standard deviation of the prior four quarters' FCF/IC. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Price Momentum Long Only Index

According to publicly available information, the FTSE US Risk Premium Price Momentum Long Only Index (the "Index") includes high total return US large/mid cap stocks and maximizes industry participation providing both diversification and momentum. In each industry, price momentum is calculated by generating each stock's 12 month total return as of the calculation date. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its price momentum versus other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Seasonality Long Only Index

According to publicly available information, the FTSE US Risk Premium Seasonality Long Only Index (the "Index") includes high total return US large/mid cap stocks and maximizes industry participation providing both diversification and momentum. In each industry, price momentum is calculated by generating each stock's 12 month total return as of the calculation date. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its price momentum versus other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Extended Price Momentum Long Only Index

According to publicly available information, the FTSE US Risk Premium Extended Price Momentum Long Only Index (the "Index") includes high total return US large/mid cap stocks and maximizes industry participation providing both diversification and momentum. In each industry, extended price momentum is calculated by generating each stock's 11 month total return lagged by one month divided by the 90-day realized volatility as of the calculation date. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its extended price momentum vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Net Operating Assets Trend Long Only Index

According to publicly available information, the FTSE US Risk Premium Net Operating Assets Trend Long Only Index (the "Index") includes high growth US large/mid cap stocks and maximizes industry participation. In each industry, net operating assets ("NOA") trend is calculated by generating each stock's current NOA minus its prior 12 months NOA divided by the prior four quarters average total assets. NOA is defined as most recently reported value of total shareholders' equity plus total debt minus cash and short term investments. Each stock is given a z-score, ranging +3.0 to - 3.0, based on the magnitude of its net operating assets trend vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Return on Equity Long Only Index

According to publicly available information, the FTSE US Risk Premium Return on Equity Long Only Index (the "Index") includes high return on equity US large/mid cap stocks and maximizes industry participation providing both diversification and quality. In each industry, return on equity is calculated by generating each stock's trailing 12 month net income divided by average equity as of the calculation date. Average equity is defined as the average of the common equity for the most recent fiscal year and the previous fiscal year. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its return on equity vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Factor Free Cash Flow/Invested Capital Long Only Index

According to publicly available information, the FTSE US Risk Premium Factor Free Cash Flow/Invested Capital Long Only Index (the "Index") includes US large/mid cap stocks with high free cash flow profitability and maximizes industry participation providing both diversification and quality. In each industry, free cash flow / invested capital is calculated by generating each stock's trailing 12 month free cash flow divided by invested capital as of the calculation date. Invested capital is defined as the sum of the most recently reported value of total capital, short term debt and current portion of long term debt. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its free cash flow / invested capital vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Dividend Yield Long Only Index

According to publicly available information, the FTSE US Risk Premium Dividend Yield Long Only Index (the "Index") includes high dividend paying US large/mid cap stocks and maximizes industry participation providing both diversification and yield. In each industry, dividend yield is calculated by summing dividends per share for each stock over the last 12 months and dividing by the stock price as of the calculation date. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its dividend yield vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Free Cash Flow Yield Long Only Index

According to publicly available information, the FTSE US Risk Premium Free Cash Flow Yield Long Only Index (the "Index") includes high free cash flow yield US large/mid cap stocks and maximizes industry participation providing both diversification and value. In each industry, free cash flow yield is calculated by generating each stock's trailing 12 month net cash flow from operating activities plus the most recently reported value of the trailing 12 months capital expenditures divided by full market cap as of the calculation date. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its free cash flow yield vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Forward Earnings Yield Long Only Index

According to publicly available information, the FTSE US Risk Premium Forward Earnings Yield Long Only Index (the "Index") includes US large/mid cap stocks with high analysts' forward earnings yields and maximizes industry participation providing both diversification and value. In each industry, forward earnings yield is calculated by generating each stock's analyst forward one year earnings per share estimates and dividing by the stock price as of the calculation date. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its forward earnings yield vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Forward Dividend Yield Long Only Index

According to publicly available information, the FTSE US Risk Premium Forward Dividend Yield Long Only Index (the "Index") includes US large/mid cap stocks with high analysts' forward dividend yields and maximizes industry participation providing both diversification and yield. In each industry, forward dividend yield is calculated by generating each stock's average analyst forward dividend per share estimates for the next two fiscal periods and dividing by the stock price as of the calculation date. The two analyst estimates average is weighted by the length of the respective terms. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its forward dividend yield vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Low Volatility Long Only Index

According to publicly available information, the FTSE US Risk Premium Low Volatility Long Only Index (the "Index") includes low volatility US large/mid cap stocks and maximizes industry participation providing both diversification and reduced volatility. In each industry, low volatility is calculated by generating each stock's 90-day realized volatility as of the calculation date. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its low volatility vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

FTSE US Risk Premium Size Long Only Index

According to publicly available information, the FTSE US Risk Premium Size Long Only Index (the "Index") includes US large/mid cap stocks and maximizes industry participation providing both diversification and smaller company exposure. In each industry, size - or smaller company exposure - is calculated by generating free float market capitalization of each company as of the calculation date. Each stock is given a z-score, ranging +3.0 to -3.0, based on the magnitude of its size vs other stocks in the industry. Stock z-scores for all industries are combined and ranked highest to lowest. For further information on the Index, see www.ftse.com. Information contained on such website is not incorporated by reference in, and should not be considered a part of, this document.

J.P. MORGAN EQUITY RISK PREMIUM – GLOBAL BALANCED MULTI-FACTOR (LONG / SHORT) USD INDEX (SERIES A)

Index Disclosure Annex

(dated November 2, 2017)

This Index Disclosure Annex, dated November 2, 2017 (the "**Disclosure Annex**"), supplements and should be read in conjunction with the Updated General Disclosure Statement for Derivatives, dated August 5, 2015 (the "**General Disclosure Statement**") and the Disclosure Annex for Equity Derivatives, dated April 26, 2013 published by the International Swaps & Derivatives Association, Inc. **NOTHING IN THIS DISCLOSURE ANNEX AMENDS OR SUPERSEDES THE EXPRESS TERMS OF ANY TRANSACTION BETWEEN YOU AND US OR ANY RELATED GOVERNING DOCUMENTATION.**

Any description of the J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series A) (the "**Index**") and its methodology included in this document is based on the rules of the Index and the rules of each of its underlying component indices (the "**Index Rules**") and is qualified entirely by the full text of the Index Rules, which are attached hereto as Annex 3. The Index Rules, and not the description in this document, govern the calculation and constitution of the Index and its underlying component indices and other decisions and actions relating to their maintenance.

Any terms used with respect to the Index not defined herein shall have the meaning ascribed thereto in the rules relating to the Index, and any terms used with respect to an underlying component index not defined herein shall have the meaning ascribed thereto in the rules relating to that underlying component index.

Prospective investors in any investment product, the performance of which is linked to the Index should: (1) have sufficient knowledge and experience (if necessary, in consultation with the investor's own legal, tax, accounting, regulatory, investment or other professional advisers) to evaluate the Index; and (2) refer to the Index Rules for a complete description of the Index, its underlying component indices and their methodologies.

THIS DOCUMENT IS IMPORTANT. YOU SHOULD NOT INVEST IN A PRODUCT LINKED TO THE INDEX UNLESS YOU HAVE ENSURED THAT YOU FULLY UNDERSTAND THE NATURE OF SUCH AN INVESTMENT AND THE RISKS INVOLVED AND ARE SATISFIED THAT THE INVESTMENT IS SUITED TO YOUR CIRCUMSTANCES AND OBJECTIVES. IF YOU ARE IN ANY DOUBT ABOUT THIS YOU SHOULD TAKE ADVICE FROM AN APPROPRIATELY QUALIFIED ADVISER. UNLESS YOU ARE A HIGHLY SOPHISTICATED INVESTOR WHO REGULARLY TRANSACTS IN PRODUCTS LINKED TO STRATEGIES OF THIS TYPE, YOU ARE STRONGLY ADVISED TO TAKE SUCH ADVICE IN ANY EVENT.

SECTION 1: QUESTIONS AND ANSWERS ON THE J.P. MORGAN EQUITY RISK PREMIUM – GLOBAL BALANCED MULTI-FACTOR (LONG / SHORT) USD INDEX (SERIES A)

What is the Index?

The J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series A) (the "**Index**") is a synthetic, rules-based proprietary index that was developed and is sponsored by J.P. Morgan Securities plc. As of the date of this Disclosure Annex, with respect to the Index, J.P. Morgan Securities plc also serves as the Disruption Determination Agent, and Solactive AG serves as the Index Calculation Agent, as described further below.

The objective of the Index is to track a synthetic equally weighted exposure to each of the J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 1) (the "**Series 1 Component Index**") and the J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 2) (the "**Series 2 Component Index**" and, together with the Series 1 Component Index, the "**Component Indices**").

The Index is rebalanced every twenty-five Index Scheduled Trading Days. The Index Calculation Agent, in respect of each Rebalance Selection Date, will determine the Number of Units for each Component Index for the related Rebalancing Date, in accordance with the methodology set forth in the Index Rules. The determination of the Number of Units in respect of the Rebalance Selection Date, and the resulting rebalancing of the Component Indices on the related Rebalancing Date, is intended to target an equal weighting of the two Component Indices.

The Index was created on September 7, 2017, and therefore has limited historical performance. The Index Level of the Index is published in respect of each Calculation Day under the Bloomberg ticker "JPQFMFWA Index."

The Index Calculation Agent calculates and publishes the Index Level of the Index in respect of each Calculation Day. The calculation of the Index Level of the Index for each Calculation Day takes into account:

- the Index Level of the Index in respect of the immediately preceding Calculation Day;
- the weighted performance of each Component Index since the immediately preceding Calculation Day; and
- if the Calculation Day is a Rebalancing Date, the synthetic costs associated with rebalancing the Component Indices on such day, which is calculated by applying a Rebalancing Adjustment Cost Factor of 0.04% to the changes in weights of the Component Indices.

The Index Level of the Index will never be less than zero.

What are the Component Indices?

Each Component Index is a synthetic, rules-based proprietary index that was developed and is sponsored by J.P. Morgan Securities plc. As of the date of this Disclosure Annex, with respect to each Component Index, J.P. Morgan Securities plc also serves as the Constituent Stock Determination Agent and the Disruption Determination Agent, and Solactive AG serves as the Index Calculation Agent, as described further below.

The Component Indices operate using methodologies that are identical, except that (i) the Index Base Date and Basket Base Date for the Series 2 Component Index (September 7, 2017) are one calendar week later than the Index Base Date and Basket Base Date of the Series 1 Component Index (August 30, 2017) and (ii) the Component Indices are published under different Bloomberg tickers.

Each Component Index aims to track the weighted return of a synthetic portfolio of long and short positions in equity securities, minus certain fees and costs, in accordance with an algorithmic methodology. As described below, for each Component Index, the Component Index constituents and their weights are selected on the basis of certain eligibility criteria and five style factors (referred to as the "**Factors**"): Value, Size, Momentum, Low Volatility and Quality. The five style factors reference 24 equity risk premium factors (referred to as the "**Base Factors**").

Each Component Index was created on September 7, 2017, and therefore has limited historical performance. The Index Level of each Component Index is published in respect of each Calculation Day under the relevant Bloomberg ticker: "JPQFMFW1 Index" for the Series 1 Component Index and "JPQFMFW2 Index" for the Series 2 Component Index.

What is the rationale of the Component Indices?

The methodology of each Component Index selects periodically the Component Index constituents and their weights from a global stock universe using an optimization procedure that seeks to maximize the scores for the Value, Quality, Momentum, Size and Volatility Factors, subject to the various constraints set out in the Index Rules.

How are the Constituents of each Component Index selected?

Each Component Index is scheduled to rebalanced every ten Index Scheduled Trading Days (each, a "**Scheduled Rebalancing Date**") to a composition that is determined on the third London Business Day prior to the relevant Scheduled Rebalancing Date (each, a "**Rebalance Selection Date**"). Because the Index Base Date and Basket Base Date for the Series 2 Component Index are one calendar week later than the Index Base Date and Basket Base Date of the Series 1 Component Index, the rebalancings of the Component Indices operate on different schedules and the Rebalance Selection Dates and Scheduled Rebalancing Dates for the Component Indices are expected to occur on different dates, approximately one week apart, which is expected to result in differences in the Component Stocks and weightings of the two Component Indices.

On each Rebalance Selection Date for a Component Index, the Constituent Stock Determination Agent will determine the Constituent Stocks that will be represented in that Component Index for the period from but excluding the Effective Rebalancing Date for that Component Index immediately following that Rebalance Selection Date for that Component Index to and including the immediately following Effective Rebalancing Date for that Component Index, in accordance with the following steps.

Determine the Eligible Stocks: In respect of each Rebalance Selection Date for a Component Index, an Eligible Stock is a security that is included in the Base Reference Index, which is currently the MSCI Daily Total Return Gross World USD Index, for which certain share, market capitalization and variance data is available as set forth in the Index Rules. An Eligible Stock that is a member of the J.P. Morgan group of companies or that is missing more than two Factor Scores (determined as described below) will be an Excluded Stock. The weight of each Excluded Stock is set equal to zero.

Determine the Factor Scores: In respect of each Rebalance Selection Date for a Component Index, for each Eligible Stock, subject to the occurrence of a Missing Value Event or a Missing Factor Input Event as described in the Index Rules, the Constituent Stock Determination Agent:

1. calculates the Preliminary Base Factor Score for each Base Factors listed in Table 1 below, in accordance with the formulas and using the various data sources described in the Index Rules;

2. calculates the Base Factor Score for each Base Factor by normalizing the Preliminary Base Factor Score for that Base Factor across the weighted average (using a market-capitalization-based weighting) of the Preliminary Base Factor Scores for that Base Factor for all Eligible Stocks within the same Group (as set forth under Table 2 below), in accordance with the formula set forth in the Index Rules;

3. sets the Factor Scores for the Size, Momentum and Low Volatility Factor equal to the Base Factor Scores for the corresponding Base Factors;

4. calculates the Preliminary Composite Factor Scores for each of the Composite Factors listed in Table 1 below using the Base Factor Scores for that Eligible Stock for the Base Factors included in that Composite Factor and their Base Factor Weights, in accordance with the formula set forth in the Index Rules;

5. calculates the Factor Score for the Value Factor by normalizing the Preliminary Composite Factor Score for the Value Composite Factor across the weighted average (using a market-capitalization-based weighting) of the Preliminary Composite Factor Scores for the Value Composite Factor for all Eligible Stocks within the same Group, in accordance with the formula set forth in the Index Rules;

6. calculates the Preliminary Quality Factor Score as:

    a. if the Value Factor for that Eligible Stock is less than or equal to -1 (indicating that that Eligible Stock represents a "growth" company), the Preliminary Composite Factor Score for the GScore Composite Factor;

    b. if the Value Factor for that Eligible Stock is greater than or equal to 1 (indicating that that Eligible Stock represents a "value" company), the Preliminary Composite Factor Score for the FScore Composite Factor; or

    c. if the Value Factor for that Eligible Stock is between -1 and 1, a linear interpolation of the Preliminary Composite Factor Scores for the GScore Composite Factor and the FScore Composite Factor, in accordance with the formula set forth in the Index Rules; and

7. calculates the Factor Score for the Quality Factor by normalizing the Preliminary Quality Factor Score across the weighted average (using a market-capitalization-based weighting) of the Preliminary Quality Factor Score for all Eligible Stocks within the same Group, in accordance with the formula set forth in the Index Rules.

The data sources used by the Constituent Stock Determination Agent to calculate the Preliminary Base Factor Scores are (a) the Estimates Data Source, which is I/B/E/S, (b) the Fundamentals Data Source, which is Reuters Fundamentals, (c) the Share Data Source, which is the Datastream database provided by Thomson Reuters, and (d) the FX Data Source, which is WM company or the Datastream database provided by Thomson Reuters, as described in the Index Rules.

As described further in the Index Rules, each normalization formula is iterated sequentially ten times, calculating a new value with respect to each iteration, to determine the Base Factor Scores and Factor Scores of the Value and Quality Factors, in accordance with the formulas set forth in the Index Rules.

Table 1 below provides a list of the Factors, Composite Factors and Base Factors. See Annex 1 and the Index Rules for additional information about the Factors, Composite Factors and Base Factors.

Table 1: Factors, Composite Factors and Base Factors

Factors	**Composite Factors**	**Base Factors**	**Base Factor Weight in Composite Factor**
Value Factor	Value Factor	Forward Earnings Yield Factor	1/4
		Forward Dividend Yield Factor	1/4
		Free Cash Flow Yield Factor	1/4
		Book to Price Factor	1/4
Size Factor	N/A	Size Factor	N/A
Momentum Factor	N/A	Momentum Factor	N/A
Low Volatility Factor	N/A	Low Volatility Factor	N/A

Factors	Composite Factors	Base Factors	Base Factor Weight in Composite Factor
Quality Factor	FScore Factor	Return on Assets Factor	1/9
		Operating Cash Flow to Assets Factor	1/9
		Delta Return on Assets Factor	1/9
		Accruals Factor	1/9
		Delta Leverage Factor	1/9
		Delta Liquidity Factor	1/9
		Equity Issuance Factor	1/9
		Delta Gross Margin Factor	1/9
		Delta Total Revenue Factor	1/9
	GScore Factor	Return on Assets Factor	1/8
		Operating Cash Flow to Assets Factor	1/8
		Accruals Factor	1/8
		Earning Variability Factor	1/8
		Revenue Growth Variability Factor	1/8
		R&D Factor	1/8
		Capital Expenditure Factor	1/8
		Advertising Factor	1/8

The Eligible Stocks are categorized into different groups on the basis of the sector and region applicable to each Eligible Stock. Each Eligible Stock will fall into one of three regional categories and a sector category. As of the date hereof, there are 11 sector categories, and there are 33 groups (11 for each of the three regions), as set forth in table 2 (the "**Groups**").

Table 2: Regions, Stock Sectors and Groups

Regions	Stock Sectors	Groups
Americas	Energy	Energy Americas
	Materials	Materials Americas
	Industrials	Industrials Americas
	Consumer Discretionary	Consumer Discretionary Americas
	Consumer Staples	Consumer Staples Americas
	Health Care	Health Care Americas
	Financials	Financials Americas
	Information Technology	Information Technology Americas
	Telecom	Telecom Americas
	Utilities	Utilities Americas
	Real Estate	Real Estate Americas
EMEA	Energy	Energy EMEA
	Materials	Materials EMEA
	Industrials	Industrials EMEA
	Consumer Discretionary	Consumer Discretionary EMEA
	Consumer Staples	Consumer Staples EMEA
	Health Care	Health Care EMEA
	Financials	Financials EMEA
	Information Technology	Information Technology EMEA
	Telecom	Telecom EMEA
	Utilities	Utilities EMEA
	Real Estate	Real Estate EMEA
Asia/Pacific	Energy	Energy Asia/Pacific
	Materials	Materials Asia/Pacific

Regions	Stock Sectors	Groups
	Industrials	Industrials Asia/Pacific
	Consumer Discretionary	Consumer Discretionary Asia/Pacific
	Consumer Staples	Consumer Staples Asia/Pacific
	Health Care	Health Care Asia/Pacific
	Financials	Financials Asia/Pacific
	Information Technology	Information Technology Asia/Pacific
	Telecom	Telecom Asia/Pacific
	Utilities	Utilities Asia/Pacific
	Real Estate	Real Estate Asia/Pacific

Determine the Selected Output Portfolio: In respect of each Rebalance Selection Date for a Component Index, the Constituent Stock Determination Agent uses third-party software (as defined in the Index Rules, the "**Optimizer Software**") to determine the Output Portfolio. The Output Portfolio is the portfolio composed of the Eligible Stocks identified by the Optimizer Software that has the highest aggregate weighted average Factor Score determined in accordance with the formula set forth in the Index Rules, subject to the various constraints set out in the Index Rules. The initial constraints include the following, in each case calculated in accordance with the relevant formula(s) set forth in the Index Rules:

Constraint to Control Style Exposures

- the weighted average Factor Score of the Output Portfolio for each Factor must be within 0.25 of the weighted average Factor Score of each other Factor of the Output Portfolio;

Constraints to Limit Non-Style Exposures

- the weighted-average beta of the Eligible Stocks in the Output Portfolio (as determined by reference to Risk Model outputs) to a market-capitalization weighted portfolio of the Eligible Stocks must be between -1% and +1%;

- the aggregate weight of the Eligible Stocks in the Output Portfolio incorporated in each country must be between -0.5% and +0.5% of the aggregate market-capitalization weight of the Eligible Stocks;

- the aggregate weight of the Eligible Stocks in the Output Portfolio within each Stock Sector must be between -0.5% and +0.5% of the aggregate market-capitalization weight of the Eligible Stocks;

- the aggregate weight of the Eligible Stocks with positive weights in the Output Portfolio incorporated in each country must not be more than the aggregate market-capitalization weight of the Eligible Stocks incorporated in that country by more than 0.1%;

- the aggregate weight of the Eligible Stocks with positive weights in the Output Portfolio within each Stock Sector must not be more than the aggregate market-capitalization weight of the Eligible Stocks within that Stock Sector by more than 0.1%;

Weight and Liquidity Constraints

- the aggregate weight of the Output Portfolio must be zero or positive;

- the aggregate weight of the Eligible Stocks with positive weights in the Output Portfolio must not be greater than one;

- the weight of each Eligible Stock in the Output Portfolio must be in the range of -0.5% to 0.5%, subject to that range being narrowed based on determinations described in the Index Rules that take into account the borrow rate, trading liquidity and holding liquidity of that Eligible Stock;

Volatility Constraint

- the volatility of the Output Portfolio (as determined by reference to Risk Model outputs) must not be greater than 5%;

Cost Constraints

- the aggregate change in the weights of the Eligible Stocks in the Output Portfolio must be less than or equal to 50% per month; and

- the weighted-average borrow cost of the Eligible Stocks in the Output Portfolio with a negative weight must not exceed the limit determined as described in the Index Rules.

The Optimizer Software will indicate whether it has identified a solution. If the Optimizer Software has identified a solution and the aggregate weight of the Eligible Stocks with positive weights is greater than or equal to 85%, then the Output Portfolio will be the Selected Output Portfolio. If no solution is identified or if that aggregate weight is less than 85%, then the optimization is rerun with Relaxed Values under the Optimization Relaxation Procedure described in the Index Rules.

The Optimization Relaxation Procedure is a process that consists of iterating through the sequential Relaxation Steps set out in the Index Rules until an Output Portfolio satisfying the specified conditions has been identified. Each Relaxation Step increases the range of acceptable values required to satisfy one or more of the constraints for the purposes of that Relaxation Step. An Output Portfolio that satisfies the specified conditions under a Relaxation Step will be the Selected Output Portfolio. If no Output Portfolio can be identified under the Relaxation Steps, then a Relaxation Event will have occurred.

If a Relaxation Event or a Temporary Optimizer Software Failure occurs, each as described further in the Index Rules, then (i) the Constituent Stocks composing the relevant Component Index will not be rebalanced and reweighted on the Effective Rebalancing Date immediately following the relevant Rebalance Selection Date and (ii) the Constituent Stocks of that Component Index will be the same as immediately prior to that Effective Rebalancing Date, subject to any adjustment to a Constituent Stock pursuant to the Index Rules.

Determine the Filtered Output Portfolio: In respect of each Rebalance Selection Date for a Component Index, if no Relaxation Event or Temporary Optimizer Software Failure has occurred, the Constituent Stock Determination Agent will remove from the Selected Output Portfolio all Eligible Stocks with a weight whose absolute value is less than 0.0001%, and the remaining Eligible Stocks within the Selected Output Portfolio will compose the "Filtered Output Portfolio."

Determine the Preliminary Long and Short Baskets: Subject to the occurrence of a Relaxation Event or a Temporary Optimizer Software Failure, the set of stocks within the Filtered Output Portfolio that have positive weights are the "**Preliminary Long Basket Constituent Stocks**" and their associated weights are the "**Preliminary Long Basket Constituent Weights**"; the set of stocks within the Filtered Output Portfolio that have negative weights are the "**Preliminary Short Basket Constituent Stocks**" and their associated weights are the "**Preliminary Short Basket Constituent Weights**."

Provide the Preliminary Constituent Stocks to the Index Calculation Agent: Subject to the occurrence of a Relaxation Event or a Temporary Optimizer Software Failure, the Constituent Stock Determination Agent will provide the Index Calculation Agent with the list of the Preliminary Long Basket Constituent Stocks, the Preliminary Long Basket Constituent Weights, the list of the Preliminary Short Basket Constituent Stocks and the Preliminary Short Basket Constituent Weights.

Weight the Constituent Stocks of the Long and Short Baskets: The Index Calculation Agent uses the information provided by the Constituent Stock Determination Agent to determine the Weights in respect of the Long Basket Constituent Stocks and the Short Basket Constituent Stocks in accordance with the following process. First, in respect of each Effective Rebalancing Date for a Component Index, the Index Calculation Agent will determine whether, from and including the relevant Rebalance Selection

Date for that Component Index to and including such Effective Rebalancing Date for that Component Index (the "**Determination Period**"), a Preliminary Long Basket Constituent Stock or a Preliminary Short Basket Constituent Stock has been delisted from the relevant Exchange (each a "**Delisted Stock**"). The Index Calculation Agent will remove from the list of the Preliminary Long Basket Constituent Stocks and the list of the Preliminary Short Basket Constituent Stocks each of the Delisted Stocks and will adjust the list of the Preliminary Long Basket Constituent Stocks and the list of the Preliminary Short Basket Constituent Stocks (as the case may be) to account for that removal.

The remaining stocks within the adjusted Preliminary Long Basket and the adjusted Preliminary Short Basket (as applicable) that are not affected by the occurrence of a delisting event during the Determination Period are the "**Long Basket Constituent Stocks**" and the "**Short Basket Constituent Stocks**," respectively (together, the "**Constituent Stocks**"). The Preliminary Long Basket Constituent Weights in respect of the Long Basket Constituent Stocks are the "**Long Basket Constituent Weights**," and the Preliminary Short Basket Constituent Weights in respect of the Short Basket Constituent Stocks are the "**Short Basket Constituent Weights**" (together, the "**Constituent Weights**"). The Constituent Stocks may have different performances during the period from one Effective Rebalancing Date for a Component Index to the next; therefore, the percentage contribution of each Constituent Stock to the relevant Basket Level may differ from the Constituent Weight of such Constituent Stock.

How is the Index Level of each Component Index calculated?

Subject to the Adjustment Provisions, the Index Calculation Agent calculates and publishes the Index Level of each Component Index in respect of each Calculation Day. The calculation of the Index Level of each Component Index for each Calculation Day takes into account:

- the Index Level of that Component Index in respect of the immediately preceding Calculation Day;
- the weighted U.S. dollar performance of the Long Basket for that Component Index since the immediately preceding Calculation Day, subject to adjustment to reflect the payment of any dividends;
- the weighted U.S. dollar performance of the Short Basket for that Component Index since the immediately preceding Calculation Day, subject to adjustment to reflect the payment of any dividends;
- a notional financing adjustment equal to the performance of the Cash Index since the immediately preceding Calculation Day, applied to the net long or net short exposure of that Component Index, which will be negative if the Index is net long, and positive if the Index is net short;
- if the Calculation Day is an Effective Rebalancing Date for that Component Index, the synthetic costs associated with reconstituting the Constituent Stocks on such day, which is calculated by applying a Rebalance Adjustment Factor of 0.04% to the change in weights of the Constituent Stocks;
- an Index Adjustment Factor of 0.25% per annum;
- an Assumed Financing Adjustment Factor of 0.35% per annum, applied to the exposure of the Index to the Long Basket for that Component Index; and
- an Assumed Borrow Adjustment Factor of 0.25%, applied to the exposure of the Index to the Short Basket for that Component Index.

How do fees impact the Index Levels of the Index and the Component Indices?

The Index Level of the Index is subject to a Rebalancing Adjustment Cost Factor that is applied in a manner that decreases the Index Level. The Rebalancing Adjustment Cost Factor is a metric that takes into account the synthetic cost, if any, associated with rebalancing the Component Indices. If a Calculation Day is not a Rebalancing Date, the Rebalancing Adjustment Cost Factor will be zero.

The Index Level of each Component Index is subject to a notional financing adjustment, an Index Adjustment Factor, a Rebalance Adjustment Factor, an Assumed Borrow Adjustment Factor and an Assumed Financing Adjustment Factor that are each applied in a manner that decreases the Index Level of that Component Index (*provided* that the notional financing adjustment may increase the Index Level of that Component Index if that Component Index is net short):

- The notional financing adjustment is a metric that adjusts each Component Index so that each Component Index will be calculated on an excess-return basis.

- The Rebalance Adjustment Factor is a metric that takes into account the synthetic cost, if any, associated with rebalancing the synthetic portfolio from one group of Constituent Stocks to another, or, in the case where a Constituent Stock is already included in the relevant Component Index, the cost of adjusting that Constituent Stock's weight. If a Calculation Day is not an Effective Rebalancing Date for the relevant Component Index, the Rebalance Adjustment Factor will be zero. Because the Rebalance Adjustment Factor is based in part on the turnover of the Constituent Stocks as of each Effective Rebalancing Date for the relevant Component Index, if that Component Index experiences high monthly turnover, there will a higher decrease to the Index Level due to the effect of the Rebalance Adjustment Factor than if a lower monthly turnover occurs.

- The Index Adjustment Factor is a per annum fee applied to each Component Index on each Calculation Day.

- The Assumed Financing Adjustment Factor is a metric that takes into account the synthetic cost of taking a long position with respect to the Long Basket Constituent Stocks for the relevant Component Index and is applied on each Calculation Day.

- The Assumed Borrow Adjustment Factor is a metric that takes into account the synthetic cost of taking a short position with respect to the Short Basket Constituent Stocks for the relevant Component Index each Calculation Day.

What is the Cash Index, and what is it used for?

The Cash Index is the J.P. Morgan Cash Index USD 3 Month (Bloomberg Ticker: JPCAUS3M Index). The net long or net short exposure of each Component Index is adjusted by the performance of the Cash Index so that each Component Index will be calculated on an excess-return basis.

What is the Optimizer Software, and what is it used for?

Each Component Index methodology uses the Optimizer Software to select the Component Index constituents and their weights from a global stock universe using an optimization procedure that seeks to maximize the scores for the Value, Quality, Momentum, Size and Volatility Factors, subject to the various constraints set out in the Index Rules.

The Optimizer Software is the MOSEK computer program version 7.1.0.36, as available from the MOSEK ApS company, which is third-party software that enables the solution of certain mathematical problems known as optimization problems. For purposes of each Component Index, the Optimizer Software is used with its default parameters except for parameters relating to software licenses.

An optimization problem is characterized by (i) one variable or a set of variables to optimize (the "**Optimization Variables**"), (ii) an objective function, which is generally a function of the Optimization Variables and other input data, which the optimizer aims to maximize (or to minimize, as applicable) and (iii) optimization constraints, which are formulaic constraints that a particular value of the Optimization Variables must satisfy in order to be eligible to be considered as a solution. For purposes of each

Component Index, (i) the weights of the Eligible Stocks in the Output Portfolio are the Optimization Variables, (ii) the objective function, which the Optimization Software aims to maximize, is the aggregate weighted average Factor Score determined in accordance with the formula set forth in the Index Rules and (iii) the constraints are as described above and in the Index Rules.

Solving an optimization problem is the task of finding, among the set of all possible values of the Optimization Variables that satisfy all the optimization constraints, the values of the Optimization Variables that maximize (or minimize, as applicable) the objective function. That value, when it exists, is called the solution of the optimization problem. A solution may not exist when, for example, two or more constraints are conflicting (e.g., one constraint stipulates that an Optimization Variable must be greater than three while another constraint stipulates that the same Optimization Variable must be less than two). A solution is generally expected to exist in the case of the optimization problems presented by the Component Indices, but, in certain cases, a solution may not exist.

If a solution does not exist with respect to a Rebalance Selection Date, then (i) the Constituent Stocks composing the relevant Component Index will not be rebalanced and reweighted on the Effective Rebalancing Date immediately following the relevant Rebalance Selection Date and (ii) the Constituent Stocks of that Component Index will be the same as immediately prior to that Effective Rebalancing Date, subject to any adjustment to a Constituent Stock pursuant to the Index Rules.

The Optimization Software uses a numerical method to attempt to find a solution to the optimization problem presented by the Component Indices. It follows the following steps, which reflect embedded assumptions: (i) preprocessing to reduce the size of the problem, (ii) choosing the form of the solution to solve, (iii) scaling the problem for better numerical stability and (iv) executing an algorithm that relies on advanced mathematical concepts and techniques. See Annex 2 for additional information about the algorithm executed by the Optimization Software.

If no optimal solution is found using the default value of the optimization constraints or if the aggregate weight of the Eligible Stocks with positive weights is below 85%, the optimization is rerun with Relaxed Values under the Optimization Relaxation Procedure described in the Index Rules.

Because the Optimization Software uses a numerical algorithm, it may not find the exact optimal solution to an optimization problem for which a solution exists, but it is expected to find a solution whose objective value is very close to the optimal solution, subject to the “optimality tolerance” parameter of the optimizer. As a result, while the weights of the Eligible Stocks in the Output Portfolio identified by the Optimization Software are expected to produce an aggregate weighted average Factor Score that is close to that of the exact optimal solution, those weights could be substantially different from the weights of the Eligible Stocks in the exact optimal solution. It is also possible that the use of a different optimization solver would result in a different, perhaps significantly different, solution.

What is the Risk Model, and what is it used for?

Each Component Index methodology uses the Risk Model to determine (a) the weighted-average beta of the Eligible Stocks in the Output Portfolio to a market-capitalization weighted portfolio of the Eligible Stocks and (b) the volatility of the Output Portfolio.

The Risk Model is the GEM3S risk model, as available from MSCI Barra, the Risk Model Data Source. All information contained in this document regarding the Risk Model has been derived from publicly available information, without independent verification. This information reflects the policies of, and is subject to change by, MSCI Barra. The Risk Model is maintained by MSCI Barra. MSCI Barra has no obligation to continue to maintain the Risk Model.

The variance of a portfolio can be used to calculate its volatility, which provides an assessment of risk. To calculate the variance of a portfolio, the covariances of all the constituent components must be calculated. Without the framework of a multiple-factor model, estimating the covariance of each asset with every other asset in a portfolio is computationally burdensome and subject to significant estimation errors. For example, in the case of a universe of 1,600 assets, there are 1,280,800 covariances and variances to calculate. A multiple-factor model simplifies these calculations. This simplification is achieved by replacing individual company profiles with categories defined by common characteristics (factors). Because the specific risk is assumed to be uncorrelated among the assets, only the factor variances and covariances need to be calculated during model estimation. Expressed in factor terms, the number of estimations is significantly reduced. In the Risk Model, for example, there are 122 factors (excluding currencies and the "World factor")—11 "style" factors, 77 local country factors and 34 industry factors (based on the Global Industry Classification Standard or "GICS")—which capture the risk characteristics of equities. As a result, the number of covariance and variance calculations is reduced significantly. Moreover, because there are fewer parameters to determine, they can be estimated with greater precision.

The Risk Model references the following "style" factors: momentum, residual volatility, beta, book-to-price, earnings yield, dividend yield, size (logarithm of market capitalization), size non-linearity (cube of logarithm of market capitalization), growth, liquidity and financial leverage.

In addition, the Risk Model incorporates an optimization bias adjustment to reduce forecasting bias within the factor covariance matrix by scaling up where risk is determined to be under-forecast and scaling down where risk is determined to be over-forecast. Furthermore, the Risk Model incorporates a volatility regime adjustment to calibrate factor volatility to current levels. Volatility regime adjustment aims to reduce the under-prediction of risk when entering a regime of increased volatility and the over-prediction of risk when exiting a period of elevated volatility, which may result in faster responses to market trends.

What is the Base Reference Index, and what is it used for?

The Base Reference Index is the MSCI Daily Total Return Gross World USD Index (Bloomberg Ticker: GDDUWI Index). The Reference Index is used as the starting universe from which the Eligible Stocks are determined on each Rebalance Selection Date. The MSCI Daily Total Return Gross World USD Index captures large- and mid-cap representation across 23 developed countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States. The MSCI Daily Total Return Gross World USD Index covers approximately 85% of the free float-adjusted market capitalization in each country.

What is the Identified Reference Index, and what is it used for?

The Identified Reference Index is the Solactive FinTech 20 Index (Bloomberg Ticker: SOLFTECU Index). The Identified Reference Index will be used in the determination of adjustments due to corporate actions and corporate events, as described below. The Solactive FinTech 20 Index tracks the 20 largest companies that have a business focus on the technology innovation in financial services.

How do Corporate Actions and Corporate Events impact the Component Indices?

If any adjustments or determinations are made with respect to the Identified Reference Index by the calculation agent of the Identified Reference Index in respect of (i) Corporate Actions that impact a Constituent Stock, (ii) Corporate Events that impact a Constituent Company and (iii) other circumstances or events (collectively, "**Constituent Stock Events**," as described in the Index Rules), then the Index Calculation Agent of the relevant Component Index may make a consistent adjustment to that Component Index (which may include the lack of an adjustment or change), taking into account the similarities and differences between the methodology and composition of the Identified Reference Index and the methodology and composition of that Component Index. The Index Calculation Agent will be solely responsible for the determination and calculation of any such consistent adjustment or the determination that no adjustment should be made, and any related determinations and calculations.

How can Disrupted Days impact the Index and the Component Indices?

The publication and calculation of the Index Level of the Index may be affected by the occurrence of certain disruption events affecting the Index Components, and publication and calculation of the Index

Level of each Component Index may be affected by the occurrence of certain the market disruption events, exchange events or non-publication events with respect to the Long Basket Constituent Stocks, the Short Basket Constituent Stocks and the Cash Index. Such events are set out more fully in the Index Rules and a day on which any such event occurs with respect to the Index or a Component Index is referred to as a Disrupted Day. The Disruption Determination Agent is responsible for determining whether a Disrupted Day has occurred and informing the Index Calculation Agent of such determination. As further described in the Index Rules, the occurrence of a Disrupted Day may affect the timing of, or the methodology used in, the calculation the Index Level of the Index or a Component Index, as applicable.

How can Data Source Disruptions impact a Component Index?

If a Data Source Disruption Event, as defined in the Index Rules, occurs on a Rebalance Selection Date for a Component Index (a "**Data Source Disrupted Date**"), then: (i) the Constituent Stocks composing that Component Index will not be rebalanced and reweighted on the Scheduled Rebalancing Date for that Component Index immediately following that Data Source Disrupted Date and (ii) the Constituent Stocks of that Component Index will remain the same as immediately prior to the Data Source Disrupted Date (although the percentage contribution of each Constituent Stock to the Index Level may differ from the weight applicable on the previous Effective Rebalancing Date).

What happens if a Temporary Optimizer Software Failure occurs on two consecutive Rebalance Selection Dates for a Component Index?

If the Constituent Stock Determination Agent determines that on any two consecutive Rebalance Selection Dates for a Component Index a Temporary Optimizer Software Failure has occurred, then the Index Sponsor may, but is not obliged to, replace the Optimizer Software for that Component Index with a substitute optimizer that has the same or substantially similar characteristics as the current Optimizer Software that is available on commercially reasonable terms. If the Index Sponsor determines that there is no such substitute optimizer available on commercially reasonable terms, then the Index Sponsor may replace the Optimizer Software for that Component Index with a substitute optimizer that has similar characteristics as the current Optimizer Software or may terminate that Component Index.

How can Extraordinary Events impact a Component Index?

The Index Rules set forth a number of events, referred to as Extraordinary Events, which can affect a Component Index. Extraordinary Events include: (i) the cancellation of any relevant license or other right used in any of the determinations or calculations set forth in the Index Rules, (ii) a change in law, (iii) the failure of a Stock Issuer to pay the full amount of any Declared Dividend, (iv) certain events affecting any Associated Currency or other currency used in connection with the Index, (v) certain events affecting the Cash Index, (vi) certain events affecting the Base Reference Index, (vii) certain events affecting the Identified Reference Index, (viii) certain corporate actions and events and (ix) certain failure of the Optimizer Software, each as described in the Index Rules.

Upon the occurrence of an Extraordinary Event with respect to a Component Index, the Index Sponsor, or in the case of certain corporate actions and events affecting a Component Index, the Index Calculation Agent, may make the adjustments described in the Index Rules, or other adjustments as may be determined to be appropriate. If no such adjustment is commercially reasonable, the Index Sponsor may cancel that Component Index. Notwithstanding the foregoing, none of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent and the Disruption Determination Agent is under any obligation to continue the calculation, publication and dissemination of the Index or any Component Index.

What documents comprise the Index Rules?

The Index Rules, and not the description in this document, govern the calculation and constitution of the Index and each Component Index and other decisions and actions relating to their maintenance.

The Index and each Component Index is a notional rules-based proprietary index and is sponsored by J.P. Morgan Securities plc. The Index Rules are attached hereto as Annex 3.

The Index Rules are the intellectual property of J.P. Morgan Securities plc, and J.P. Morgan Securities plc retains all rights with respect to the ownership of the Index and each Component Index.

Who is the Index Sponsor, Constituent Stock Determination Agent and Disruption Determination Agent?

J.P. Morgan Securities plc is the sponsor of the Index and each Component Index (the "**Index Sponsor**," which expression includes any successor in such capacity), as well as the current Constituent Stock Determination Agent for each Component Index and the current Disruption Determination Agent for the Index and each Component Index.

The Index Sponsor may delegate or transfer any of its obligations or responsibilities in connection with the Index or either Component Index to one or more entities which it determines are appropriate. The Index Sponsor is responsible for, among other things, the creation and design of the Index and each Component Index, the documentation of the Index Rules, and the appointment of the calculation agent of the Index and each Component Index (the "**Index Calculation Agent**"), which may be the Index Sponsor, an unrelated third party or an affiliate or subsidiary of the Index Sponsor.

The Constituent Stock Determination Agent is responsible for determining the Eligible Stocks, the Preliminary Long Basket Constituent Stocks, the Preliminary Long Basket Constituent Weights, the Preliminary Short Basket Constituent Stocks and the Preliminary Short Basket Constituent Weights for each Component Index in accordance with the Index Rules.

The Disruption Determination Agent is responsible for determining whether a market disruption event has occurred and for making related determinations pursuant to the provisions set forth in the Index Rules, and informing the Index Calculation Agent of such determination.

Who is the Index Calculation Agent?

Solactive AG currently serves as the Index Calculation Agent of the Index.

What currency is the Index and the Component Indices calculated in?

The Index and each Component Index are denominated in U.S. dollars.

May the Index Rules be amended?

Yes. The Index Sponsor may amend the Index Rules as it deems appropriate. Following any amendment, the Index Sponsor will make available (as soon as practicable) the amended version of the Index Rules and will include the effective date of such amendment in the new version of the Index Rules. However, the Index Sponsor is under no obligation to inform any person about any amendments to the Index or either Component Index (except as required by law or regulation).

Why are the Index and the Component Indices described as "notional" indices?

The Index and each Component Index are described as a "notional" index because there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Index and each Component Index merely reference certain assets, the performances of which are used as a reference point for calculating the level of the Index or that Component Index, respectively.

When were the Index and the Component Indices launched?

The Index and each Component Index was launched on September 7, 2017.

SECTION 2: RISK FACTORS FOR THE J.P. MORGAN EQUITY RISK PREMIUM – GLOBAL BALANCED MULTI-FACTOR (LONG / SHORT) USD INDEX (SERIES A)

The following list of risk factors does not purport to be a complete enumeration or explanation of all the risks associated with the Index. The following risk factors supplement any additional risk factors which may be contained in the Index Rules, the General Disclosure Statement, the Disclosure Annex for Equity Derivatives and should be read and considered in conjunction with such risk factors and any other risk factors which may be provided to you. In addition, any description of the Index and the Component Indices contained in these risk factors is qualified entirely by the full text of the Index Rules. The Index Rules, and not any description of the Index in these risk factors, govern the calculation and constitution of the Index and each Component Index and other decisions and actions relating to its maintenance.

Proprietary and Rules-Based Indices

The Index and each Component Index are notional rules-based indices that operate on the basis of predefined rules. Accordingly, potential investors in transactions linked to the performance of the Index should determine whether the rules-based proprietary index (as described in the Index Rules) is appropriate in light of their individual circumstances and investment objectives.

No assurance can be given that the synthetic investment strategy on which the Index is based will be successful or that the Index will outperform any alternative strategy that might be employed in respect of the Component Indices referenced in the Index or the Constituents Stocks referenced in each Component Index.

Notional Exposure

Each Component Index is constructed on "notional" Constituent Stocks because there is no actual portfolio of Constituent Stocks or other assets to which any person is entitled or in which any person has any ownership interest. Each Component Index merely identifies certain Constituent Stocks, the performance of which is used as a reference point for the purposes of calculating the Index Level of that Component Index, which is in turn used to calculate the Index Level of the Index. Consequently, investors in transactions which are linked to the performance of the Index will not have any claim against any of the issuers of the Constituent Stocks included in the Component Indices.

Lack of Operating History

The Index and the Component Indices have been recently established and therefore there is limited history to evaluate their likely performances. Any back-testing or similar analysis performed by any person in respect of the Index or a Component Index must be considered illustrative only and may be based on estimates or assumptions not used by the Index Calculation Agent when determining the Index Level of the Index or a Component Index, as applicable. For example, with respect to each Component Index, the constraint limiting the aggregate change in the weights of the Eligible Stocks to less than 50% per month was not applied in respect of any Rebalance Selection Date that occurred on or before the Index Base Date. Had a turnover constraint been applied in the calculation of Index Levels prior to the Index Base Date, the back-tested Index Levels of each Component Index may have been meaningfully different from any actual back-tested Index Levels.

Past performance should not be considered indicative of future performance.

The reported level of the Index and each Component Index will be impacted by fees

The Index Level of the Index is subject to a Rebalancing Adjustment Cost Factor that is applied in a manner that decreases the Index Level.

In addition, the Index Level of each Component Index is subject to a notional financing adjustment, an Index Adjustment Factor, a Rebalance Adjustment Factor, an Assumed Borrow Adjustment Factor and an Assuming Financing Adjustment Factor that will be applied in a manner that decreases the Index Level of that Component Index (*provided* that the notional financing adjustment may increase the Index Level of that Component Index if that Component Index is net short).

Index Level

The prices of the Constituent Stocks underlying each Component Index can be volatile and move dramatically over short periods of time. There can be no assurance that the relevant synthetic exposures will not be subject to substantial negative returns. Positive returns on each Component Index may therefore be reduced or eliminated entirely due to movements in any of these market parameters.

In addition, market disruptions that impact the Constituent Stocks or the removal of Constituent Stocks from a Component Index between Effective Rebalancing Dates for that Component Index due to corporate actions and events may impact the Index Level of that Component Index and, therefore, the Index Level of the Index.

Market Risks and Long-Short Exposure

The performance of the Index is dependent on the performance of the Constituent Stocks referenced in each Component Index and the notional rules-based proprietary trading strategy. As a consequence, investors in transactions linked to the Index should appreciate that their investment is exposed to the performance of the Constituent Stocks included in each Component Index and the rules-based strategy. In addition, each Component Index employs a "long-short" strategy and, accordingly, the performance of each Component Index is likely to diverge from the performance of long-only market benchmarks.

Your return on a transaction may not reflect the return of a direct investment in the Constituent Stocks underlying the Component Indices referenced by the Index.

Factors

The Constituent Stocks are selected on each Rebalance Selection Date for each Component Index based on the Factors identified above and described in the Index Rules, which are calculated as of each Rebalance Selection Date for that Component Index. The data used to calculate each Factor may fluctuate after the Rebalancing Selection Date for a Component Index. Therefore, the Long Basket Constituent Stocks that were selected for inclusion in the Long Basket based on Factor scores calculated as of the relevant Rebalance Selection Date for a Component Index may not continue to display the characteristics that resulted in its selection for the Long Basket, and the Short Basket Constituent Stocks that were selected for inclusion in the Short Basket based on Factor scores calculated as of the relevant Rebalance Selection Date or that Component Index may not continue to display the characteristics that resulted in its selection for the Short Basket, which may negatively affect the level of that Component Index.

The Optimizer Software is subject to inherent limitations.

In certain cases, a solution to the optimization problem presented by a Component Index may not exist or may not be identifiable by the Optimization Software. If a solution does not exist or is not identified by the Optimization Software, then (i) the constituents of that Component Index will not be rebalanced and reweighted on the following Effective Rebalancing Date for that Component Index and (ii) the constituents of that Component Index will be the same as immediately prior to that Effective Rebalancing Date for that Component Index, subject to any adjustment to a constituent pursuant to the Index Rules.

Because the Optimization Software uses a numerical algorithm, even if it finds a solution, it may not find the exact optimal solution, but it is expected to find a solution whose objective value is very close to the optimal solution, subject to the "optimality tolerance" parameter of the optimizer. As a result, while the weights of the constituents of a Component Index in the Output Portfolio identified by the Optimization Software are expected to produce an aggregate weighted average style factor score that is close to that of the exact optimal solution, those weights could be substantially different from the weights of the constituents of that Component Index in the exact optimal solution. It is also possible that the use of a different optimization solver would result in a different, perhaps significantly different, solution.

No assurance can be given that the investment strategy on which each Component Index is based, including its use of the Optimization Software, will be successful or that either Component Index will outperform any alternative strategy that might be employed in respect of the Index constituents.

The Risk Model may not provide an accurate assessment of risk.

The Risk Model uses various assumptions, simplifications and estimates to determine the covariances of the constituent components referenced by each Component Index. For example, the Risk Model replaces individual company profiles with categories defined by the common characteristics (factors) described above and assumes that the specific risk among the constituent components is uncorrelated. Consequently, the covariances of the constituent components determined by the Risk Model may differ, perhaps significantly, from the actual covariances of those constituent components.

In addition, the Risk Model's optimization bias adjustment and volatility regime adjustment may fail to operate as intended and may cause the covariances of the constituent components determined by the Risk Model to differ even more significantly from the actual covariances of those constituent components.

No assurance can be given that the Risk Model will provide an accurate assessment of risk or that the Risk Model will assess risk more accurately than any alternative risk assessment strategy.

Volatility Constraint

The volatility of the Output Portfolio selected by each Component Index must generally not be greater than 5%, *provided* that such volatility might be as high as 7% if the Optimization Relaxation Procedure is applied. This volatility constraint may cause the aggregate weight of a Component Index to be less than such aggregate weight would be if no volatility constraint were applied or if the volatility constraint applied were higher. Accordingly, if the level of the Component Index increases, such level might increase by a lesser degree than if no volatility constraint were applied or if the volatility constraint applied were higher.

Corporate Actions and Corporate Events

Following the occurrence of certain Constituent Stock Events as described in the Index Rules, the Index Calculation Agent of the relevant Component Index may make adjustments to that Component Index or may determine to make no adjustment to that Component Index. These adjustments, or the lack of an adjustment, may adversely affect the performance of that Component Index. The Index Calculation Agent will be solely responsible for the determination and calculation of any such adjustment or the determination that no adjustment should be made, and any related determinations and calculations. Sponsors of other indices, including J.P. Morgan Securities plc or one of its affiliates, might make determinations and calculations for a Constituent Stock Event for those other indices that differ from those made by the Index Calculation Agent for the same Constituent Stock Event for a Component Index.

Extraordinary Events

Following the occurrence of certain Extraordinary Events as described in the Index Rules, changes, substitutions and/or modifications may be made to the Constituent Stocks and each Component Index (and its calculation or methodology) among other changes. These changes and modifications may adversely affect the performance of a Component Index.

Constituent Stock Determination Agent, Disruption Determination Agent and Index Calculation Agent Discretion

The Index Rules confer on the Constituent Stock Determination Agent, the Disruption Determination Agent and the Index Calculation Agent discretion in making certain determinations and calculations from time to time. The exercise of such discretion in the making of calculations and determinations may adversely affect the performance of the Index and each Component Index. Without limitation to the generality of the foregoing, the Constituent Stock Determination Agent has discretion in relation to the monthly composition of the Long Basket and the Short Basket of each Component Index, the Disruption Determination Agent has discretion to determine if market disruptions affect the Index and each Component Index and the Index Calculation Agent has discretion in relation to the calculation of the Index Level of the Index and each Component Index.

Although the Constituent Stock Determination Agent, the Disruption Determination Agent and the Index Calculation Agent will make all determinations and take all action in relation to the Index and each Component Index acting in good faith, it should be noted that such discretion could have an impact, positive or negative, on the Index Levels of the Index and the Component Indices. The Constituent Stock Determination Agent, the Disruption Determination Agent and the Index Calculation Agent are under no obligation to consider your interests in taking any actions. Furthermore, the inclusion of any Constituent Stock in an Component Index is not an investment recommendation by JPMorgan Chase & Co., JPMS plc, JPMS LLC, Solactive AG or any other entity appointed as the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent.

Continued publication and accuracy of data

The selection of the Constituent Stocks on each Rebalance Selection Date for a Component Index and the publication of the Index Levels of the Index and the Component Indices on each Calculation Day depend on the continued publication of the relevant data on the relevant databases, and the maintenance of the relevant licenses or any other right to use or refer to the relevant data. Any disturbance or discontinuation of the relevant data may adversely affect the ability of the Index Calculation Agent to continue with the calculation and publication of the Index Levels of the Index or either Component Index.

The Index Calculation Agent has no obligation to make any determination about or to conduct any inquiry into the accuracy of the data reported on the databases, and the Index Calculation Agent will rely upon the information published on the databases.

Global Stocks

Each Component Index is composed of stocks from a variety of countries. The prices of non-U.S. stocks may be more volatile than stock prices of large capitalization U.S. companies. Non-U.S. stocks companies may be less able to withstand adverse economic, market, trade and competitive conditions relative to larger U.S. companies.

Certain non-U.S. stocks are not denominated in USD and hence each Component Index, and therefore the Index, will have exposure to risks associated with fluctuating currency exchange rates.

Amendments of the Index Rules

The Index Sponsor may amend or supplement the Index Rules. The Index Sponsor is not obliged to consider the circumstances of any person or entity when amending the Index Rules and any such amendment may have adverse consequences for any person or entity that has exposure to the Index and each Component Index via an investment in any product linked to the Index.

Potential Conflicts of Interest

Potential conflicts of interest may exist in the structure and operation of the Index and each Component Index and the course of the normal business activities of the Index Calculation Agent and any of its affiliates or subsidiaries or their respective directors, officers, employees, representatives or agents (each a "**Relevant Person**"). Currently, J.P. Morgan Securities LLC acts as Constituent Stock Determination Agent, Disruption Determination Agent and Index Sponsor.

During the course of their normal business, the Index Calculation Agent and each Relevant Person may enter into or promote, offer or sell transactions or investments (structured or otherwise) linked to the Index or a Component Index. In addition, the Index Calculation Agent and any Relevant Person may have, or may have had, interests or positions, or may buy, sell or otherwise trade positions in or relating to the Index or a Component Indices, or may invest or engage in transactions with other persons, or on behalf of such persons relating to any of these items. Such activity may have an impact on the Index Level of the Index and each Component Index, and all persons reading this document should be aware that a conflict of interest could arise where anyone is acting in more than one capacity, and such conflict may have an impact, positive or negative, on the Index Level of the Index and each Component Index. Neither the Index Calculation Agent nor any Relevant Person has any duty to consider the circumstances of any person when participating in such transactions or to conduct themselves in a manner that is favorable to anyone with exposure to the Index or a Component Index.

J.P. Morgan is currently one of approximately 100 market participants that reports data regarding certain of its securities lending activities to the Borrow Data Provider, and data reported by other market participants to the Borrow Data Provider may involve securities lending transactions to which J.P. Morgan is a party. This data may be aggregated with the securities lending data of other market participants and may be used by the Borrow Data Provider to publish the rate of borrow that is used by the Constituent Stock Determination Agent to determine the Borrow Eligible Stocks. J.P. Morgan is not affiliated with the Borrow Data Provider and is not involved in the calculation or distribution of information by the Borrow Data Provider.

SECTION 3: DISCLAIMERS

Back Testing

Back-testing and other statistical analysis material that may be provided in connection with the explanations of the potential performance of the Index and the Component Indices use simulated analysis and hypothetical circumstances to estimate how each may have performed prior to its actual existence. The results obtained from such "back-testing" information should not be considered indicative of the actual results or performance of the Index or either Component Index. J.P. Morgan provides no assurance or guarantee that the Index or either Component Index will perform or would have performed in the past in a manner consistent with this document. Any simulated information has not been verified by an independent third party, and such information has inherent limitations. Alternative simulations, techniques, modelling or assumptions might produce significantly different results and prove to be more appropriate. Actual results will vary, perhaps materially, from any simulated returns.

MSCI

The MSCI Daily Total Return Gross World USD Index (the "**MSCI World Index**") is used by the Index Sponsor as the reference universe for selection of the companies included in each Component Index. MSCI does not in any way sponsor, support, promote or endorse the Index or either Component Index. MSCI was not and is not involved in any way in the creation, calculation, maintenance or review of the Index or either Component Index. The MSCI World Index is provided to the Index Sponsor on an "as is" basis. MSCI, each of its affiliates and each other person involved in or related to compiling, computing or creating the MSCI World Index (collectively, the "**MSCI Parties**") expressly disclaim all warranties (including, without limitation, any warranties of originality, accuracy, completeness, timeliness, non-infringement, merchantability and fitness for a particular purpose). Without limiting any of the foregoing, in no event shall any MSCI Party have any liability for any direct, indirect, special, incidental, punitive, consequential (including, without limitation, lost profits) or any other damages in connection with the MSCI World Index, the Index or either Component Index.

Barra

Barra, LLC ("**Barra**") data is used by J.P. Morgan in the selection and weighting process of companies included in each Component Index. Barra does not in any way sponsor, support, promote or endorse the Index or either Component Index. Barra was not and is not involved in any way in the creation, calculation, maintenance or review of the Index or either Component Index. The Barra data was provided on an "as is" basis. Barra each of its affiliates and each other person involved in or related to compiling, computing or creating the data (collectively, the "**Barra Parties**") expressly disclaim all warranties (including, without limitation, any warranties of originality, accuracy, completeness, timeliness, non-infringement, merchantability and fitness for a particular purpose). Without limiting any of the foregoing, in no event shall any of the Barra Parties have any liability for any direct, indirect, special, incidental, punitive, consequential (including, without limitation, lost profits) or any other damages in connection with the Barra data or the Index or either Component Index.

Solactive AG

The Index, each Component Index and any financial instrument referencing the Index or either Component Index are not sponsored, promoted, sold or supported in any other manner by Solactive AG, nor does Solactive AG offer any express or implicit guarantee or assurance either with regard to the results of using the Index, either Component Index, related trademarks or the Index Level of the Index or either Component Index at any time or in any other respect. The Index and each Component Index are calculated and published by Solactive AG. Solactive AG uses its best efforts to ensure that the Index and each Component Index are calculated correctly. Irrespective of its obligations towards the issuer of any financial instrument, Solactive AG has no obligation to point out errors in the Index or either Component Index to third parties including but not limited to investors and/or financial intermediaries of any financial instrument. Neither publication of the Index and each Component Index by Solactive AG nor the licensing of the Index, a Component Index or related trademarks for the purpose of use in connection with the financial instrument constitutes a recommendation by Solactive AG to invest capital in said financial instrument, nor does it in any way represent an assurance or opinion of Solactive AG with regard to any investment in this financial instrument.

Annex 1

The Value Factor

The Factor Score for the Value Factor for each Eligible Stock with respect to each Rebalance Selection Date for a Component Index is calculated by reference to the Base Factor Scores for the following Base Factors for that Eligible Stock:

- Forward Earnings Yield Factor: calculated based on (a) the most recent Mean Analyst Consensus Estimate of the unadjusted earnings per share (meaning, as reported, but not adjusted for corporate actions) for the first as yet unreported financial year for the relevant company whose estimate date is within the 134 calendar days immediately preceding and including that Rebalance Selection Date and (b) the most recent official closing price associated with a date that is within the period of 31 calendar days immediately preceding and including that Rebalance Selection Date, in each case, expressed in U.S. dollars;

- Forward Dividend Yield Factor: calculated based on (a) the most recent Mean Analyst Consensus Estimate of the unadjusted dividend per share (meaning, as reported, but not adjusted for corporate actions) for the first as yet unreported financial year for the relevant company whose estimate date is within the 134 calendar days immediately preceding and including that Rebalance Selection Date and (b) the most recent official closing price associated with a date that is within the period of 31 calendar days immediately preceding and including that Rebalance Selection Date, in each case, expressed in U.S. dollars;

- Free Cash Flow Yield Factor: calculated based on (a) the cash from operating activities for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, (b) the capital expenditure for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date and (c) the consolidated market capitalization of the relevant company, in each case, expressed in U.S. dollars; and

- Book to Price Factor: calculated based on (a) the tangible book value for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the consolidated market capitalization of the relevant company, in each case, expressed in U.S. dollars.

The Size Factor

The Factor Score for the Size Factor for each Eligible Stock with respect to each Rebalance Selection Date for a Component Index is equal to Base Factor Score for the Size Base Factor for that Eligible Stock, which is calculated based on the natural logarithm of the average consolidated market capitalization of the relevant company, expressed in U.S. dollars, over the Calculation Days that occur within the 29 calendar days immediately preceding but excluding that Rebalance Selection Date.

The Momentum Factor

The Factor Score for the Momentum Factor for each Eligible Stock with respect to each Rebalance Selection Date for a Component Index is equal to Base Factor Score for the Momentum Base Factor for that Eligible Stock, which is calculated based on the change in the average total return price of the relevant company from a four-week period occurring approximately one year prior to that Rebalance Selection Date to a three-day period occurring approximately one week prior to that Rebalance Selection Date.

The Low Volatility Factor

The Factor Score for the Low Volatility Factor for each Eligible Stock with respect to each Rebalance Selection Date for a Component Index is equal to Base Factor Score for the Low Volatility Base Factor for that Eligible Stock, which is the one-year realized volatility of the total return price of the relevant company calculated over the 365 calendar days immediately prior to and including that Rebalance Selection Date.

The Quality Factor

The Factor Score for the Quality Factor for each Eligible Stock with respect to each Rebalance Selection Date for a Component Index is calculated by reference to the Composite Factor Scores for the FScore Composite Factor and GScore Composite Factor for that Eligible Stock, as described below. An FScore Composite Factor is a measure of the strength of a company's financial position that is generally applied to "value" stocks, and a GScore Composite Factor is a measure of the strength of a company's financial position that is generally applied to "growth" stocks.

- The Composite Factor Score for the FScore Composite Factor for each Eligible Stock with respect to each Rebalance Selection Date for a Component Index is calculated by reference to the Base Factor Scores for the following Base Factors for that Eligible Stock:
  - o Return on Assets Factor: calculated based on (a) the net income before extraordinary items for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total assets for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;
  - o Operating Cash Flow to Assets Factor: calculated based on (a) the cash from operating activities for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total assets for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;
  - o Delta Return on Assets Factor: represents the year-over-year change in return on assets calculated based on (a) the net income before extraordinary items for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total assets for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;
  - o Accruals Factor: calculated based on (a) the net income before extraordinary items for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date; (b) the cash from operating activities for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date and (c) the total assets for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;
  - o Delta Leverage Factor: represents the year-over-year change in leverage calculated based on (a) the total long-term debt for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total assets for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;
  - o Delta Liquidity Factor: represents the year-over-year change in liquidity calculated based on (a) the total current assets for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total current liabilities for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;

- Equity Issuance Factor: represents the year-over-year change in shares outstanding calculated based on the unadjusted total common shares outstanding (meaning, as reported, but not adjusted for corporate actions) for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date;

- Delta Gross Margin Factor: represents the year-over-year change in gross margin calculated based on (a) the cost of revenue for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total revenue (or, in the case of a company in the "Banks" industry, the total interest income) for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars; and

- Delta Total Revenue Factor: represents the year-over-year change in total revenue calculated based on (a) the total revenue (or, in the case of a company in the "Banks" industry, the total interest income) for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total assets for the last two reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars.

- The Composite Factor Score for the GScore Composite Factor for each Eligible Stock with respect to each Rebalance Selection Date for a Component Index is calculated by reference to the Base Factor Scores for the following Base Factors for that Eligible Stock:

  - Return on Assets Factor: calculated based on (a) the net income before extraordinary items for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total assets for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;

  - Operating Cash Flow to Assets Factor: calculated based on (a) the cash from operating activities for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total assets for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;

  - Accruals Factor: calculated based on (a) the net income before extraordinary items for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date; (b) the cash from operating activities for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date and (c) the total assets for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;

  - Earning Variability Factor: represents the four-year earnings variability calculated based on (a) the net income before extraordinary items for the last four reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date and (b) the total assets for the last four reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date, in each case, expressed in U.S. dollars;

  - Revenue Growth Variability Factor: represents the four-year growth variability calculated based on the total revenue (or, in the case of a company in the "Banks" industry, the interest income) for the last four reported financial years for the relevant company on or immediately preceding that Rebalance Selection Date, expressed in U.S. dollars;

- <u>R&D Factor</u>: is the research and development for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, expressed in U.S. dollars;
- <u>Capital Expenditure Factor</u>: is the capital expenditure for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, expressed in U.S. dollars; and
- <u>Advertising Factor</u>: is the advertising expense for the last reported financial year for the relevant company on or immediately preceding that Rebalance Selection Date, expressed in U.S. dollars.

Annex 2

The Optimization Software is able to solve, among other things, certain categories of optimization problems known as “second-order cone program,” or SOCP, optimization problems. An SOCP optimization problem has a linear objective function (which means that its objective function is a linear function of the Optimization Variables) and each of its constraints can be either a linear constraint (which means that the constraint is expressed as the fact that a linear function of the Optimization Variables must be less than, equal to or greater than (as applicable) a particular threshold value) or a second-order cone constraint (which means that the constraint is expressed as the fact that a second-order cone function of the Optimization Variables must be less than, equal to or greater than (as applicable) a particular threshold value).

The Optimization Software executes an interior-point algorithm that relies on advanced mathematical concepts and techniques. Such an algorithm is known in the scientific literature as a “homogeneous and self-dual algorithm” and is described in the following scientific publication: “On implementing a primal-dual interior-point method for conic quadratic optimization” by Andersen, E. D., Roos, C. and Terlaky, T, published in the “Mathematical Programming” publication in February 2003. The information contained in such scientific publication is not incorporated by reference in, and should not be considered a part of, this Disclosure Annex.

Annex 3

J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series A)

Index Rules

J.P.Morgan

7 September 2017

Notices, Disclaimers and Conflicts

Each capitalised term used in this section but not otherwise defined has the meaning set forth in other parts of the Index Rules.

None of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent endorses or makes any representation or warranty, express or implied, in connection with any security, transaction, fund, structured deposit or other financial product or investment (each, a "**Product**") that references the Index including as to the advisability of purchasing or entering into a Product or the results to be obtained by any party using the Index in connection with a Product. Furthermore, none of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent has any obligation or liability in connection with the administration, marketing or trading of any Product and is not obliged to enter into or promote any Product.

The Index is the exclusive property of the Index Sponsor and no one may reproduce, distribute or disseminate this document or any information contained in this document (the Index Rules, such Index Rules being subject to provisions relating to amendments, corrections, market disruptions and extraordinary events) or any Index Level without the prior written consent of the Index Sponsor. This document is not intended for distribution to, or use by, any person in a jurisdiction in which such distribution or use is prohibited by law or regulation.

None of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent has any liability whatsoever in such capacity to any person who uses the Index or any Index Level in any circumstances.

None of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent is under any obligation to continue the calculation, publication or dissemination of the Index or the Index Level. The Index Sponsor may terminate the calculation and publication of the Index or the Index Level at any time without notice. The Index Sponsor may delegate or transfer to a third party some or all of the functions of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent in relation to the Index.

Except as provided in the following paragraph, none of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent gives any representation, warranty or undertaking, of any type (whether express or implied, statutory or otherwise) in relation to the Index, as to (i) the condition, satisfactory quality, performance or fitness for purpose of the Index, (ii) the results to be achieved by an investment in any Product, (iii) any data included in or omitted from the Index, (iv) the use of the Index in connection with a Product, (v) the level of the Index at any time on any day, (vi) the veracity, currency, completeness or accuracy of the information on which the Index is based (and without limitation, none of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent accepts any liability to any investor in a Product for any errors or omissions in that information or the results of any interruption to it and none of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent shall be under any obligation to advise any person of any such error, omission or interruption), or (vii) any other matter. To the extent any such representation, warranty or undertaking could be deemed to have been given by any of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent, it is excluded save to the extent that such exclusion is prohibited by law.

To the fullest extent permitted by law, none of the Index Sponsor, the Disruption Determination Agent and the Index Calculation Agent shall have any liability or responsibility to any person or entity (including, without limitation, any investor in any Product) for any loss, damages, costs, charges, expenses or other liabilities howsoever arising, including, without limitation, liability for any special, punitive, indirect or consequential damages (including loss of business, loss of profit, loss of time and loss of goodwill), even if notified of the possibility of the same, arising in connection with the design, compilation, calculation, maintenance or sponsoring of the Index or the Index Level or in connection with any Product.

Each of the Index Sponsor, the Disruption Determination Agent or the Index Calculation Agent may make certain determinations or calculations based on information obtained from publicly available sources without independently verifying such information, and none of them accepts any responsibility or liability in respect of such determinations, calculations or information.

Each of the Index Sponsor, the Disruption Determination Agent and the Index Calculation Agent, and each of their respective affiliates, directors, officers, employees and agents, does not assume any obligation or duty to any party in connection with the Index or the Index Level and does not assume any relationship of agency, trust or of a fiduciary nature with any party, and any information or communication that any such party may provide is not intended to be impartial investment advice.

Potential conflicts of interest may arise in connection with or exist between the structure and operation of the Index and the conduct of business activities of the Index Sponsor, the Disruption Determination Agent, the Index Calculation Agent or any [Affiliate] of the Index Sponsor or Index Calculation Agent (each, a "**Relevant Person**").

In connection with its businesses, the Index Sponsor, the Disruption Determination Agent, the Index Calculation Agent or any Relevant Person may enter into or promote, offer or sell transactions or investments (structured or otherwise) that reference the Index, the Index Level or any Constituent of the Index. In addition, the Index Sponsor, the Disruption Determination Agent, the Index Calculation Agent and any Relevant Person may have, or may have had, interests (including general commercial interests related to this Index or any Constituent) or positions, or may buy, sell or otherwise trade positions in or relating to the Index, the Index Level, or any Constituent of the Index, or may invest or engage in transactions with other persons, or on behalf of such persons relating to any of these. Such activity could give rise to a conflict of interest, and such conflict may have an impact, positive or negative, on the level of the Index. The Index Sponsor, the Disruption Determination Agent, the Index Calculation Agent and the Relevant Persons do not have (a) any duty to consider the circumstances of any person when participating in such transactions or (b) any duty to conduct themselves in a manner that is favourable to anyone with exposure to the Index.

The foregoing notices, disclaimers and conflicts disclosure is not intended to be exhaustive. Anyone reading the Index Rules should seek such advice as that person considers necessary from that person's professional, legal, tax or other advisers or otherwise, without reliance on the Index Sponsor, Disruption Determination Agent, Index Calculation Agent or any Relevant Person to satisfy that person that such person fully understands the Index Rules and the risks associated with the Index. Any person interested in obtaining exposure to the Index shall make and shall be deemed to make its own investment decision based upon its own judgment and its own examination of the relevant security or financial instrument.

The Index Rules have been developed with the possibility of one or more entities, with the written permission of the Index Sponsor, entering into or promoting, offering or selling Products (structured or otherwise) linked to the Index and hedging such Products in any manner that such entity sees fit.

Further information relating to (i) the internal governance framework and (ii) the identity and role of third parties that are non-affiliates of J.P. Morgan, in respect of this Index, is available on request to the Index Sponsor.

THIS DOCUMENT IS IMPORTANT. YOU SHOULD NOT INVEST IN A PRODUCT UNLESS YOU HAVE ENSURED THAT YOU FULLY UNDERSTAND THE NATURE OF SUCH AN INVESTMENT AND THE RISKS INVOLVED AND ARE SATISFIED THAT THE INVESTMENT IS SUITED TO YOUR CIRCUMSTANCES AND OBJECTIVES. IF YOU ARE IN ANY DOUBT ABOUT THIS YOU SHOULD

TAKE ADVICE FROM AN APPROPRIATELY QUALIFIED ADVISER. UNLESS YOU ARE A HIGHLY SOPHISTICATED INVESTOR WHO REGULARLY TRANSACTS IN PRODUCTS LINKED TO AN INDEX OF THIS TYPE, YOU ARE STRONGLY ADVISED TO TAKE SUCH ADVICE IN ANY EVENT.

1. This Document

This document comprises the rules and methodology (the **"Index Rules"**) for the J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series A) (the "**Index**"). The provisions and variables set forth in these Index Rules are applicable to the Index.

Further information relating to (i) the internal governance framework and (ii) the identity and role of third parties that are non-affiliates of J.P. Morgan, in respect of this Index, is available on request to the Index Sponsor.

2. Overview

The following introduction is intended merely to describe the strategy reflected in the Index in general terms. It is not intended to be exhaustive and the methodology set out in Section 5 and the remainder of these Index Rules shall govern in the event of any inconsistency.

The objective of the Index is to track, in accordance with the methodology described herein, the returns of two underlying constituents (together, the "**Constituents**", and each, a "**Constituent**") identified in Table A of Section 3, by providing a synthetic equally-weighted exposure to each of the two Constituents. The Index is rebalanced every twenty-five Index Scheduled Trading Days, in accordance with the methodology described in these Index Rules. The Index Calculation Agent seeks to achieve this objective by following the rules-based methodology set out in these Index Rules.

The Index Calculation Agent, subject to the occurrence of any Market Disruption Event or any Extraordinary Event, will calculate and publish the Index Level in respect of each Calculation Day (each, a "**Calculation Day (t)**"), subject to and in accordance with these Index Rules by implementing the following three steps:

Step 1: Determining of the Number of Units for each Constituent:

The Index Calculation Agent, in respect of each Rebalance Selection Date, will determine the Number of Units for each Constituent for the related Rebalancing Date, in accordance with the methodology set forth in Section 5.1 below. The determination of the Number of Units in respect of the Rebalance Selection Date, and the resulting rebalancing of the Constituents on the related Rebalancing Date, is intended to target an equal weighting of the two Constituents.

Step 2: Rebalancing the Index:

Subject to Section 9 and Section 11, the Index will be rebalanced every twenty-five Index Scheduled Trading Days, using the Number of Units determined by the Index Calculation Agent in the previous step.

Step 3: Calculating the Index Level:

The final step is for the Index Calculation Agent to calculate and publish the Index Level in respect of a Calculation Day (t), in accordance with the methodology set forth in Section 5.2(b). The Index Calculation Agent will also take into account an adjustment, when determining the Index Level, in accordance with the formulas set forth in Section 5.2(a), which involves the deduction of the Rebalancing Adjustment Cost Factor Amount, which represents synthetic costs associated with the rebalancing of the Constituents in respect of a Rebalancing Date. The Rebalancing Adjustment Cost Factors will act as a drag on the performance of the Index.

The Index Level will never be less than zero.

Terms not otherwise defined in these Index Rules have the meanings set out in Section 13 below.

3. The Index is a synthetic strategy. There is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Index Sponsor and its Affiliates have no obligation to buy, sell or hold the Constituents or any asset underlying the Constituents.

Index Specifics

The following table sets out the specific information relating to the Index:

Name of the Index	J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series A)
Index Bloomberg Ticker	JPQFMFWA <Index>
Index Currency	USD
Index Base Level	100.00
Index Base Date	7 September 2017
Index Live Date	7 September 2017
Index Sponsor	J.P. Morgan Securities plc or any successor or assignee. See Section 7.1.
Index Calculation Agent	Solactive AG or any successor or assignee. See Section 7.1.
Disruption Determination Agent	J.P. Morgan Securities plc or any successor or assignee. See Section 7.1.
Calculation Day	Means each day that is not a Saturday or a Sunday
Index Scheduled Trading Day	Means each Calculation Day on which each of the New York Stock Exchange, the Xetra Exchange, the London Stock Exchange and the Tokyo Stock Exchange is scheduled to be open for trading during its regular trading session, whether scheduled for a full-day regular trading session or a shortened-day regular trading session.
Rebalancing Date	Means (1) the Index Base Date and (2) each Index Scheduled Trading Day that falls twenty-five Index Scheduled Trading Days after a previous Rebalancing Date.
Rebalance Selection Date	Means, in respect of a Rebalancing Date that is not the Index Base Date, the Calculation Day that is three London Scheduled Business Days immediately preceding that Rebalancing Date

Table A Constituents composing the Index:

i / serial number	Constituent	Bloomberg Ticker	Constituent Sponsor	Target W
1	J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 1)	JPQFMFW1 Index	J.P. Morgan Securities plc	50%
2	J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 2)	JPQFMFW2 Index	J.P. Morgan Securities plc	50%

4. Mathematical functions

Certain mathematical symbols and functions are used in the Index Rules. Unless otherwise specified, the following symbols and functions will have the following meanings:

$\sum_{[]}^{[]}()$	means the sum of the numbers or the outputs of the formulas enclosed in parentheses from the day or number indicated below the summation symbol to the day or number indicated above the summation symbol.
$MAX()$	means the highest value among the numbers or outputs of the formulas enclosed in parentheses.
$ABS()$	means the absolute value of the number or the output of the formula enclosed in parentheses.

5. Index Methodology

5.1 Determination of the Number of Units for each Constituent in respect of Rebalancing Date (k)

The Index Calculation Agent shall determine the number of units (the "**Number of Units**") for each Constituent (i) for each Rebalancing Date (k) in respect of the related Rebalance Selection Date (the "**$NOU_{i,k}$**") in accordance with the following formula:

$$NOU_{\mathrm{i},k} = \frac{IL_{ND} \times W_i}{CL_{\mathrm{i},ND}}$$

Where:

Calculation Day (ND) means, the Rebalance Selection Date in respect of Rebalancing Date (k), which shall be determined as follows:

- if Rebalancing Date (k) is the Index Base Date, the relevant Rebalance Selection Date is deemed to be the Index Base Date.
- if Rebalancing Date (k) is not the Index Base Date, the relevant Rebalance Selection Date is the Rebalance Selection Date in respect of Rebalancing Date (k).

IL_{ND} means (i) if Calculation Day (ND) is not a Disrupted Day, the Index Level in respect of Calculation Day (ND), or (ii) if Calculation Day (ND) is a Disrupted Day, the Index Level in respect of the Calculation Day immediately preceding Calculation Day (ND) that is not a Disrupted Day.

W_i means the Target Weight of Constituent (i), as specified in Table A of Section 3.

$CL_{i,ND}$ means the Closing Level of Constituent (i) in respect of Calculation Day (ND)

5.2 Calculation of the Index Level in respect of Calculation Day (t)

(a) Calculation of the Rebalancing Adjustment Cost Factor Amount in respect of Calculation Day (t)

The Index Calculation Agent shall calculate the Rebalancing Adjustment Cost Factor Amount in respect of Calculation Day (t) (the "**Rebalancing Adjustment Cost Factor Amount**" or "**$RebalFactor_t$**") as follows:

In respect of each Calculation Day (t) that is not a Rebalancing Date:

$$RebalFactor_t = 0$$

In respect of each Calculation Day (t) that is a Rebalancing Date:

$$RebalFactor_t = \sum_{i=1}^{N} ABS\left(NOSH_{i,t} - NOSH_{i,k}\right) \times CL_{i,t} \times CRAF_i$$

Where:

N means the Number of Constituents.

$NOSH_{i,t}$ means the Number of Units of Constituent (i) in respect of Calculation Day (t).

Rebalancing Date (k) means the Rebalancing Date immediately preceding Calculation Day (t).

$NOSH_{i,k}$ means the Number of Units of Constituent (i) in respect of Rebalancing Date (k).

$CL_{i,t}$ means the Closing Level of Constituent (i) in respect of Calculation Day (t).

$CRAF_i$ means the Constituent Rebalancing Adjustment Cost Factor of Constituent (i), as specified in Table A of Section 3.

(b) Calculation of the Index Level in respect of Calculation Day (t)

The Index Calculation Agent shall calculate the index level in respect of Calculation Day (t) (the "**Index Level**" or "**$IndexLevel_t$**") as follows:

In respect of the Index Base Date:

$$IndexLevel_t = Index\ Base\ Level$$

In respect of each Calculation Day (t) after the Index Base Date:

$$IndexLevel_t = MAX\left(0, IndexLevel_{t-1} + \sum_{i=1}^{N}\left(NOU_{i,k} \times \left(CL_{i,t} - CL_{i,t-1}\right)\right) - RebalFactor_t\right)$$

Where:

$Index\ Base\ Level$	means the Index Base Level.
Calculation Day (t-1)	means the Calculation Day immediately preceding Calculation Day (t).
$IndexLevel_{t-1}$	means the Index Level in respect of Calculation Day (t-1).
N	means the Number of Constituents.
Rebalancing Date (k)	means the Rebalancing Date immediately preceding Calculation Day (t).
$NOU_{i,k}$	means the Number of Units of Constituent (i) in respect of Rebalancing Date (k).
$CL_{i,t}$	means the Closing Level of Constituent (i) in respect of Calculation Day (t).
$CL_{i,t-1}$	means the Closing Level of Constituent (i) in respect of Calculation Day (t-1).
$RebalFactor_t$	means the Rebalancing Adjustment Cost Factor Amount in respect of Calculation Day (t).

If on a Calculation Day (t) the Index Level is equal to zero (0) then for all subsequent Calculation Days the Index Level shall be equal to zero (0) and in such case the formula above shall not be used to calculate the Index Level for any subsequent Calculation Day.

6. Certain General Terms relating to the Index

6.1 Publication and availability of the Index Rules

The Index Rules are published by J.P. Morgan Securities plc of 25 Bank Street, Canary Wharf, London E14 5JP, in its capacity as the Index Sponsor.

Copies of the Index Rules may be obtained by holders or potential holders of investments linked to the Index free of charge on request from the Index Sponsor at its principal office in London against such proof of status as the Index Sponsor may in its reasonable discretion require.

6.2 Amendments

Economic, market, regulatory, legal, financial or other circumstances may arise that may necessitate or make desirable an amendment of the Index Rules.

Notwithstanding the foregoing, the Index Sponsor may amend the Index Rules as it deems appropriate. Such amendments may include (without limitation):

- correcting or curing any errors, omissions or contradictory provisions; or
- modifications to the methodology described in the Index Rules (including, without limitation, a change in the frequency of calculation of the Index Level) that are necessary or desirable in order for the calculation of the Index to continue notwithstanding any economic, market, regulatory, legal, financial or other circumstances as of the Index Base Date; or
- modifications of a formal, minor or technical nature; or

The Index Sponsor will notify the Index Calculation Agent (if a different entity than the Index Sponsor) before making an amendment pursuant to this Section 6.2. The Index Sponsor may, but is not obliged to, take into account the views of the Index Calculation Agent regarding any proposed amendment.

Following any amendment, the Index Sponsor will make available (as soon as practicable) the amended version of the Index Rules and will include the effective date of such amendment in the new version of the Index Rules. However, the Index Sponsor is under no obligation to inform any person about any amendments to the Index (except as required by law or regulation).

The Index Sponsor may, in its reasonable discretion, at any time and without notice, terminate the calculation and publication of the Index.

6.3 No advice or offer of securities

The Index Rules do not constitute investment, tax, legal, accounting, regulatory or other advice, including within the meaning of Article 53 of the Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 or investment advice within the meaning of Article 4(4) of the Markets in Financial Instruments Directive 2004/39/EC or otherwise.

The Index Rules neither constitute an offer to purchase or sell securities nor constitute specific advice in whatever form (investment, tax, legal, accounting or regulatory) in respect of any investment that may be linked to the Index.

6.4 The Index is synthetic

The Index references a "notional" or synthetic exposure to the Constituents and there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Index merely references certain synthetic exposures the performance of which are used as reference points for calculating Index Levels.

7. Index Sponsor, Index Calculation Agent and Disruption Determination Agent

7.1 Identity of Index Sponsor, Index Calculation Agent and Disruption Determination Agent

The sponsor of the Index specified in Section 3 (the "**Index Sponsor**", which term includes any successor in such capacity) may delegate or transfer any of its obligations or responsibilities in connection with the Index to one or more entities that it determines are appropriate.

The Index Sponsor is responsible for, among other things, the creation and design of the Index, the documentation of the Index Rules, and the appointment of (i) the calculation agent of the Index (the "**Index Calculation Agent**"), which may be the Index Sponsor, an unrelated third party or an affiliate or subsidiary of the Index Sponsor, and (ii) the determination agent of disruption events (the "**Disruption Determination Agent**"), which may be the Index Sponsor, an unrelated third party or an affiliate or subsidiary of the Index Sponsor. The Index Sponsor is also responsible for determining whether an Extraordinary Event has occurred and the related adjustments set forth in Section 11 of these Index Rules.

Each of the Index Sponsor, the Index Calculation Agent and the Disruption Determination Agent, each as of the Index Live Date, is specified in Section 3. In the case of an Index Calculation Agent or a Disruption Determination Agent that is not at such time an affiliate of the Index Sponsor, such entity must obtain written permission from the Index Sponsor prior to any delegation or transfer of such entity's responsibilities or obligations in connection with the Index.

The Index Sponsor may at any time or for any reason terminate the appointment of any of the Index Calculation Agent or the Disruption Determination Agent and appoint an alternative entity (or entities) as such entity's replacement.

The Index Calculation Agent is responsible for:

(i) determining the Number of Unity for each Constituent in respect of each Rebalancing Date, in accordance with Section 5.1 of the Index Rules; and

(ii) calculating the Index Level in respect of each Calculation Day, in accordance with Section 5.2 of the Index Rules.

The Disruption Determination Agent is responsible for determining whether a Market Disruption Event has occurred and for making related determinations pursuant to the provisions set forth in Sections 9.2, 9.3 and 9.4 of the Index Rules, and informing the Index Calculation Agent of any such determinations.

If the Index Sponsor determines that a relevant event has occurred, and if the Index Calculation Agent or the Disruption Determination Agent fails to make that determination, then the Index Sponsor may instruct one or more of the Index Calculation Agent and the Disruption Determination Agent to consider such event and whether there should be related consequences and adjustments in accordance with the Index Rules to take account of such event.

The Index Sponsor may delegate or transfer any of its obligations or responsibilities in connection with the Index to one or more entities as it determines appropriate.

The Index is a rules-based Index and none of the Index Sponsor, the Index Calculation Agent and the Disruption Determination Agent will exercise any discretion or independent judgment in the implementation of the methodology of the weighting and ongoing rebalancing of the Index apart from limited circumstances that are expressly contemplated in these Index Rules. .

7.2 Index Sponsor, Index Calculation Agent and Disruption Determination Agent standards and No Duties of Care and No Fiduciary Duties

Each of the Index Sponsor, the Index Calculation Agent and the Disruption Determination Agent shall act in good faith and in a commercially reasonable manner in respect of determinations, interpretations and calculations made by it pursuant to the Index Rules.

7.3 Index Sponsor and Index Calculation Agent determinations

An action (or failure to act) on the part of the Index Sponsor, the Index Calculation Agent or the Disruption Determination Agent in relation to the Index may have a detrimental effect on the Index Level or the volatility of the Index.

The Index Sponsor, the Index Calculation Agent or the Disruption Determination Agent may make certain determinations or calculations based on information obtained from publicly available sources without independently verifying such information and accepts no responsibility or liability for any consequent loss or damage.

All determinations, interpretations and calculations of the Index Sponsor, the Index Calculation Agent or the Disruption Determination Agent relating to the Index Rules shall be final, conclusive and binding, provided that if the Index Sponsor identifies an error or omission in any of the determinations, interpretations or calculations in respect of the Index made by the Index Sponsor, the Index Calculation Agent or the Disruption Determination Agent, the Index Sponsor may, if the Index Sponsor determines that such error, omission or correction (as the case may be) is material and that it is practicable, adjust or correct the relevant determination, interpretation or calculation to take into account such correction as soon as it is reasonably practicable to do so. No person shall be entitled to make any claim against the Index Sponsor, the Index Calculation Agent, the Disruption Determination Agent or any Relevant Person in respect of any such determinations, interpretations or calculations of the Index Sponsor, the Index Calculation Agent or the Disruption Determination Agent. None of the Index Sponsor, the Index Calculation Agent, the Disruption Determination Agent or any Relevant Person shall:

(a) be under any obligation to revise any determination, interpretation or calculation made or action taken for any reason in connection with the Index Rules or the Index; or

(b) have any responsibility to any person for any determination, interpretation or calculation made or anything done (or omitted to be done) (whether as a result of negligence or otherwise) in respect of the Index Rules or the Index or in respect of the publication of the Index Level (or failure to publish such level) or any use to which any person may put the Index or the Index Levels.

8. Index Levels

8.1 Index Base Level and Index Base Date

The Index Base Level and the Index Base Date are specified in Section 3 above.

8.2 Publication of Index Levels

In respect of a Calculation Day that is not a Disrupted Day for one or more Constituents, the Index Calculation Agent shall publish the Index Level, calculated in respect of such Calculation Day in accordance with the Index Rules, as soon as reasonably practicable on or after such Calculation Day. If a Calculation Day (t) or a Rebalancing Date is a Disrupted Day in respect of one or more Constituents, then the Index Calculation shall suspend the publication of the Index Level and shall resume the publication of the Index Level on the immediately following Calculation Day that is not a Disrupted Day in respect of any of the Constituents, subject to the provisions set out in Section 9 below.

The Index Level or any subsequent correction to the Index Level will be published on Bloomberg on the Index Bloomberg Ticker page (as specified in Section 3) or by means of such other information source as the Index Sponsor may determine in its reasonable discretion. Notwithstanding anything to the contrary, the Index Sponsor may cease calculation and publication of the Index Level at any time in its sole discretion and nothing in this document shall be construed as an agreement by the Index Sponsor to continue to calculate the Index Level if the Index Sponsor has elected to cease publication.

All Index Levels are rounded to 2 decimal places for purposes of publication only before being published. The Index Calculation Agent may vary its rounding convention in its sole discretion provided that it will not publish the Index Level with fewer than two decimal places. Notwithstanding anything to the contrary, the Index Calculation Agent may calculate and maintain the Index Level to greater accuracy for the determination of upcoming Index Levels or other calculations.

8.3 Index Live Date

The Index Calculation Agent has been calculating the Index Level and publishing it in accordance with the methodology set forth in these Index Rules from the Index Live Date specified in Section 3.

9. Disruption Provisions

9.1 Defining a Disrupted Day for a Constituent

For a Constituent (i), a **"Disrupted Day"** or **"Disrupted Day (i)"** means a Calculation Day on which a Market Disruption Event occurs in respect of such Constituent (i), as determined by the Disruption Determination Agent, in which case the Disruption Determination Agent will notify the Index Calculation Agent of such determination.

9.2 Defining a Market Disruption Event for a Constituent

For a Constituent (i) in respect of a Calculation Day, a **"Market Disruption Event"** or **"Market Disruption Event (i)"** means the failure by the Constituent Sponsor of Constituent (i) to calculate and publish the Closing Level of Constituent (i) in respect of such Calculation Day, as determined by the Disruption Determination Agent, in which case the Disruption Determination Agent will notify the Index Calculation Agent of such determination.

9.3 Consequences of a Market Disruption Event

If a Calculation Day is a Disrupted Day in respect of one or more of the Constituents (each such Constituent, a "**Disrupted Constituent**"), then, subject to the provisions of Section 9.4 in the case of Consecutive Disrupted Days, the Index Calculation Agent shall suspend the publication (but not the calculation) of the Index Level until the first succeeding Calculation Day that is not a Disrupted Day for any Constituent.

In cases in which the Closing Level of a Disrupted Constituent is required by the methodology set forth in Section 5.1, then, subject to the applicability of other provisions of these Index Rules, the Closing Level of such Disrupted Constituent in respect of such Disrupted Day shall be deemed to be equal to the Closing Level for that Constituent in respect of the immediately preceding Scheduled Trading Day that was not a Disrupted Day for that Constituent), as determined by the Disruption Determination Agent, with the Disruption Determination Agent notifying the Index Calculation Agent of such determination.

In cases in which the Closing Level of a Disrupted Constituent is required by the methodology set forth in Section 5.2, then, subject to the applicability of other provisions of these Index Rules, the Closing Level of such Disrupted Constituent in respect of such Disrupted Day shall be deemed to be equal to the Closing Level for that Constituent in respect of the immediately following Scheduled Trading Day that is not a Disrupted Day for that Constituent), as determined by the Disruption Determination Agent, with the Disruption Determination Agent notifying the Index Calculation Agent of such determination.

9.4 Consecutive Disrupted Days

If the Disruption Determination Agent determines that a Disrupted Day has occurred for a period of eight consecutive Calculation Days for a particular Constituent (the "**Disruption Determination Constituent**"), the Disruption Determination Agent shall determine such eighth day to be a "**Disruption Determination Date**" for the Disruption Determination Constituent, in which case the Disruption Determination Agent will notify the Index Calculation Agent of such determinations of a Disruption Determination Constituent and a Disruption Determination Date. The Disruption Determination Agent shall also immediately inform the Index Sponsor of such determinations, and (i) the Disruption Determination Agent shall determine the Closing Level of the relevant Disruption Determination Constituent (the "**Disruption Determination Closing Level**") in respect of the Disruption Determination Date as the Disruption Determination Agent considers appropriate in good faith and a commercially reasonable manner and (ii) the Disruption Determination Agent shall notify the Index Calculation Agent and the Index Sponsor of the Disruption Determination Closing Level, which shall be used in the calculation of the Index Level in respect of such Disruption Determination Date in the place of the Closing Level.

10. Corrections

If any publicly available financial or other information (including, but not limited to, the Closing Price of a Constituent or any other level, price or rate related to a Constituent or any variable, input or other matter used for any calculation or determination relevant to the Index Level for any Calculation Day) published or otherwise made available by the relevant recognized financial or other information source selected by the Index Sponsor, the Index Calculation Agent or the Disruption Determination Agent and used in any calculation or determination is subsequently corrected, or the Index Sponsor, the Index Calculation Agent or the Disruption Determination Agent identifies an error or omission in any of its calculations or determinations in respect of the Index or the Index Sponsor identifies an error or omission in any of the Index Calculation Agent's or the Disruption Determination Agent's calculations or determinations in respect of the Index, the Index Sponsor may or the Index Calculation Agent or the Disruption Determination Agent may only with the prior consent of the Index Sponsor, in any case if the Index Sponsor determines that such error, omission or correction (as the case may be) is material and that it is practicable, adjust or correct the relevant calculation or determination to take into account such correction as soon as it is reasonably practicable to do so.

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11. Extraordinary Events

11.1 Cancellation of relevant license or other right

If, at any time, any relevant license or other right granted to the Index Sponsor, the Index Calculation Agent or the Disruption Determination Agent (or any of their Affiliates) (together the "**Relevant Parties**") to use or refer to the level of or other information for any Constituent or any licenses or other rights used in any of the determinations or calculations set forth in these Index Rules ("**Affected Information**") is terminated, or is otherwise disputed, impaired, replaced by the relevant data provider or ceases (for any reason), then the Index Sponsor may: (i) (a) find a replacement data source or provider or select an alternative source of information having characteristics substantially similar to information available from the relevant source of the Affected Information used by the Relevant Parties in the context of any determination or calculation set forth in these Index Rules, (b) determine a date on which such replacement is effective, and (c) adjust the Index Rules as it determines to be appropriate to account for such replacement or (ii) cease publication of the Index on such date as is determined by the Index Sponsor.

11.2 Change in Law

Without prejudice to the ability of the Index Sponsor to amend the Index Rules, the Index Sponsor may, in respect of the Index, exclude any Constituent (an "**Affected Constituent**") affected by the occurrence of a Change in Law, and if it excludes an Affected Constituent, then the Index Sponsor may adjust the Index Rules as it determines to be appropriate to account for such exclusion on such date(s) selected by the Index Sponsor.

11.3 Successor Constituent

If the level of a Constituent is (a) not calculated and is not announced by the Constituent Sponsor, but is calculated and announced by a successor sponsor acceptable to the Index Calculation Agent, or (b) replaced by a successor index using, in the determination of the Index Calculation Agent, the same or a substantially similar formula for and method of calculation as used in the calculation of the Constituent, then the Constituent will be deemed to be the successor index so calculated and announced by that successor sponsor described in clause (a) above or that successor index described in clause (b) above, as the case may be, with effect from a date determined by the Index Sponsor who may make such determination and who may make such adjustments to the Index Rules as it determines are appropriate to account for such change.

If on or prior to any Calculation Day, the Constituent Sponsor makes a material change in the formula for or the method of calculating a Constituent, as applicable or in any other way materially modifies such Constituent (other than a modification prescribed in that formula or method to maintain the Constituent or any component of the Constituent and other routine events), then the Index Sponsor may select a replacement Constituent, having similar characteristics to the original Constituent, as applicable and may adjust the Index Rules as it determines appropriate to account for such replacement and the date such replacement is effective.

If on or prior to any Calculation Day, the Constituent Sponsor permanently cancels the Constituent, as applicable, and no successor or replacement index exists, the Index Calculation Agent shall make such adjustment(s) that it determines to be appropriate to any variable, calculation methodology, valuation terms or any other rule in relation to the Index to account for such cancellation which may include, without limitation, selecting a replacement for such Constituent or any component of the Constituent, as applicable.

11.4 Index Cancellation

If the Index Sponsor determines that no adjustment, exclusion or substitution that the Index Calculation Agent or it could make following an Extraordinary Event or any other event described in these Index Rules will produce a commercially reasonable result in respect of the Index, then the Index Sponsor may request (i) the Disruption Determination Agent cease performing its role as Disruption Determination Agent and (ii) the Index Calculation Agent cease calculating and publishing the Index from a date determined by the Index Sponsor. Notwithstanding this section, none of the Index Sponsor, the Index Calculation Agent or the Disruption Determination Agent is under any obligation to continue the calculation, publication and dissemination of the Index.

12. Hypothetical Back-Tested Levels

Any Index Level prior to the Index Live Date is a hypothetical, back-tested level. Such levels should not be taken as an indication of future performance, and no assurance can be given as to the levels or performance of the Index on a future date. Back-tested results are achieved by means of a retroactive application of a back-tested model designed with the benefit of hindsight. The Index Sponsor or the Index Calculation Agent, in calculating hypothetical back-tested index levels, may have applied the disruption provisions specified in these Index Rules differently than it otherwise would have applied such provisions in a "live" calculation scenario. Additionally, the precision and rounding of the levels of the Index or a Constituent (or other calculated values) may differ from the methodology applied on a going-forward basis. In calculating the hypothetical back-tested levels, the Index Sponsor or the Index Calculation Agent may have made certain assumptions in respect of the timing surrounding the publication of certain indicators, Closing Levels and Index Levels. These assumptions may have a material impact on the hypothetical back-tested levels occurring on or before the Index Live Date. No representation is made that any investment that references the Index will or is likely to achieve returns similar to any hypothetical back-tested returns. Alternative modelling techniques or assumptions might provide different results. Finally, hypothetical back-tested past performance is neither an indicator nor a guarantee of future performance or returns. Actual results and performance may vary compared to such hypothetical back-tested levels.

13. Definitions of Terms

In respect of the Index, the terms defined below have the following meaning in the Index Rules:

"**Affected Constituent**"	has the meaning given to it in Section 11.
"**Affiliate**"	means in relation to any entity (the "**First Entity**"), any entity controlled, directly or indirectly, by the First Entity, any entity that controls, directly or indirectly, the First Entity or any entity directly or indirectly under common control with the First Entity. For these purposes "control" means ownership of a majority of the voting power of an entity.
"**Calculation Day**" or "**Calculation Day (t)**"	has the meaning given to it in Section 3.
"**Change in Law**"	means, in respect of the Index, on or after the Index Live Date for the Index, the adoption of, or any change in, any applicable law, regulation, order or rule (including, without limitation, any tax law) or the promulgation of, or any change in, the interpretation, application, exercise or operation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, as implemented by any exchange or trading facility), the Index Sponsor determines that it is or will be contrary to such law, regulation, order or rule for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) any transaction or interest in or relating to a Constituent or any component thereof.
"**Closing Level**"	means, in respect of a Constituent and a Calculation Day, and subject to the disruption provisions of Section 9.3, the official closing level of such Constituent as published by the relevant Constituent Sponsor;
"**Constituent Rebalancing Adjustment Cost Factor**"	has the meaning given to it in Section 3.
"**Constituent Sponsor**"	has the meaning given to it in Section 3.
"**Constituent**" or "**Constituent (i)**"	has the meaning given to it in Section 2.
"**Constituents**"	has the meaning given to it in Section 2.
"Disrupted Constituents"	has the meaning given to it in Section 9.3.
"Disrupted Day" or "Disrupted Day (i)"	has the meaning given to it in Section 9.1.
"**Disruption Determination Date**"	has the meaning given to it in Section 9.4.
"**Disruption Determination Closing Level**"	has the meaning given to it in Section 9.4.
"**Disruption Determination Constituent**"	has the meaning given to it in Section 9.4.
"**Extraordinary Event**"	means any event described in Section 11.
"**Index Base Date**"	has the meaning given to it in Section 3.
"**Index Base Level**"	has the meaning given to it in Section 3.
"**Index Bloomberg Ticker"**	has the meaning given to it in Section 3.
"**Index Calculation Agent**"	has the meaning given to it in Section 3.
"**Index Currency**"	has the meaning given to it in Section 3.
"**Index Level**"	means the level of the Index as determined in Section 5.2(b).
"**Index Live Date**"	has the meaning given to it in Section 3.
"**Index Rules**"	has the meaning given to it in Section 1.

"Index Scheduled Trading Day"	has the meaning given to it in Section 3.
"**Index Sponsor**"	has the meaning given to it in Section 3.
"**Index**"	has the meaning given to it in Section 1.
"**London Scheduled Business Day**"	means each day that is both (i) a Calculation Day and (ii) a day on which the London Stock Exchange is scheduled to be open for its regular trading session.
"Market Disruption Event" or **"Market Disruption Event (i)**"	has the meaning given to it in Section 9.2.
"**Name of the Index**"	has the meaning given to it in Section 3.
"**Number of Constituents**"	means the number of Constituents that comprise the Index, as specified in Section 3.
"**Number of Units**"	has the meaning given to it in Section 5.1.
"**Product**"	has the meaning given to it in the Section entitled "Notices, Disclaimers and Conflicts"
"Rebalance Selection Date"	has the meaning given to it in Section 3.
"**Rebalancing Adjustment Cost Factor**"	has the meaning given to it in Section 5.2(a).
"Rebalancing Date"	has the meaning given to it in Section 3.
"**Relevant Person**"	means each of the Index Sponsor, the Index Calculation Agent and each of their respective affiliates and subsidiaries and their respective directors, officers, employees, representatives, delegates and agents.
"Scheduled Trading Day"	means, in respect of a Constituent, any day on, or, as the case may be, in respect of, which a Constituent Sponsor of a Constituent is scheduled to publish the Closing Level of such Constituent (disregarding any non-publication due to disruptions).
"**Target Weight**"	has the meaning given to it in Section 3.
"**USD**"	means the lawful currency of the United States of America.

14. Versions of the Index Rules and Index Adjustments

Any amendment or adjustment to the Index Rules for the Index and the effective date of any such amendment or adjustment may but does not have to be reflected in a revised version of the Index Rules. Copies of the latest issue of the Index Rules or details of relevant adjustments (where not reflected in a revised version of the Index Rules) are available as specified in Section 6.1.

Version	Date	Amendment
1.0	7 September 2017	Not Applicable (First Release)

15. Disclaimers

Solactive AG

The Index (and any financial instrument referencing the Index) is not sponsored, promoted, sold or supported in any other manner by Solactive AG nor does Solactive AG offer any express or implicit guarantee or assurance either with regard to the results of using the Index and/or Index trade mark or the Index Level at any time or in any other respect. The Index is calculated and published by Solactive AG. Solactive AG uses its best efforts to ensure that the Index is calculated correctly. Irrespective of its obligations towards the issuer of any financial instrument, Solactive AG has no obligation to point out errors in the Index to third parties including but not limited to investors and/or financial intermediaries of any financial instrument. Neither publication of the Index by Solactive AG nor the licensing of the Index or Index trade mark for the purpose of use in connection with the financial instrument constitutes a recommendation by Solactive AG to invest capital in said financial instrument nor does it in any way represent an assurance or opinion of Solactive AG with regard to any investment in this financial instrument.

J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 1)

Index Rules

J.P.Morgan

7 September 2017

Notices, Disclaimers and Conflicts

Each capitalised term used in this section but not otherwise defined has the meaning set forth in other parts of the Index Rules.

None of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent endorses or makes any representation or warranty, express or implied, in connection with any security, transaction, fund, structured deposit or other financial product or investment (each, a "**Product**") that references the Index including as to the advisability of purchasing or entering into a Product or the results to be obtained by any party using the Index in connection with a Product. Furthermore, none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent has any obligation or liability in connection with the administration, marketing or trading of any Product and is not obliged to enter into or promote any Product.

The Index is the exclusive property of the Index Sponsor and no one may reproduce, distribute or disseminate this document or any information contained in this document (the Index Rules, such Index Rules being subject to the Adjustment Provisions) or any Index Level without the prior written consent of the Index Sponsor. This document is not intended for distribution to, or use by, any person in a jurisdiction in which such distribution or use is prohibited by law or regulation.

None of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent has any liability whatsoever in such capacity to any person who uses the Index or any Index Level in any circumstances.

None of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent is under any obligation to continue the calculation, publication or dissemination of the Index or the Index Level. The Index Sponsor may terminate the calculation and publication of the Index or the Index Level at any time without notice. The Index Sponsor may delegate or transfer to a third party some or all of the functions of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent in relation to the Index.

Except as provided in the following paragraph, none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent gives any representation, warranty or undertaking, of any type (whether express or implied, statutory or otherwise) in relation to the Index, as to (i) the condition, satisfactory quality, performance or fitness for purpose of the Index, (ii) the results to be achieved by an investment in any Product, (iii) any data included in or omitted from the Index, (iv) the use of the Index in connection with a Product, (v) the level of the Index at any time on any day, (vi) the veracity, currency, completeness or accuracy of the information on which the Index is based (and without limitation, none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent accepts any liability to any investor in a Product for any errors or omissions in that information or the results of any interruption to it and none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent shall be under any obligation to advise any person of any such error, omission or interruption), or (vii) any other matter. To the extent any such representation, warranty or undertaking could be deemed to have been given by any of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent, it is excluded save to the extent that such exclusion is prohibited by law.

To the fullest extent permitted by law, none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent and the Index Calculation Agent shall have any liability or responsibility to any person or entity (including, without limitation, any investor in any Product) for any loss, damages, costs, charges, expenses or other liabilities howsoever arising, including, without limitation, liability for any special, punitive, indirect or consequential damages (including loss of business, loss of profit, loss of time and loss of goodwill), even if notified of the possibility of the same, arising in connection with the design, compilation, calculation, maintenance or sponsoring of the Index or the Index Level or in connection with any Product.

Each of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent may make certain determinations or calculations based on information obtained from publicly available sources without independently verifying such information, and none of them accepts any responsibility or liability in respect of such determinations, calculations or information.

Each of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent and the Index Calculation Agent, and each of their respective affiliates, directors, officers, employees and agents, does not assume any obligation or duty to any party in connection with the Index or the Index Level and does not assume any relationship of agency, trust or of a fiduciary nature with any party, and any information or communication that any such party may provide is not intended to be impartial investment advice..

Potential conflicts of interest may arise in connection with or exist between the structure and operation of the Index and the conduct of business activities of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent, the Index Calculation Agent or any Affiliate of the Index Sponsor or Index Calculation Agent (each, a "**Relevant Person**").

In connection with its businesses, the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent, the Index Calculation Agent or any Relevant Person may enter into or promote, offer or sell transactions or investments (structured or otherwise) that reference the Index, the Index Level or any Constituent Stock of the Index. In addition, the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent, the Index Calculation Agent and any Relevant Person may have, or may have had, interests (including general commercial interests related to this Index or any Constituent Stock) or positions, or may buy, sell or otherwise trade positions in or relating to the Index, the Index Level, or any Constituent Stock of the Index, or may invest or engage in transactions with other persons, or on behalf of such persons relating to any of these. Such activity could give rise to a conflict of interest, and such conflict may have an impact, positive or negative, on the level of the Index. The Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent, the Index Calculation Agent and the Relevant Persons do not have (a) any duty to consider the circumstances of any person when participating in such transactions or (b) any duty to conduct themselves in a manner that is favourable to anyone with exposure to the Index.

The foregoing notices, disclaimers and conflicts disclosure is not intended to be exhaustive. Anyone reading the Index Rules should seek such advice as that person considers necessary from that person's professional, legal, tax or other advisers or otherwise, without reliance on the Index Sponsor, Constituent Stock Determination Agent, Disruption Determination Agent, Index Calculation Agent or any Relevant Person to satisfy that person that such person fully understands the Index Rules and the risks associated with the Index. Any person interested in obtaining exposure to the Index shall make and shall be deemed to make its own investment decision based upon its own judgment and its own examination of the Relevant Persons and the relevant security or financial instrument.

The Index Rules have been developed with the possibility of one or more entities, with the written permission of the Index Sponsor, entering into or promoting, offering or selling Products (structured or otherwise) linked to the Index and hedging such Products in any manner that such entity sees fit.

Further information relating to (i) the internal governance framework and (ii) the identity and role of third parties that are non-affiliates of J.P. Morgan, in respect of this Index, is available on request to the Index Sponsor.

THIS DOCUMENT IS IMPORTANT. YOU SHOULD NOT INVEST IN A PRODUCT UNLESS YOU HAVE ENSURED THAT YOU FULLY UNDERSTAND THE NATURE OF SUCH AN INVESTMENT AND THE RISKS INVOLVED AND ARE SATISFIED THAT THE INVESTMENT IS SUITED TO YOUR CIRCUMSTANCES AND OBJECTIVES. IF YOU ARE IN ANY DOUBT ABOUT THIS YOU SHOULD TAKE ADVICE FROM AN APPROPRIATELY QUALIFIED ADVISER. UNLESS YOU ARE A HIGHLY SOPHISTICATED INVESTOR WHO REGULARLY TRANSACTS IN PRODUCTS LINKED TO AN INDEX OF THIS TYPE, YOU ARE STRONGLY ADVISED TO TAKE SUCH ADVICE IN ANY EVENT.

consent of the Index Sponsor (including in situations in which a third party performs certain functions in relation to the Index).

1. This Document

This document comprises the rules and methodology (the **"Index Rules"**) of the J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 1) (the "**Index**"). The provisions and variables set forth in these Index Rules are applicable to the Index.

Further information relating to (i) the internal governance framework and (ii) the identity and role of third parties that are non-affiliates of J.P. Morgan, in respect of this Index, is available from the Index Sponsor, on request.

2. Overview of the Index

The following introduction is intended merely to summarize the methodology of the Index in general terms. It is not intended to be exhaustive and the methodology set forth in Sections 4 and 5 and the remainder of these Index Rules will govern in the event of any inconsistency.

The objective of the Index is to track, in accordance with the methodology described herein, the return of a long basket of certain stocks (the "**Long Basket**") minus the return of a short basket of certain other stocks (the "**Short Basket**"), which are selected from the set of stocks comprising the Base Reference Index, subject to certain criteria and an optimization methodology, as further described below. The Constituent Stock Determination Agent and the Index Calculation Agent seek to achieve this objective by following the rules-based methodology set out in these Index Rules.

The Index is rebalanced every ten Index Scheduled Trading Days and the stocks and weights assigned to each of the stocks comprising the Long Basket and Short Basket, respectively, are selected by the Constituent Stock Determination Agent from the set of stocks comprising the Base Reference Index, in accordance with the methodology described in these Index Rules.

The Constituent Stock Determination Agent, in respect of each Rebalance Selection Date, will determine the Eligible Stocks, using the rules and methodology set forth in Section 4. The Constituent Stock Determination Agent will determine the Preliminary Constituent Stocks that will compose the Long Basket and the Short Basket of the Index, subject to Sections 5.1, 10 and 11, in respect of each Rebalancing Date, based on the Eligible Stocks, the Final Factor Scores and third-party optimization software (the "**Optimizer Software**") using the methodology set forth in Section 4. The Constituent Stock Determination Agent and the Index Calculation Agent (as applicable) will perform their respective roles in accordance with the methodology set forth in Sections 3, 4 and 5.

The Index Calculation Agent, subject to the occurrence of any Market Disruption Event or any Extraordinary Event, will calculate and publish the Index Level in respect of each Calculation Day (each, a "**Calculation Day (t)**"), subject to and in accordance with these Index Rules by implementing the following four steps:

Step 1: Determining the Eligible Stocks and the Final Factor Scores: The Constituent Stock Determination Agent, in respect of each Rebalance Selection Date, using the methodology and rules set forth in Section 4 will determine the Eligible Stocks and the Final Factor Scores.

Step 2: Selecting the Constituent Stocks and determining the Constituent Weights: The Constituent Stock Determination Agent, in respect of each Rebalance Selection Date, shall use, among other things, the Eligible Stocks, the Final Factor Scores and an optimization methodology in order to determine the Preliminary Constituent Stocks and the Preliminary Constituent Weights. The optimization methodology, further described in Sections 4.8 and 4.9 (the "**Optimization Methodology**"), shall involve, among other parameters further described below, the use of the Optimizer Software, which will be subject to certain constraints as described in Section 4.8(b) and 4.9(b). The aim of the Optimization Methodology is to find the portfolio of stocks and associated weights (the "**Output Portfolio**") that maximizes the aggregate exposure of such portfolio to certain factors, within the given constraints, as further described in the methodology set out in Sections 4.8 and 4.9.

The Preliminary Constituent Stocks and Preliminary Constituent Weights will compose the Long Basket and the Short Basket of the Index, subject to Sections 5.1, 5.2, 10 and 11, for the period from but excluding the Rebalancing Date immediately following such Rebalance Selection Date to and including the immediately following Rebalancing Date.

The Constituent Stock Determination Agent will provide the Index Calculation Agent with information regarding the Preliminary Constituent Stocks and the Preliminary Constituent Weights in respect of each

Rebalance Selection Date so that the Index Calculation Agent can perform the calculations in connection with the Index Calculation Agent's role, as further described below.

Step 3: Rebalancing the Index: Subject to Section 10 and Section 11, the Index will be rebalanced every ten Index Scheduled Trading Days, using the Preliminary Constituent Stocks and the Preliminary Constituent Weights determined by the Constituent Stock Determination Agent in the previous step, as determined by the Index Calculation Agent subject to and in accordance with Sections 5.1 and 5.2.

Step 4: Calculating the Index Level: The final step is for the Index Calculation Agent to calculate and publish the Index Level in respect of each Calculation Day (t), using the methodology set forth in Section 5.2. The Index Calculation Agent will also apply the following set of adjustments, when determining the Index Level, in accordance with the formulas set forth in Section 5.2(f):

- If Calculation Day (t) is a Rebalancing Date, the Rebalance Adjustment Factor set forth in Section 5.2(e), which is determined in part based on the Rebalancing Cost Percentage specified in Section 3.1; and
- The Index Adjustment Cost Factor, Assumed Financing Cost Adjustment Factor and Assumed Borrow Cost Adjustment Factor, which are each per annum amounts, specified in Section 3.

The Index Adjustment Cost Factor, Assumed Financing Cost Adjustment Factor and Assumed Borrow Cost Adjustment Factor and (when applicable) the Rebalance Adjustment Factor will each act as a drag on the performance of the Index.

The Index Level will never be less than zero.

Terms not otherwise defined in these Index Rules have the meanings set forth in Section 13.

3. Index Specifics

3.1 Specific information related to the Index

Name of the Index	J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 1)
Index Bloomberg Ticker	JPQFMFW1 <Index>
Index Rationale	The Index methodology selects stocks and determines stock weights based on value, size, momentum, low volatility and quality metrics. The Index methodology uses a proprietary algorithm involving an optimization methodology aiming to maximize the aggregate exposure of the Output Portfolio subject to the constraints set out in these Index Rules. The Index rebalances every ten Index Scheduled Trading Days.
Index Currency	USD
Index Base Level	100.00
Index Base Date	30 August 2017
Basket Base Date	30 August 2017
Index Live Date	7 September 2017
Index Sponsor	J.P. Morgan Securities plc or any successor or assignee. See Section 7.1.
Index Calculation Agent	Solactive AG or any successor or assignee. See Section 7.1.
Constituent Stock Determination Agent	J.P. Morgan Securities plc or any successor or assignee. See Section 7.1.
Disruption Determination Agent	J.P. Morgan Securities plc or any successor or assignee. See Section 7.1.
Grouping Criteria	Stock Sector and Stock Region. See Section 3.11.
Optimizer Software	Means the MOSEK computer program version 7.1.0.36, as available from the MOSEK ApS company, which is third-party software for solving mathematical optimization problems, used with its default parameters except for (i) parameter "cacheLicense" which shall be set to be "off" and (ii) for parameter "licenseWait" which shall be set to be "on".
Risk Model	Means the GEM3S risk model, as available from the Risk Model Data Source
Minimum Long Delta Accepted	85.0%
Maximum Absolute Factor Score Difference	0.25
Maximum Absolute Beta	1.0%

Maximum Net Country Exposure Deviation	0.5%
Maximum Net Sector Exposure Deviation	0.5%
Maximum Long Country Exposure Deviation	0.1%
Maximum Long Sector Exposure Deviation	0.1%
Maximum Volatility	5.0%
Maximum Missing Final Factor Scores Number	2
Maximum Short Stock Borrow Rate	1.5%
Maximum Absolute Weight	0.5%
Maximum Trading Liquidity Ratio	20.0%
Maximum Holding Liquidity Ratio	70.0%
Liquidity Notional	USD 2.0 billion
Maximum Monthly Turnover	50.0%
Maximum Short Leg Borrow Rate	0.35%
Country Exposure Penalty Multiplier	50
Sector Exposure Penalty Multiplier	100
Borrow Penalty Multiplier	100
Small Weight Threshold Percentage	0.0001%
Source Data Threshold Number	850 Eligible Stocks
Index Adjustment Cost Factor	0.25%
Assumed Financing Cost Adjustment Factor	0.35%
Assumed Borrow Cost	0.25%

Adjustment Factor	
Rebalancing Cost Percentage	0.04%
Borrow Data Provider	Markit Securities Finance Analytics Limited
Calculation Day	Means each week day that is not a Saturday or a Sunday
Rebalance Selection Date	Means, in respect of a Scheduled Rebalancing Date, the Calculation Day that is three London Scheduled Business Days immediately preceding that Scheduled Rebalancing Date
Index Scheduled Trading Day	Means each Calculation Day on which each of the New York Stock Exchange, the Xetra Exchange, the London Stock Exchange and the Tokyo Stock Exchange is scheduled to be open for trading during its regular trading session, whether scheduled for a full-day regular trading session or a shortened-day regular trading session
Scheduled Rebalancing Date	Means (1) the Index Base Date and (2) each Index Scheduled Trading Day that falls ten Index Scheduled Trading Days after a previous Scheduled Rebalancing Date
Effective Rebalancing Date	Means (1) the Index Base Date and (2) in respect of a Scheduled Rebalancing Date in respect of which no Data Source Disruption Event and no Relaxation Event occurs for the related Rebalance Selection Date, that Scheduled Rebalancing Date
Data Reference Time	Means, in respect of a Rebalance Selection Date, 08.00 am local time in London, United Kingdom on the London Scheduled Business Day that immediately follows that Rebalance Selection Date
Base Reference Index	MSCI Daily Total Return Gross World USD Index (Bloomberg: GDDUWI Index)
Base Reference Index Sponsor	MSCI Inc.
Identified Reference Index	Solactive FinTech 20 Index (USD) (Bloomberg: SOLFTECU Index)
Identified Reference Index Sponsor	Solactive AG
Mean Analyst Consensus Estimate	Means, for an Eligible Stock in respect of a Rebalance Selection Date (t), the arithmetic mean of all analyst estimates of the relevant data as reported by the Estimates Data Source
Cash Index	J.P. Morgan Cash Index USD 3 Month (Bloomberg: JPCAUS3M Index)
Cash Index Sponsor	J.P. Morgan Securities LLC
Universe Stocks	Means, in respect of a Rebalance Selection Date, each of the constituent stocks included in the Base Reference Index, as available to the Constituent Stock Determination Agent from the Base Reference Data Source at approximately the Data Reference Time.
Eligible Stocks	Means, in respect of a Rebalance Selection Date, the set of Universe Stocks, each of which:

	(i) is represented in the Share Data Source at approximately the Data Reference Time; and (ii) has a Dollar Base Reference Free-Float Market Capitalization in respect of Rebalance Selection Date (t), as determined pursuant to Section 3.8(c); and (iii) has available, from the Risk Model Data Source at approximately the Data Reference Time, specific risk information in respect of Rebalance Selection Date (t), as identified by the “SpecRisk%” identifier in the Risk Model Data Source. One or more than one Eligible Stock may be issued by the same issuer. This is the case when each trades separately.

3.2 Base Factors, Data Sources and Base Factor Eligibility Requirements

Base Factor name	Data Source	Base Factor Eligibility Requirement
Forward Earnings Yield Factor	Estimates Data Source, FX Data Source, Share Data Source	Six (6) or more analysts contribute to the Mean Analyst Consensus Estimate
Forward Dividend Yield Factor	Estimates Data Source, FX Data Source, Share Data Source	Six (6) or more analysts contribute to the Mean Analyst Consensus Estimate
Free Cash Flow Yield Factor	Fundamentals Data Source, FX Data Source, Share Data Source, Base Reference Data Source	None
Book to Price Factor	Fundamentals Data Source, FX Data Source, Share Data Source, Base Reference Data Source	None
Size Factor	Share Data Source, FX Data Source, Base Reference Data Source	None
Price Momentum Factor	Share Data Source	None
Low Volatility Factor	Share Data Source	None
Return on Assets Factor	Fundamentals Data Source, FX Data Source	None
Operating Cash Flow to Assets Factor	Fundamentals Data Source, FX Data Source	None
Delta Return on Assets Factor	Fundamentals Data Source, FX Data Source	None
Accruals Factor	Fundamentals Data Source, FX Data Source	None
Delta Leverage Factor	Fundamentals Data Source, FX Data Source	None
Delta Liquidity Factor	Fundamentals Data Source, FX Data Source	None
Equity Issuance Factor	Fundamentals Data Source, Share Data Source	None
Delta Gross Margin Factor	Fundamentals Data Source, FX Data Source	None
Delta Total Revenue Factor	Fundamentals Data Source, FX Data Source	None
Earnings Variability Factor	Fundamentals Data Source, FX Data Source	None
Revenue Growth Variability Factor	Fundamentals Data Source, FX Data Source	None

Research and Development (R&D) Factor	Fundamentals Data Source, FX Data Source	None
Capital Expenditure Factor	Fundamentals Data Source, FX Data Source	None
Advertising Factor	Fundamentals Data Source, FX Data Source	None

3.3 Composite Factors

Composite Factor name	Base Factor name	Base Factor Weight In Composite Factor
Value Factor	Forward Earnings Yield Factor	1/4
	Forward Dividend Yield Factor	1/4
	Free Cash Flow Yield Factor	1/4
	Book to Price Factor	1/4
QV FScore Factor	Return on Assets Factor	1/9
	Operating Cash Flow to Assets Factor	1/9
	Delta Return on Assets Factor	1/9
	Accruals Factor	1/9
	Delta Leverage Factor	1/9
	Delta Liquidity Factor	1/9
	Equity Issuance Factor	1/9
	Delta Gross Margin Factor	1/9
	Delta Total Revenue Factor	1/9
QG GScore Factor	Return on Assets Factor	1/8
	Operating Cash Flow to Assets Factor	1/8
	Accruals Factor	1/8
	Earnings Variability Factor	1/8
	Revenue Growth Variability Factor	1/8
	Research and Development (R&D)	1/8
	Capital Expenditure Factor	1/8
	Advertising Factor	1/8

3.4 Final Factor Scores

Final Factor variable name	Section location
Final Value Factor Score	Section 4.5
Final Size Factor Score	Section 4.3
Final Momentum Factor Score	Section 4.3
Final Low Volatility Factor Score	Section 4.3
Final Quality Factor Score	Section 4.7

3.5 Base Factor Definitions

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i), the Base Factors are defined in accordance with the following formulas:

3.5.1 Forward Earnings Yield Factor

$$Forward\ Earnings\ Yield_i^t = ER\left(EPSFY1_i^t \times AM_{i,EPSFY1}^t \times FX_{i,EPSFY1}^t\ ,\ Price_i^t \times AM_{i,Price}^t \times FX_{i,Price}^t\right)$$

Where:

ER	means the Enhanced Ratio function defined in Section 3.12(b)
$EPSFY1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent Mean Analyst Consensus Estimate of the unadjusted earnings per share (meaning, as reported, but not adjusted for corporate actions) for the first as yet unreported financial year for the relevant company whose estimate date is within the 134 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Estimates Data Source at approximately the Data Reference Time
$AM_{i,EPSFY1}^t$	means the Adjustment Multiplier of Eligible Stock (i) in respect of the estimate date associated with $EPSFY1_i^t$, as available from the Share Data Source at approximately the Data Reference Time
$FX_{i,EPSFY1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $EPSFY1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$Price_i^t$	means, in respect of Eligible Stock (i) and Rebalance Selection Date (t), the most recent official closing price associated with a date (the "**Price Reference Date**") that is within the period of 31 calendar days immediately preceding and including Rebalance Selection Date (t), expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time
$AM_{i,Price}^t$	means the Adjustment Multiplier of Eligible Stock (i) as available from the Share Data Source at approximately the Data Reference Time, in respect of the Price Reference Date associated with $Price_i^t$
$FX_{i,Price}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $Price_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.2 Forward Dividend Yield Factor

$$Forward\ Dividend\ Yield_i^t = \frac{DPSFY1_i^t \times AM_{i,DPSFY1}^t \times FX_{i,DPSFY1}^t}{Price_i^t \times AM_{i,Price}^t \times FX_{i,Price}^t}$$

Where:

$DPSFY1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent Mean Analyst Consensus Estimate of the unadjusted dividend per share (meaning, as reported, but not adjusted for corporate actions) for the first as yet unreported financial year for the relevant company whose estimate date is within the 134 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Estimates Data Source at approximately the Data Reference Time
$AM_{i,DPSFY1}^t$	means the Adjustment Multiplier of Eligible Stock (i) in respect of the estimate date associated with $DPSFY1_i^t$, as available from the Share Data Source at approximately the Data Reference Time
$FX_{i,DPSFY1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $DPSFY1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$Price_i^t$	means, in respect of Eligible Stock (i) and Rebalance Selection Date (t), the most recent official closing price associated with a date (the "**Price Reference Date**") that is within the 31 calendar days immediately preceding and including Rebalance Selection Date (t), expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time
$AM_{i,Price}^t$	means the Adjustment Multiplier of Eligible Stock (i) as available from the Share Data Source at approximately the Data Reference Time, in respect of the Price Reference Date associated with $Price_i^t$
$FX_{i,Price}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $Price_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.3 Free Cash Flow Yield Factor

$$Free\ Cash\ Flow\ Yield_i^t = ER\left(CashFromOperatingActivities_i^t \times FX_{i,CashFromOperatingActivities}^t + CapEx_i^t \times FX_{i,CapEx}^t\ ,\ Dollar\ Consolidated\ Market\ Capitalization_i^t\right)$$

Where:

ER	means the Enhanced Ratio function defined in Section 3.12(b)
$CashFromOperatingActivities_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cash from operating activities for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,CashFromOperatingActivities}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CashFromOperatingActivities_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$CapEx_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent capital expenditure for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as

available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,CapEx}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CapEx_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$Dollar\ Consolidated\ Market\ Capitalization_i^t$ means the Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.8(b)

In the Fundamentals Data Source, capital expenditures are recorded as negative values, hence $CapEx_i^t$ is added, not subtracted, in the formula above.

3.5.4 Book to Price Factor

$$Book\ to\ Price_i^t = ER\big(TangibleBookValue_i^t \times FX_{i,TangibleBookValue}^{t}\ ,\ Dollar\ Consolidated\ Market\ Capitalization_i^t\big)$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$TangibleBookValue_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent tangible book value for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TangibleBookValue}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TangibleBookValue_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$Dollar\ Consolidated\ Market\ Capitalization_i^t$ means the Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.8(b)

3.5.5 Size Factor

$$Size_i^t = -1 \times LN\left(\frac{1}{N}\sum_{d=SD}^{t} Dollar\ Consolidated\ Market\ Capitalization_i^d\right)$$

Where:

Calculation Day (SD) means, in respect of Rebalance Selection Date (t), the first Calculation Day that falls on or after the day that is 29 calendar days before Rebalance Selection Date (t)

N means the number of Calculation Days that occur from and including Calculation Day (SD) to and including Rebalance Selection Date (t) and in respect of which a Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) is available, as determined pursuant to Section 3.8(b)

d means an integer representing each of the Calculation Days that occur from and including Calculation Day (SD) to and including Rebalance Selection Date (t) and in respect of which a Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) is available, as determined pursuant to Section 3.8(b)

$Dollar\ Consolidated\ Market\ Capitalization_i^d$ means the Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) and Calculation Day (d), as determined pursuant to Section 3.8(b)

The impact of multiplying by negative one (-1) in the calculation of the Size Factor is that smaller capitalization stocks will have a higher score than higher capitalization stocks when the Size Factor is used in the optimization procedure set forth in Section 4.8.

3.5.6 Price Momentum Factor

$$Momentum_i^t = \frac{\frac{1}{N} \times \sum_{d=SD1W}^{ED1W} TRPrice_i^d}{\frac{1}{M} \times \sum_{d=SD1Y}^{ED1Y} TRPrice_i^d} - 1$$

Where:

d means an integer representing a Calculation Day

$CD1Y$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 364 calendar days before Rebalance Selection Day (t)

$SD1Y$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 10 Calculation Days before $CD1Y$

$ED1Y$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 10 Calculation Days after $CD1Y$

$SD1W$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 6 Calculation Days before Rebalance Selection Day (t)

$ED1W$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 4 Calculation Days before Rebalance Selection Day (t)

$TRPrice_i^d$ means, for Eligible Stock (i) in respect of Calculation Day (d), the most recent total return price associated with a date that is on or before Calculation Day (d), as available from the Share Data Source at approximately the Data Reference Time

N means, in respect of Rebalance Selection Day (t), the number of Calculation Days (d) from and including Calculation Day $SD1W$ to and including Calculation Day $ED1W$ in respect of which $TRPrice_i^d$ is not missing.

M means, in respect of Rebalance Selection Day (t), the number of Calculation Days (d) from and including Calculation Day $SD1Y$ to and including Calculation Day $ED1Y$ in respect of which $TRPrice_i^d$ is not missing.

CD1Y is always a Calculation Day since Rebalance Selection Day (t) is a Calculation Day and since 364 is a multiple of 7.

3.5.7 Low Volatility Factor

$$Low\ Volatility\ Factor_i^t = -1 \times \sqrt{\frac{252}{N^2} \times \left(N \times \sum_{j=t-N+1}^{t} \left(\mathrm{LN}\left(\frac{TRPrice_i^j}{TRPrice_i^{j-1}} \right) \right)^2 - \left(\sum_{j=t-N+1}^{t} \mathrm{LN}\left(\frac{TRPrice_i^j}{TRPrice_i^{j-1}} \right) \right)^2 \right)}$$

Where:

j means an integer representing a calendar day in respect of which a total return price is available for Eligible Stock (i), as provided by the Share Data Source at approximately the Data Reference Time.

N	means, for Eligible Stock (i), the sum of (1) the number of calendar days in the 365 calendar days immediately prior to and including Rebalance Selection Date (t) in respect of which a total return price is available for Eligible Stock (i), as provided by the Share Data Source at approximately the Data Reference Time and (2) negative one (-1)
$TRPrice_i^j$	means the total return price in respect of Eligible Stock (i) and calendar day (j), as available from the Share Data Source at approximately the Data Reference Time
$TRPrice_i^{j-1}$	means the total return price in respect of Eligible Stock (i) and calendar day (j-1), as available from the Share Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Low Volatility Factor is that lower volatility stocks will have a higher score than higher volatility stocks when the Low Volatility Factor is used in the optimization procedure set forth in Section 4.8.

3.5.8 Return on Assets Factor

$$Return\ on\ Assets_i^t = ER\left(NetIncomeExclExtra_i^t \times FX_{i,NetIncomeExclExtra}^t\ ,\ TotalAssets_i^t \times FX_{i,TotalAssets}^t\right)$$

Where:

ER	means the Enhanced Ratio function defined in Section 3.12(b)
$NetIncomeExclExtra_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,NetIncomeExclExtra}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtra_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalAssets_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalAssets}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssets_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.9 Operating Cash Flow to Assets Factor

$$\begin{aligned}&Operating\ Cash\ Flow\ to\ Assets_i^t\\&\quad = ER\left(CashFromOperatingActivities_i^t \times FX_{i,CashFromOperatingActivities}^t\ ,\ TotalAssets_i^t \times FX_{i,TotalAssets}^t\right)\end{aligned}$$

Where:

ER	means the Enhanced Ratio function defined in Section 3.12(b)
$CashFromOperatingActivities_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cash from operating activities for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection

	Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,CashFromOperatingActivities}^{t}$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CashFromOperatingActivities_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalAssets_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalAssets}^{t}$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssets_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.10 Delta Return on Assets Factor

$$
\begin{aligned}
Return\ on\ Assets_i^t
&= ER\left(NetIncomeExclExtraH1_i^t \times FX_{i,NetIncomeExclExtraH1}^t,\ TotalAssetsH1_i^t \times FX_{i,TotalAssetsH1}^t\right)\\
&- ER\left(NetIncomeExclExtraH2_i^t \times FX_{i,NetIncomeExclExtraH2}^t,\ TotalAssetsH2_i^t \times FX_{i,TotalAssetsH2}^t\right)
\end{aligned}
$$

Where:

ER	means the Enhanced Ratio function defined in Section 3.12(b)
$NetIncomeExclExtraH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,NetIncomeExclExtraH1}^{t}$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalAssetsH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalAssetsH1}^{t}$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$NetIncomeExclExtraH2_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,NetIncomeExclExtraH2}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH2^t_i$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH2^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,TotalAssetsH2}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH2^t_i$, as available from the FX Data Source at approximately the Data Reference Time

3.5.11 Accruals Factor

$$Accruals^t_i = -1 \times ER\big(NetIncomeExclExtra^t_i \times FX^t_{i,NetIncomeExclExtra} - CashFromOperatingActivities^t_i \times FX^t_{i,CashFromOperatingActivities}\ ,\ TotalAssets^t_i \times FX^t_{i,TotalAssets}\big)$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$NetIncomeExclExtra^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,NetIncomeExclExtra}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtra^t_i$, as available from the FX Data Source at approximately the Data Reference Time

$CashFromOperatingActivities^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cash from operating activities for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,CashFromOperatingActivities}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CashFromOperatingActivities^t_i$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssets^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,TotalAssets}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssets^t_i$, as available from the FX Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Accruals Factor is that smaller accruals stocks will have a higher score than higher accruals stocks when the Accruals Factor is used in the optimization procedure set forth in Section 4.8.

3.5.12 Delta Leverage Factor

$$Delta\ Leverage_i^t = -1 \times \left(\frac{TotalLongTermDebtH1_i^t \times FX_{i,TotalLongTermDebtH1}^t}{TotalAssetsH1_i^t \times FX_{i,TotalAssetsH1}^t} - \frac{TotalLongTermDebtH2_i^t \times FX_{i,TotalLongTermDebtH2}^t}{TotalAssetsH2_i^t \times FX_{i,TotalAssetsH2}^t} \right)$$

Where:

$TotalLongTermDebtH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total long term debt for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalLongTermDebtH1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalLongTermDebtH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalAssetsH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalAssetsH1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalLongTermDebtH2$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total long term debt for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalLongTermDebtH2}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalLongTermDebtH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalAssetsH2_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalAssetsH2}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Delta Leverage Factor is that smaller delta leverage stocks will have a higher score than higher delta leverage stocks when the Delta Leverage Factor is used in the optimization procedure set forth in Section 4.8.

3.5.13 Delta Liquidity Factor

$$Delta\ Liquidity_i^t = \frac{TotalCurrentAssetsH1_i^t \times FX_{i,TotalCurrentAssetsH1}^t}{TotalCurrentLiabilitiesH1_i^t \times FX_{i,TotalCurrentLiabilitiesH1}^t} - \frac{TotalCurrentAssetsH2_i^t \times FX_{i,TotalCurrentAssetsH2}^t}{TotalCurrentLiabilitiesH2_i^t \times FX_{i,TotalCurrentLiabilitiesH2}^t}$$

Where:

$TotalCurrentAssetsH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total current assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalCurrentAssetsH1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalCurrentAssetsH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalCurrentLiabilitiesH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total current liabilities for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalCurrentLiabilitiesH1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalCurrentLiabilitiesH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalCurrentAssetsH2$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total current assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalCurrentAssetsH2}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalCurrentAssetsH2$, as available from the FX Data Source at approximately the Data Reference Time
$TotalCurrentLiabilitiesH2_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total current liabilities for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalCurrentLiabilitiesH2}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalCurrentLiabilitiesH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.14 Equity Issuance Factor

$$Equity\ Issuance_i^t = -1 \times \frac{TotalCommonSharesOutstandingH1_i^t}{TotalCommonSharesOutstandingH2_i^t} \times \frac{AM_{i,TotalCommonSharesOutstandingH2}^t}{AM_{i,TotalCommonSharesOutstandingH1}^t}$$

Where:

$TotalCommonSharesOutstandingH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent unadjusted total common shares outstanding (meaning, as reported, but not adjusted for corporate actions) for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$AM_{i,TotalCommonSharesOutstandingH1}^t$ means the Adjustment Multiplier of Eligible Stock (i) in respect of the period end date associated with $TotalCommonSharesOutstandingH1_i^t$, as available from the Share Data Source at approximately the Data Reference Time

$TotalCommonSharesOutstandingH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent unadjusted total common shares outstanding (meaning, as reported, but not adjusted for corporate actions) for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$AM_{i,TotalCommonSharesOutstandingH2}^t$ means the Adjustment Multiplier of Eligible Stock (i) in respect of the period end date associated with $TotalCommonSharesOutstandingH2_i^t$, as available from the Share Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Equity Issuance Factor is that smaller equity issuance stocks will have a higher score than higher equity issuance stocks when the Equity Issuance Factor is used in the optimization procedure set forth in Section 4.8.

3.5.15 Delta Gross Margin Factor

$$Delta\ Gross\ Margin_i^t = \left(1 - \frac{CostOfRevenueH1_i^t \times FX_{i,CostOfRevenueH1}^t}{TotalRevenueExtH1_i^t \times FX_{i,TotalRevenueExtH1}^t}\right) - \left(1 - \frac{CostOfRevenueH2_i^t \times FX_{i,CostOfRevenueH2}^t}{TotalRevenueExtH2_i^t \times FX_{i,TotalRevenueExtH2}^t}\right)$$

Where:

$CostOfRevenueH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cost of revenue for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,CostOfRevenueH1}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CostOfRevenueH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference

Time, is "Banks", the most recent interest income for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,TotalRevenueExtH1}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH1^t_i$, as available from the FX Data Source at approximately the Data Reference Time

$CostOfRevenueH2^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cost of revenue for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,CostOfRevenueH2}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CostOfRevenueH2^t_i$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH2^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,TotalRevenueExtH2}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH2^t_i$, as available from the FX Data Source at approximately the Data Reference Time

3.5.16 Delta Total Revenue Factor

$$Delta\ Total\ Revenue_i^t = ER\left(TotalRevenueExtH1_i^t \times FX_{i,TotalRevenueExtH1}^t\ ,\ TotalAssetsH1_i^t \times FX_{i,TotalAssetsH1}^t\right) - ER\left(TotalRevenueExtH2_i^t \times FX_{i,TotalRevenueExtH2}^t\ ,\ TotalAssetsH2_i^t \times FX_{i,TotalAssetsH2}^t\right)$$

Where:

$TotalRevenueExtH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalRevenueExtH1}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssetsH1}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
- if the industry of Eligible Stock (i), as available from the ;Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date

(t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,TotalRevenueExtH2}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH2^t_i$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH2^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,TotalAssetsH2}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH2^t_i$, as available from the FX Data Source at approximately the Data Reference Time

3.5.17 Earnings Variability Factor

$$
\begin{aligned}
&Earnings\ Variability^t_i \\
&\quad = -1 \\
&\quad \times STD\Big(ER\big(NetIncomeBeforeExtraH1^t_i \times FX^t_{i,NetIncomeExclExtraH1}\,,\ TotalAssetsH1^t_i \\
&\quad \times FX^t_{i,TotalAssetsH1}\big), ER\big(NetIncomeBeforeExtraH2^t_i \\
&\quad \times FX^t_{i,NetIncomeExclExtraH2}\,,\ TotalAssetsH2^t_i \\
&\quad \times FX^t_{i,TotalAssetsH2}\big), ER\big(NetIncomeBeforeExtraH3^t_i \\
&\quad \times FX^t_{i,NetIncomeExclExtraH3}\,,\ TotalAssetsH3^t_i \\
&\quad \times FX^t_{i,TotalAssetsH3}\big), ER\big(NetIncomeBeforeExtraH4^t_i \\
&\quad \times FX^t_{i,NetIncomeExclExtraH4}\,,\ TotalAssetsH4^t_i \times FX^t_{i,TotalAssetsH4}\big)\Big)
\end{aligned}
$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$NetIncomeExclExtraH1^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,NetIncomeExclExtraH1}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH1^t_i$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH1^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^t_{i,TotalAssetsH1}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH1^t_i$, as available from the FX Data Source at approximately the Data Reference Time

$NetIncomeExclExtraH2^t_i$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^{t}_{i,NetIncomeExclExtraH2}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH2^{t}_{i}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH2^{t}_{i}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^{t}_{i,TotalAssetsH2}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH2^{t}_{i}$, as available from the FX Data Source at approximately the Data Reference Time

$NetIncomeExclExtraH3^{t}_{i}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the third last reported financial year for the relevant company whose period end date is within the 1277 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^{t}_{i,NetIncomeExclExtraH3}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH3^{t}_{i}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH3^{t}_{i}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the third last reported financial year for the relevant company whose period end date is within the 1277 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^{t}_{i,TotalAssetsH3}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH3^{t}_{i}$, as available from the FX Data Source at approximately the Data Reference Time

$NetIncomeExclExtraH4^{t}_{i}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the fourth last reported financial year for the relevant company whose period end date is within the 1642 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^{t}_{i,NetIncomeExclExtraH4}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH4^{t}_{i}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH4^{t}_{i}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the fourth last reported financial year for the relevant company whose period end date is within the 1642 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX^{t}_{i,TotalAssetsH4}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH4^{t}_{i}$, as available from the FX Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Earnings Variability Factor is that smaller earnings variability stocks will have a higher score than higher earnings variability stocks when the Earnings Variability Factor is used in the optimization procedure set forth in Section 4.8.

3.5.18 Revenue Growth Variability Factor

$$Revenue\ Growth\ Variability_i^t = -1 \times STD\left(\frac{TotalRevenueExtH1_i^t \times FX_{i,TRH1}^t}{TotalRevenueExtH2_i^t \times FX_{i,TRH2}^t}, \frac{TotalRevenueExtH2_i^t \times FX_{i,TRH2}^t}{TotalRevenueExtH3_i^t \times FX_{i,TRH3}^t}, \frac{TotalRevenueExtH3_i^t \times FX_{i,TRH3}^t}{TotalRevenueExtH4_i^t \times FX_{i,TRH4}^t}, \frac{TotalRevenueExtH4_i^t \times FX_{i,TRH4}^t}{TotalRevenueExtH5_i^t \times FX_{i,TRH5}^t}\right)$$

Where:

$TotalRevenueExtH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH1_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH1_i^t$ shall be considered missing.

$FX_{i,TRH1}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH2_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date

(t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH2_i^t$ shall be considered missing.

$FX_{i,TRH2}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH3_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the third last reported financial year for the relevant company whose period end date is within the 1277 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH3_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the third last reported financial year for the relevant company whose period end date is within the 1277 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH3_i^t$ shall be considered missing.

$FX_{i,TRH3}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH3_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH4_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the fourth last reported financial year for the relevant company whose period end date is within the 1642 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH4_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the fourth last reported financial year for the relevant company whose period end date is within the 1642 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH4_i^t$ shall be considered missing.

$FX_{i,TRH4}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH4_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH5_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is “Banks”, the most recent interest income for the fifth last reported financial year for the relevant company whose period end date is within the 2007 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH5_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not “Banks”, the most recent total revenue for the fifth last reported financial year for the relevant company whose period end date is within the 2007 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH5_i^t$ shall be considered missing.

$FX_{i,TRH5}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH5_i^t$, as available from the FX Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Revenue Growth Variability Factor is that smaller revenue growth variability stocks will have a higher score than higher revenue growth variability stocks when the Revenue Growth Variability Factor is used in the optimization procedure set forth in Section 4.8.

3.5.19 Research and Development (R&D) Factor

$$R\&D_i^t = ResearchAndDev_i^t \times FX_{i,ResearchAndDev}^t$$

Where:

$ResearchAndDev_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent research and development for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,ResearchAndDev}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $ResearchAndDev_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.20 Capital Expenditure Factor

$$Capital\ Expenditure_i^t = -1 \times CapEx_i^t \times FX_{i,CapEx}^t$$

Where:

$CapEx_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent capital expenditure for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,CapEx}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CapEx_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

In the Share Data Source, capital expenditures are recorded as negative values. Hence, the impact of multiplying by negative one (-1) in the calculation of the Capital Expenditure Factor is that higher capital expenditure stocks will have a higher score than lower capital expenditure stocks when the Capital Expenditure Factor is used in the optimization procedure set forth in Section 4.8.

3.5.21 Advertising Factor

$$Advertising_{i}^{t} = AdvertisingExpense_{i}^{t} \times FX_{i,AdvertisingExpense}^{t}$$

Where:

$AdvertisingExpense_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent advertising expense for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,AdvertisingExpense}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $AdvertisingExpense_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

The Base Factors Definitions described herein may differ from the factors definitions set out in other index rules that form part of the J.P. Morgan equity risk premia family of indices.

3.6 Data Source Table associated with the Base Factor Definitions and inputs for such Base Factor Definitions

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?	The Relevant Factor Definition in which the Data is used in Section 3.5
earnings per share	Estimates Data Source	"EPS"	"Currency_"	"FY1"	Yes	3.5.1 Forward Earnings Yield Factor
official closing price	Share Data Source	"Close_"	"ISOCurrCode"	Not applicable	No	3.5.1 Forward Earnings Yield Factor 3.5.2 Forward Dividend Yield Factor
dividends per share	Estimates Data Source	"DPS"	"Currency_"	"FY1"	Yes	3.5.2 Forward Dividend Yield Factor
cash from operating activities	Fundamentals Data Source	"OTLO"	"ISOCurrCode"	Not applicable	No	3.5.3 Free Cash Flow Yield Factor 3.5.9 Operating Cash Flow to Assets Factor 3.5.11 Accruals Factor
capital expenditure	Fundamentals Data Source	"SCEX"	"ISOCurrCode"	Not applicable	No	3.5.3 Free Cash Flow Yield Factor 3.5.20 Capital Expenditure Factor
tangible book value	Fundamentals Data Source	"STBV"	"ISOCurrCode"	Not applicable	No	3.5.4 Book to Price Factor
total return price	Share Data Source	"RI"	"ISOCurrCode"	Not applicable	No	3.5.6 Price Momentum Factor 3.5.7 Low Volatility Factor
total assets	Fundamentals Data Source	"ATOT"	"ISOCurrCode"	Not applicable	No	3.5.9 Operating Cash Flow to Assets Factor 3.5.10 Delta Return on Assets Factor 3.5.11 Accruals Factor 3.5.12 Delta Leverage Factor 3.5.16 Delta Total Revenue Factor 3.5.17 Earnings Variability Factor
net income before extraordinary items	Fundamentals Data Source	"NIBX"	"ISOCurrCode"	Not applicable	No	3.5.10 Delta Return on Assets Factor 3.5.11 Accruals Factor 3.5.17 Earnings Variability Factor
total long term debt	Fundamentals Data Source	"LTTD"	"ISOCurrCode"	Not applicable	No	3.5.12 Delta Leverage Factor
total current assets	Fundamentals Data Source	"ATCA"	"ISOCurrCode"	Not applicable	No	3.5.13 Delta Liquidity Factor
total current liabilities	Fundamentals Data Source	"LTCL"	"ISOCurrCode"	Not applicable	No	3.5.13 Delta Liquidity Factor
total common shares outstanding	Fundamentals Data Source	"QTCO"	Not applicable	Not applicable	No	3.5.14 Equity Issuance Factor
cost of revenue	Fundamentals Data Source	"SCOR"	"ISOCurrCode"	Not applicable	No	3.5.15 Delta Gross Margin Factor
industry	Fundamentals Data Source	"COATypeCode"	Not applicable	Not applicable	No	3.5.15 Delta Gross Margin Factor 3.5.16 Delta Total Revenue Factor 3.5.18 Revenue Growth Variability Factor
interest income	Fundamentals Data Source	"SIIB"	"ISOCurrCode"	Not applicable	No	3.5.15 Delta Gross Margin Factor 3.5.16 Delta Total Revenue Factor 3.5.18 Revenue Growth Variability Factor
total revenue	Fundamentals Data Source	"RTLR"	"ISOCurrCode"	Not applicable	No	3.5.15 Delta Gross Margin Factor 3.5.16 Delta Total Revenue Factor 3.5.18 Revenue Growth Variability Factor
research and development	Fundamentals Data Source	"ERAD"	"ISOCurrCode"	Not applicable	No	3.5.19 Research and Development (R&D) Factor
advertising expense	Fundamentals Data Source	"EADV"	"ISOCurrCode"	Not applicable	No	3.5.21 Advertising Factor
Number of analysts used in computing the Mean Analyst Consensus Estimate	Estimates Data Source	"NumEst"	Not applicable	Not applicable	No	Not applicable

The prices that are inputs in Section 3.5 (*Base Factor Definitions*) are denominated in the applicable currency units. The applicable currency unit represents the standard unit of value for a particular country; for example, for the United Kingdom, the applicable currency unit is the Pound Sterling (not the Pound Sterling penny) and for the United States of America, the applicable currency unit is the U.S. Dollar (not the U.S. Dollar cent).

3.7 Calculation of Dollar Notional Trading Estimate for each Eligible Stock

In respect of each Rebalance Selection Date (t) and for each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the dollar notional trading estimate (the "**Dollar Notional Trading Estimate**"), in accordance with the following three steps:

a) In respect of each calendar day (d) that (a) occurs from but excluding the day that is 30 calendar days prior to Rebalance Selection Date (t) to and including Rebalance Selection Date (t) and (b) for which the consolidated volume in respect of Eligible Stock (i) is available from the Share Data Source at approximately the Data Reference Time, the Constituent Stock Determination Agent shall determine the consolidated traded notional quantity (the "**Consolidated Traded Notional Quantity**"). The Consolidated Traded Notional Quantity is calculated as the notional quantity (expressed in USD) traded on the Eligible Stock's exchanges on calendar day (d), in accordance with the following formula:

$$\text{Consolidated Traded Notional Quantity}_{\mathrm{i}}^{\mathrm{d}} = \frac{Consolidated\ Volume_i^d}{AM_{i,Volume}^d} \times Price_i^d \times AM_{i,Price}^d \times FX_i^d$$

Where:

$Consolidated\ Volume_i^d$ means the consolidated volume in respect of calendar day (d) and Eligible Stock (i), as available from the Share Data Source at approximately the Data Reference Time

$AM_{i,Volume}^d$ means the Adjustment Multiplier of Eligible Stock (i) in respect of calendar day (d), as available from the Share Data Source at approximately the Data Reference Time

$Price_i^d$ means, in respect of Eligible Stock (i) and calendar day (d), the most recent official closing price, expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time

$AM_{i,Price}^d$ means the Adjustment Multiplier of Eligible Stock (i) in respect of the date associated with the official closing price of $Price_i^d$, as available from the Share Data Source at approximately the Data Reference Time

FX_i^d means the Selection Currency Rate in respect of calendar day (d) for the currency associated with $Price_i^d$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
consolidated volume	Share Data Source	"ConsolVol"	Not applicable	Not applicable	No
official closing price	Share Data Source	"Close_"	"ISOCurrCode"	Not applicable	No

b) In respect of each calendar day (d) that (a) occurs from but excluding the day that is 30 calendar days prior to Rebalance Selection Date (t) to and including Rebalance Selection Date (t) and (b) for which the primary volume in respect of Eligible Stock (i) is available from the Share Data Source at approximately the Data Reference Time, the Constituent Stock Determination Agent shall determine the primary traded notional quantity (the "**Primary Traded Notional Quantity**"). The Primary Traded Notional Quantity is calculated as the notional quantity (expressed in USD) traded on the Eligible Stock's primary exchange on calendar day (d), in accordance with the following formula:

$$\text{Primary Traded Notional Quantity}_{\mathrm{i}}^{\mathrm{d}} = \frac{Primary\ Volume_i^d}{AM_{i,Volume}^d} \times Price_i^d \times AM_{i,Price}^d \times FX_i^d$$

Where:

$Primary\ Volume_i^d$	means the primary volume in respect of calendar day (d) and Eligible Stock (i), which is the volume traded on the primary exchange of Eligible Stock (i), as available from the Share Data Source at approximately the Data Reference Time
$AM_{i,Volume}^d$	means the Adjustment Multiplier of Eligible Stock (i) in respect of calendar day (d), as available from the Share Data Source at approximately the Data Reference Time
$Price_i^d$	means, in respect of Eligible Stock (i) and calendar day (d), the most recent official closing price, expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time
$AM_{i,Price}^d$	means the Adjustment Multiplier of Eligible Stock (i) in respect of the date associated with the official closing price of $Price_i^d$, as available from the Share Data Source at approximately the Data Reference Time
FX_i^d	means the Selection Currency Rate in respect of calendar day (d) for the currency associated with $Price_i^d$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
primary volume	Share Data Source	“Volume”	Not applicable	Not applicable	No
official closing price	Share Data Source	“Close_”	“ISOCurrCode”	Not applicable	No

c) The Constituent Stock Determination Agent shall determine the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t) as the trimmed average (being the arithmetic average of all values after first excluding certain values, as described below) of the Consolidated Traded Notional Quantities, if a sufficient number of Consolidated Traded Notional Quantities is available, as specified below, or as the trimmed average (being the arithmetic average of all values after first excluding certain values, as described below) of the Primary Traded Notional Quantities otherwise, in accordance with the following steps:

i. If the number of Consolidated Traded Notional Quantities computed in Step a) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is greater than six, the Constituent Stock Determination Agent shall select all such Consolidated Traded Notional Quantities but excluding the three highest values and the three lowest values (such selected Traded Notional Quantities, the “**Selected Traded Notional Quantities**”), and it shall compute the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t) as the arithmetic average of such Selected Traded Notional Quantities.

ii. If the number of Consolidated Traded Notional Quantities computed in Step a) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is equal to or less than six, and if the number of Primary Traded Notional Quantities computed in Step b) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is greater than six, then the Constituent Stock Determination Agent shall select as Selected Traded Notional Quantities all such Primary Traded Notional Quantities but excluding the three highest values and the three lowest values, and it shall compute the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t) as the arithmetic average of such Selected Traded Notional Quantities.

iii. If the number of Consolidated Traded Notional Quantities computed in Step a) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is equal to or less than six, and if the number of Primary Traded Notional Quantities computed in Step b) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is equal to or less than six, then the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t) shall be considered missing, and (i) no trading liquidity constraint shall be applied to that Eligible Stock, pursuant to Section 4.8(b).11.b.i and (ii) no holding liquidity constraint shall be applied to that Eligible Stock, pursuant to Section 4.8(b).11.c.i.

3.8 Calculation of Dollar Base Reference Consolidated Market Capitalization and Dollar Consolidated Market Capitalization for each Eligible Stock, and of Base Reference Free-Float Market Capitalization for each Universe Stock

(a) Calculation of Dollar Base Reference Consolidated Market Capitalization for each Eligible Stock

In respect of each Rebalance Selection Date (t) and in respect of each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the dollar base reference consolidated market capitalization (the "**Dollar Base Reference Consolidated Market Capitalization**") in respect of each Calculation Day (d) that occurs within the 30 calendar days immediately preceding and including Rebalance Selection Date (t), as follows:

$$Dollar\ Base\ Reference\ Consolidated\ Market\ Capitalization_i^d = \sum_{j=1}^{NI(i,t)} \frac{Shares_j^d}{AM_{j,Shares}^d} \times Price_j^d \times AM_{j,Price}^d \times FX_j^d$$

Where:

$NI(i,t)$ means, in respect of Rebalance Selection Date (t) and Eligible Stock (i), the number of Eligible Stocks (including Eligible Stock (i)) that have been issued by the same issuer as Eligible Stock (i)

j means, in respect of Rebalance Selection Date (t) and Eligible Stock (i), an integer representing each of the Eligible Stocks (including Eligible Stock (i)) that have been issued by the same issuer as Eligible Stock (i)

$Shares_j^d$ means the end-of-day number of shares for Eligible Stock (j) in respect of Calculation Day (d), as available from the Base Reference Data Source at approximately the Data Reference Time.

$AM_{j,Shares}^d$ means the Adjustment Multiplier of Eligible Stock (j) in respect of Calculation Day (d), as available from the Share Data Source at approximately the Data Reference Time

$Price_j^d$ means, in respect of Eligible Stock (j) and Calculation Day (d), the most recent official closing price, expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time

$AM_{j,Price}^d$ means the Adjustment Multiplier of Eligible Stock (j) in respect of the date associated with the official closing price of $Price_j^d$, as available from the Share Data Source at approximately the Data Reference Time

FX_j^d means the Selection Currency Rate in respect of Calculation Day (d) for the currency associated with $Price_j^d$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
end-of-day number of shares	Base Reference Data Source	"NextShares"	Not applicable	Not applicable	No
official closing price	Share Data Source	"Close_"	"ISOCurrCode"	Not applicable	No

(b) Calculation of Dollar Consolidated Market Capitalization for each Eligible Stock

In respect of each Rebalance Selection Date (t) for each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the dollar consolidated market capitalization (the "**Dollar Consolidated Market Capitalization**") in respect of each Calculation Day (d) that occurs within the 30 calendar days immediately preceding and including Rebalance Selection Date (t), as follows:

(x) if the consolidated market value for the relevant company is available from the Share Data Source at approximately the Data Reference Time, an amount calculated in accordance with the following formula:

$$Dollar\ Consolidated\ Market\ Capitalization_i^d = Consolidated\ Market\ Value_i^d \times FX_{i,Consolidated\ Market\ Value}^d$$

Where:

$Consolidated\ Market\ Value_i^d$ means, for Eligible Stock (i) in respect of Calculation Day (d), the consolidated market value for the relevant company, as available from the Share Data Source at approximately the Data Reference Time.

$FX_{i,Consolidated\ Market\ Value}^d$ means the Selection Currency Rate in respect of Calculation Day (d) for the currency associated with $Consolidated\ Market\ Value_i^d$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
consolidated market value	Share Data Source	"ConsolMktVal"	"ISOCurrCode"	Not applicable	No

(y) if the consolidated market value for the relevant company is not available from the Share Data Source at approximately the Data Reference Time, the Dollar Base Reference Consolidated Market Capitalization in respect of Eligible Stock (i) and Calculation Day (d), as determined pursuant to Section 3.8(a)

(c) Calculation of Dollar Base Reference Free-Float Market Capitalization for each Universe Stock

In respect of each Rebalance Selection Date (t) for each Universe Stock (i), the Constituent Stock Determination Agent shall determine the dollar base reference free-float market capitalization (the "**Dollar Base Reference Free-Float Market Capitalization**") as follows:

$$Dollar\ Base\ Reference\ FreeFloat\ Market\ Capitalization_i^t = \frac{Shares_i^t}{AM_{i,Shares}^t} \times Inclusion\ Factor_i^t \times Price_i^t \times AM_{i,Price}^t \times FX_i^t$$

Where:

$Shares_i^t$ means the end-of-day number of shares for Universe Stock (i) in respect of Rebalance Selection Date (t), as available from the Base Reference Data Source at approximately the Data Reference Time.

$AM_{i,Shares}^t$ means the Adjustment Multiplier of Eligible Stock (i) in respect of Rebalance Selection Date (t), as available from the Share Data Source at approximately the Data Reference Time

$Inclusion\ Factor_i^t$ means the inclusion factor for Universe Stock (i) in respect of Rebalance Selection Date (t), as available from the Base Reference Data Source at approximately the Data Reference Time.

$Price_i^t$ means, in respect of Universe Stock (i) and Rebalance Selection Date (t), the most recent official closing price, expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time

$AM_{i,Price}^t$ means the Adjustment Multiplier of Eligible Stock (i) in respect of the date associated with the official closing price of $Price_i^t$, as available from the Share Data Source at approximately the Data Reference Time

FX_i^t means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $Price_i^t$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
end-of-day number of shares	Base Reference Data Source	"NextShares"	Not applicable	Not applicable	No
inclusion factor	Base Reference Data Source	"TotIncFactor"	Not applicable	Not applicable	No
official closing price	Share Data Source	"Close_"	"ISOCurrCode"	Not applicable	No

3.9 Calculation of Risk Model Covariance for each pair of Eligible Stocks

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Risk Model covariance (the "**Risk Model Covariance**") between each Eligible Stock (i) and each Eligible Stock (j), as follows:

If $i = j$:

$$K_{i,j}^t = \sum_{k=1}^{n} \left(\sum_{l=1}^{n} Y_{i,k}^t \times G_{k,l}^t \times Y_{j,l}^t \right) + (S_i^t)^2$$

If $i \neq j$:

$$K_{i,j}^t = \sum_{k=1}^{n} \sum_{l=1}^{n} Y_{i,k}^t \times G_{k,l}^t \times Y_{j,l}^t$$

Where:

$K_{i,j}^t$ means the Risk Model Covariance between Eligible Stock (i) and Eligible Stock (j) in respect of Rebalance Selection Date (t). When $i = j$, such Risk Model Covariance is the Risk Model variance (the "**Risk Model Variance**") in respect of Eligible Stock (i) and Rebalance Selection Date (t).

k means, in respect of Rebalance Selection Date (t), an integer representing each of the Risk Model factors (each, a "**Risk Model Factor**"), as available from the Risk Model Data Source at approximately the Data Reference Time.

l means, in respect of Rebalance Selection Date (t), an integer representing each of the Risk Model Factors, as available from the Risk Model Data Source at approximately the Data Reference Time.

n means, in respect of Rebalance Selection Date (t), the number of Risk Model Factors, as available from the Risk Model Data Source at approximately the Data Reference Time.

$Y_{i,k}^t$ means the asset exposure in respect of Eligible Stock (i), Risk Model Factor (k) and Rebalance Selection Date (t), as available from the Risk Model Data Source at approximately the Data Reference Time, or zero if such asset exposure is not available.

$G_{k,l}^t$ means the factor covariance between Risk Model Factor (k) and Risk Model Factor (l) in respect of Rebalance Selection Date (t), as available from the Risk Model Data Source at approximately the Data Reference Time, divided by 10,000 (ten thousand).

$Y_{j,l}^t$ means the asset exposure in respect of Eligible Stock (j), Risk Model Factor (l) and Rebalance Selection Date (t), as available from the Risk Model Data Source at approximately the Data Reference Time, or zero if such asset exposure is not available.

S_i^t means the specific risk in respect of Eligible Stock (i) and Rebalance Selection Date (t), as available from the Risk Model Data Source at approximately the Data Reference Time, divided by 100 (one hundred).

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
asset exposure	Risk Model Data Source	"Exposure"	Not applicable	Not applicable	No
factor covariance	Risk Model Data Source	"VarCovar"	Not applicable	Not applicable	No
specific risk	Risk Model Data Source	"SpecRisk%"	Not applicable	Not applicable	No

3.10 Calculation of Defined Borrow Rate and Filled Borrow Rate for each Eligible Stock

(a) Calculation of Defined Borrow Rate for each Eligible Stock

In respect of each Rebalance Selection Date (t) for each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the defined borrow rate (the "**Defined Borrow Rate**") as the most recent borrow rate whose date falls within the 91 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Borrow Data Provider at approximately the Data Reference Time.

(b) Calculation of Filled Borrow Rate for each Eligible Stock

In respect of each Rebalance Selection Date (t) for each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the filled Borrow Rate (the "**Filled Borrow Rate**") as follows:

If BR_i^t is not missing:

$$FBR_i^t = BR_i^t$$

If BR_i^t is missing:

$$FBR_i^t = \frac{1}{NB(t)} \times \sum_j BR_j^t$$

Where:

BR_i^t means the Defined Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).

FBR_i^t means the Filled Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t).

BR_j^t means the Defined Borrow Rate in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).

$NB(t)$ means, in respect of Rebalance Selection Date (t), the number of Eligible Stocks (j) for which BR_j^t is not missing.

j means, in respect of Rebalance Selection Date (t), each Eligible Stock (j) for which BR_j^t is not missing.

3.11 Grouping Definitions

Stock Sector and Stock Region

The sector of a stock (the "**Stock Sector**") is identified as the sector associated with such stock as determined by Global industry Classification Standard (GICS®) and as reported by the Base Reference Data Source at approximately the Data Reference Time.

The region of a stock (the "**Stock Region**") is identified as the Stock Region (where the Stock Region can be "Americas"; Europe, the Middle East and Africa ("EMEA"); or "Asia/Pacific") of the Country of Incorporation of such stock, as determined by the Constituent Stock Determination Agent.

As of the Index Live Date, the number of Stock Sectors is 11 (eleven) and the Stock Sector and Stock Region pairs are listed below (each, a "**Stock Sector Region Pair Group**"):

1. Energy Americas
2. Materials Americas
3. Industrials Americas
4. Consumer Discretionary Americas
5. Consumer Staples Americas
6. Health Care Americas
7. Financials Americas
8. Information Technology Americas
9. Telecom Americas
10. Utilities Americas
11. Real Estate Americas
12. Energy EMEA
13. Materials EMEA
14. Industrials EMEA
15. Consumer Discretionary EMEA
16. Consumer Staples EMEA
17. Health Care EMEA
18. Financials EMEA
19. Information Technology EMEA
20. Telecom EMEA
21. Utilities EMEA
22. Real Estate EMEA
23. Energy Asia/Pacific
24. Materials Asia/Pacific
25. Industrials Asia/Pacific
26. Consumer Discretionary Asia/Pacific
27. Consumer Staples Asia/Pacific
28. Health Care Asia/Pacific
29. Financials Asia/Pacific
30. Information Technology Asia/Pacific
31. Telecom Asia/Pacific
32. Utilities Asia/Pacific
33. Real Estate Asia/Pacific

3.12 Mathematical functions

(a) Standard mathematical functions

Certain mathematical symbols and functions are used in the Index Rules. Unless otherwise specified, the following symbols and functions will have the following meanings:

$\sum(\ )$ means the sum of the numbers or the outputs of the formulas enclosed in parentheses from the day or number indicated below the summation symbol to the day or number indicated above the summation symbol.

$|\ |$ means the absolute value of the number or the output of the formula enclosed in vertical lines.

$ABS()$ means the absolute value of the number or the output of the formula enclosed in parentheses.

$MAX()$ means the highest value among the numbers or the outputs of the formulas enclosed in parentheses.

$MIN()$ means the lowest value among the numbers or the outputs of the formulas enclosed in parentheses.

$LN()$ means the natural logarithm of the number or the output of the formula enclosed in parentheses.

$STD()$ means the standard deviation of the numbers or the outputs of the formulas enclosed in parentheses, calculated in accordance with the following formula:

(i) If $n > 1$:

$$STD(x_1, \dots, x_n) = \sqrt{\frac{1}{n-1} \times \sum_{i=1}^{n} \left(x_i - \frac{\sum_{j=1}^{n} x_j}{n} \right)^2}$$

(ii) If $\boldsymbol{n \leq 1}$: $\boldsymbol{STD(x_1, \dots, x_n)}$ shall be considered to be a missing value.

Where:

n means the number of inputs to the standard deviation function

x_1 means the first input to the standard deviation function

x_n means the last input to the standard deviation function

x_i means the $(i)^{th}$ input to the standard deviation function

x_j means the $(j)^{th}$ input to the standard deviation function

(b) Mathematical functions specific to the Index

$ER(numerators, denominators)$ means, in respect of a set of numerators, $numerator_1$ to $numerator_n$, and in respect of a set of denominators, $denominator_1$ to $denominator_n$, the set of enhanced ratios (the "**Enhanced Ratios**", ER_1 to ER_n) calculated in accordance with the following formula:

In respect of each integer i between 1 and n:

If $numerator_i \geq 0$:

$$ER_i = \frac{numerator_i}{denominator_i}$$

If $numerator_i < 0$:

$$ER_i = \frac{numerator_i}{MAX\left(\frac{M}{2 \times m} - 1, 1\right)} \times \left(\frac{1}{m} - \frac{1}{denominator_i}\right)$$

Where:

n	means the number of numerators input to the Enhanced Ratio function, which shall be the same as the number of denominators input to the Enhanced Ratio function, and which will be the same as the number of Enhanced Ratios returned by the Enhanced Ratio function
$numerator_i$	means the $(i)^{th}$ numerator input to the Enhanced Ratio function
$denominator_i$	means the $(i)^{th}$ denominator input to the Enhanced Ratio function
ER_i	means the $(i)^{th}$ Enhanced Ratio
m	means the lowest value among the denominators
M	means the highest value among the denominators

4. Determining the Preliminary Constituent Stocks and Preliminary Constituent Weights

4.1 Determination of the Preliminary Base Factor Scores

In respect of each Rebalance Selection Date (the "**Rebalance Selection Date (t)**"), each Base Factor (BF), and each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the preliminary Base Factor score (the "**Preliminary Base Factor Score**") at approximately the Data Reference Time, in accordance with the formulas set forth in Section 3.5 (*Base Factor Definitions*).

Subject to Section 10 (*Disruption Provisions*), if the Constituent Stock Determination Agent is unable to determine such Preliminary Base Factor Score due to the unavailability of information to the Constituent Stock Determination Agent for any reason (including, without limitation, due to missing data or data considered missing for such Eligible Stock or due to technology issues affecting the Constituent Stock Determination Agent, the applicable Data Source, or the means by which such data is accessed or other factors that result in such unavailability) using the applicable Data Source at approximately the Data Reference Time, or if the Constituent Stock Determination Agent determines such Preliminary Base Factor Score to be either positive infinity or negative infinity, then, the Base Factor Weight In Composite Factor in respect of Base Factor (BF) and in respect of any Composite Factor (CF) listed in Section 3.3 will be set to 0 (zero) (and such setting to zero shall be a "**Missing Value Event**") for the purpose of usage in formulas set forth in Section 4.4 in respect of such Rebalance Selection Date (t), Eligible Stock (i) and Base Factor (BF).

Furthermore, in order to determine the Preliminary Base Factor Score in respect of Eligible Stock (i), Rebalance Selection Date (t) and Base Factor (BF), such Eligible Stock (i) must satisfy the Base Factor Eligibility Requirement for Base Factor (BF) set forth in Section 3.2. If Eligible Stock (i) does not satisfy the Base Factor Eligibility Requirement for Base Factor (BF), then the Base Factor Weight In Composite Factor in respect of Base Factor (BF) and in respect of any Composite Factor (CF) listed in Section 3.3 will be set to 0 (zero) (and such setting to zero shall be a "**Missing Factor Input Event**") for the purpose of the formulas set forth in Section 4.4 in respect of such Rebalance Selection Date (t), Eligible Stock (i) and Base Factor (BF).

Pursuant to Section 4.3, in respect of each Rebalance Selection Date (t), each Base Factor (BF) and each Eligible Stock (i) for which either a Missing Value Event or a Missing Factor Input Event has occurred, the Constituent Stock Determination Agent shall not determine a Normalized Base Factor Score.

Furthermore, in respect of Rebalance Selection Date (t), the Eligible Stocks are categorized into different groups (each a "**Group**" or "**Group (G)**") on the basis of the Stock Sector Region Pair Group associated with an Eligible Stock. Such Groups are identified in Section 3.11.

4.2 Determination of the Base Reference Weights

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the base reference weight (the "**Base Reference Weight**") in respect of each Eligible Stock (i) in accordance with the following formula:

$$Base\ Reference\ Weight_i^t = \frac{MCap_i^t}{\sum_{j=1}^{N(t)} MCap_j^t}$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
$MCap_i^t$	means the Dollar Base Reference Free-Float Market Capitalization in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.8(c).
$MCap_j^t$	means the Dollar Base Reference Free-Float Market Capitalization in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 3.8(c).

4.3 Determination of the Normalized Base Factor Scores

In respect of each Rebalance Selection Date (t), each Base Factor (F) and each Eligible Stock (i) for which neither a Missing Value Event nor a Missing Factor Input Event has occurred, the Constituent Stock Determination Agent shall normalize the Preliminary Base Factor Score for Base Factor (F) and Eligible Stock (i) across the set of Eligible Stocks within the same Group (G) as Eligible Stock (i), sequentially a total of 10 times to determine the normalized Base Factor score (the "**Normalized Base Factor Score**") for Base Factor (F) and Eligible Stock (i), as further described below.

In respect of each Rebalance Selection Date (t), each Base Factor (F) and each Eligible Stock (i) for which either a Missing Value Event or a Missing Factor Input Event has occurred, the Constituent Stock Determination Agent shall not determine a Normalized Base Factor Score.

The Normalized Base Factor Score is calculated by iterating the below formula ten (10) times, calculating a new value with respect to each iteration k (the "**k^{th} Group Normalized Base Factor Score$_{i,F}^{t}$**", or "**^{k}Group Normalized Base Factor Score$_{i,F}^{t}$**"). For each iteration "k" from the second to the tenth iteration, the group average input and the group input std dev for such iteration "k" are based on values obtained from the previous iteration of the formula (the iteration corresponding to k-1). The Normalized Base Factor Score is the value obtained as a result of the 10^{th} iteration (k=10) of the following formula:

$$^{k}\text{Group Normalized Base Factor Score}_{i,F}{}^{t} = \text{MAX}\left(\text{MIN}\left(\frac{^{k-1}\text{Factor Input}_{i,F}{}^{t} - {}^{k-1}\text{Group Average Input}_{G,F}{}^{t}}{^{k-1}\text{Group Input Std Dev}_{G,F}{}^{t}}, 3\right), -3\right)$$

Where:

$^{k-1}\text{Factor Input}_{i,F}{}^{t}$	means in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (i): (x) for the first iteration of the above formula (k=1), the Preliminary Base Factor Score in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (i), and (y) for the second through tenth iterations of the above formula (k=2 to k=10), the Group Normalized Base Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{k-1}\text{Group Normalized Base Factor Score}_{i,F}{}^{t}$") in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (i)
$^{k-1}\text{Group Average Input}_{G,F}{}^{t}$	means in respect of Rebalance Selection Date (t), Group (G) and Base Factor (F), the quantity computed in accordance with the following formula:

$$^{k-1}\text{Group Average Input}_{G,F}{}^{t} = \frac{\sum_{j=1}^{n} {}^{k-1}\text{Factor Input}_{j,F}{}^{t} \times w_{M,j}^{t}}{\sum_{j=1}^{n} w_{M,j}^{t}}$$

Where:

n	means the number of Eligible Stocks within Group (G)
j	means an integer representing each Eligible Stock within Group (G)
$^{k-1}\text{Factor Input}_{j,F}{}^{t}$	means: (x) for the first iteration of the above formula (k=1): (a) if no Missing Value Event and no Missing Factor Input Event occurs in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), means the Preliminary Base Factor Score in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), or (b) if a Missing Value Event or a Missing Factor Input Event occurs in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), means zero. (y) for the second through tenth iterations of the above formula (k=2 to k=10): (a) if no Missing Value Event and no Missing Factor Input Event occurs in respect of Rebalance Selection

Date (t), Base Factor (F) and Eligible Stock (j), means the Group Normalized Base Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "${}^{k-1}\text{Group Normalized Base Factor Score}_{j,F}{}^{t}$") in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), or

(b) if a Missing Value Event or a Missing Factor Input Event occurs in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), means zero.

$w_{M,j}^{t}$ means the Base Reference Weight in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 4.2.

${}^{k-1}\text{Group Input Std Dev}_{G,F}{}^{t}$ means in respect of Rebalance Selection Date (t), Group (G) and Base Factor (F):

(x) for the first iteration of the above formula (k=1), the standard deviation, as defined in Section 3.12(a), of the Preliminary Base Factor Scores for all Eligible Stocks within Group (G), but excluding any Preliminary Base Factor Score in respect of which a Missing Value Event or a Missing Factor Input Event has occurred, and

(y) for the second through tenth iterations of the above formula (k=2 to k =10), the standard deviation, as defined in Section 3.12(a), of the (k-1)th Group Normalized Base Factor Scores for all Eligible Stocks within Group (G) (where the (k-1)th Group Normalized Base Factor Score is the Group Normalized Base Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "${}^{k-1}\text{Group Normalized Base Factor Score}_{i,F}{}^{t}$") in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (i)), but excluding any (k-1)th Group Normalized Base Factor Score that is considered missing.

The Normalized Base Factor Score is the value obtained as a result of the 10th iteration (k=10):

$$\text{Normalized Base Factor Score}_{i,F}{}^{t} = {}^{10}\text{Group Normalized Base Factor Score}_{i,F}{}^{t}$$

The Normalized Base Factor Score for the Size Factor for Eligible Stock (i) in respect of Rebalance Selection Date (t) shall be the "**Final Size Factor Score**" for Eligible Stock (i) in respect of Rebalance Selection Date (t).

The Normalized Base Factor Score for the Price Momentum Factor for Eligible Stock (i) in respect of Rebalance Selection Date (t) shall be the "**Final Momentum Factor Score**" for Eligible Stock (i) in respect of Rebalance Selection Date (t).

The Normalized Base Factor Score for the Low Volatility Factor for Eligible Stock (i) in respect of Rebalance Selection Date (t) shall be the "**Final Low Volatility Factor Score**" for Eligible Stock (i) in respect of Rebalance Selection Date (t).

4.4 Determination of the Preliminary Composite Factor Scores

In respect of each Rebalance Selection Date (t) and each Composite Factor (CF), the Constituent Stock Determination Agent shall determine in respect of each Eligible Stock (i) the preliminary Composite Factor score (the "**Preliminary Composite Factor Score**") in accordance with the following formula:

$$\text{Preliminary Composite Factor Score}_{i,CF}^{t} = \frac{\sum_{BF=1}^{NBF}\left(\text{Factor Weight}_{BF,CF} \times \text{Normalized Base Factor Score}_{i,BF}^{t}\right)}{\sum_{BF=1}^{NBF}\text{Factor Weight}_{BF,CF}}$$

Where:

NBF means the total number of Base Factors in respect of Composite Factor (CF), Eligible Stock (i) and Rebalance Selection Date (t) for which no Missing Value Event and no Missing Factor Input Event occurs.

BF means each Base Factor in respect of Composite Factor (CF), Eligible Stock (i) and Rebalance Selection Date (t) for which no Missing Value Event and no Missing Factor Input Event occurs.

$\mathrm{Factor\ Weight}_{\mathrm{BF,CF}}$ means the Base Factor Weight In Composite Factor in respect of Base Factor (BF) and Composite Factor (CF), subject to the occurrence of a Missing Value Event or a Missing Factor Input Event as described further in Section 4.1.

$\mathrm{Normalized\ Base\ Factor\ Score}^{t}_{i,\mathrm{BF}}$ means the Normalized Base Factor Score in respect of Eligible Stock (i), Base Factor (BF) and Rebalance Selection Date (t), determined in accordance with Section 4.3.

If, in respect of a Rebalance Selection Date (t), a Composite Factor (CF) and an Eligible Stock (i), all Base Factor Weight In Composite Factor in respect of all Base Factors are set at 0 (zero) as a result of any of the events set forth in Section 4.1, then the Composite Factor Score shall not be calculated for such Composite Factor (CF) and Eligible Stock (i) in respect of Rebalance Selection Date (t) and shall be considered missing.

The occurrence of a Missing Value Event or a Missing Factor Input Event in respect of any Base Factor (BF) will result in the relevant Composite Factor Score having a higher exposure to those Base Factors in respect of which neither a Missing Value Event nor a Missing Factor Input Event has occurred.

4.5 Determination of the Final Value Factor Scores

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i) for which the Preliminary Composite Factor Score for the Value Factor is not considered missing, the Constituent Stock Determination Agent shall normalize such Preliminary Composite Factor Score for the Value Factor across the set of Eligible Stocks within the same Group (G) as Eligible Stock (i), sequentially a total of 10 times to determine the final Value Factor score (the "**Final Value Factor Score**") for Eligible Stock (i), as further described below.

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i) for which the Preliminary Composite Factor Score for the Value Factor is considered missing, the Constituent Stock Determination Agent shall not determine a Final Value Factor Score.

The Final Value Factor Score is calculated by iterating the below formula ten (10) times, calculating a new value with respect to each iteration k (the "**k^{th} Group Normalized Value Factor Score$_i^t$**", or "**^{k}Group Normalized Value Factor Score$_i^t$**"). For each iteration "k" from the second to the tenth iteration, the group average input and the group input std dev for such iteration "k" are based on values obtained from the previous iteration of the formula (the iteration corresponding to k-1). The Final Value Factor Score is the value obtained as a result of the 10^{th} iteration (k=10) of the following formula:

$$^{k}\mathrm{Group\ Normalized\ Value\ Factor\ Score}_i{}^{t} = \mathrm{MAX}\left(\mathrm{MIN}\left(\frac{^{k-1}\mathrm{Factor\ Input}_i{}^{t} - {}^{k-1}\mathrm{Group\ Average\ Input}_G{}^{t}}{^{k-1}\mathrm{Group\ Input\ Std\ Dev}_G{}^{t}}, 3\right), -3\right)$$

Where:

$^{k-1}\mathrm{Factor\ Input}_i{}^{t}$ means in respect of Rebalance Selection Date (t) and Eligible Stock (i):

(x) for the first iteration of the above formula (k=1), the Preliminary Composite Factor Score for the Value Factor in respect of Rebalance Selection Date (t) and Eligible Stock (i), and

(y) for the second through tenth iterations of the above formula (k=2 to k=10), the Group Normalized Value Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{k-1}\mathrm{Group\ Normalized\ Value\ Factor\ Score}_i{}^{t}$") in respect of Rebalance Selection Date (t) and Eligible Stock (i)

$^{\mathrm{k-1}}\text{Group Average Input}_{\mathrm{G}}{}^{\mathrm{t}}$ means in respect of Rebalance Selection Date (t) and Group (G), the quantity computed in accordance with the following formula:

$$^{\mathrm{k-1}}\text{Group Average Input}_{\mathrm{G}}{}^{\mathrm{t}} = \frac{\sum_{j=1}^{n} {}^{\mathrm{k-1}}\text{Factor Input}_{\mathrm{j}}{}^{\mathrm{t}} \times w_{M,j}^{t}}{\sum_{j=1}^{n} w_{M,j}^{t}}$$

Where:

n means the number of Eligible Stocks within Group (G)

j means an integer representing each Eligible Stock within Group (G)

$^{\mathrm{k-1}}\text{Factor Input}_{\mathrm{j,F}}{}^{\mathrm{t}}$ means:

(x) for the first iteration of the above formula (k=1):

(a) if the Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date (t) is not considered missing, means such Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date (t), or

(b) if the Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date (t) is considered missing, means zero.

(y) for the second through tenth iterations of the above formula (k=2 to k=10):

(a) if the Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date is not considered missing, means the Group Normalized Value Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{\mathrm{k-1}}\text{Group Normalized Value Factor Score}_{\mathrm{j,F}}{}^{\mathrm{t}}$") for Eligible Stock (j) in respect of Rebalance Selection Date (t), or

(b) if the Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date (t) is considered missing, means zero.

$w_{M,j}^{t}$ means the Base Reference Weight in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 4.2.

$^{\mathrm{k-1}}\text{Group Input Std Dev}_{\mathrm{G}}{}^{\mathrm{t}}$ means in respect of Rebalance Selection Date (t) and Group (G):

(x) for the first iteration of the above formula (k=1), the standard deviation, as defined in Section 3.12(a), of the Preliminary Composite Factor Scores for the Value Factor for all Eligible Stocks within Group (G), but excluding any Preliminary Composite Factor Score for the Value Factor that is considered missing, and

(y) for the second through tenth iterations of the above formula (k=2 to k =10), the standard deviation, as defined in Section 3.12(a), of the (k-1)$^{\text{th}}$ Group Normalized Value Factor Scores for all Eligible Stocks within Group (G) (where the (k-1)$^{\text{th}}$ Group Normalized Value Factor Score is the Group Normalized Value Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{k-1}$Group Normalized Value Factor Score$_i^t$") in respect of Rebalance Selection Date (t) and Eligible Stock (i)), but excluding any (k-1)th Group Normalized Value Factor Score that is considered missing.

The Final Value Factor Score is the value obtained as a result of the 10th iteration (k=10):

$$\text{Final Value Factor Score}_i^{\,t} = {}^{10}\text{Group Normalized Value Factor Score}_i^{\,t}$$

4.6 Determination of the Preliminary Quality Factor Scores

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the preliminary quality factor score (the "**Preliminary Quality Factor Score**") in respect of each Eligible Stock (i) for which neither the Final Value Factor Score nor the Preliminary Composite Factor Score for the QV FScore Factor nor the Preliminary Composite Factor Score for the QG GScore Factor are considered missing, in accordance with the following formula:

If $S_{Value,i}^{t} \leq -1$:

$$S_{Quality,i}^{t} = S_{QG\ GScore,i}^{t}$$

If $-1 < S_{Value,i}^{t} < 1$:

$$S_{Quality,i}^{t} = QV\ FScore\ Weight_i^t \times S_{QV\ FScore,i}^{t} + (1 - QV\ FScore\ Weight_i^t) \times S_{QG\ GScore,i}^{t}$$

If $S_{Value,i}^{t} \geq 1$:

$$S_{Quality,i}^{t} = S_{QV\ FScore,i}^{t}$$

Where:

$S_{Value,i}^{t}$ means the Final Value Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t).

$S_{Quality,i}^{t}$ means the Preliminary Quality Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t).

$S_{QV\ FScore,i}^{t}$ means the Preliminary Composite Factor Score for the QV FScore Factor, for Eligible Stock (i) in respect of Rebalance Selection Date (t).

$S_{QG\ GScore,i}^{t}$ means the Preliminary Composite Factor Score for the QG GScore Factor, for Eligible Stock (i) in respect of Rebalance Selection Date (t).

$QV\ FScore\ Weight_i^t$ means an amount calculated in accordance with the following formula:

$$QV\ FScore\ Weight_i^t = \frac{S_{Value,i}^{t} + 1}{2}$$

4.7 Determination of the Final Quality Factor Scores

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i) for which the Preliminary Quality Factor Score is not considered missing, the Constituent Stock Determination Agent shall normalize such Preliminary Quality Factor Score across the set of Eligible Stocks within the same Group (G) as Eligible Stock (i), sequentially a total of 10 times to determine the final quality factor score (the "**Final Quality Factor Score**") for Eligible Stock (i), as further described below.

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i) for which the Preliminary Quality Factor Score is considered missing, the Constituent Stock Determination Agent shall not determine a Final Quality Factor Score.

The Final Quality Factor Score is calculated by iterating the below formula ten (10) times, calculating a new value with respect to each iteration k (the "**k^{th} Group Normalized Quality Factor Score$_i^t$**", or "**^{k}Group Normalized Quality Factor Score$_i^t$**"). For each iteration "k" from the second to the tenth iteration, the group average input and the group input std dev for such iteration "k" are based on values obtained from the previous iteration of the formula (the iteration corresponding to k-1). The Final Quality Factor Score is the value obtained as a result of the 10^{th} iteration (k=10) of the following formula:

$$^{k}\text{Group Normalized Quality Factor Score}_{i}{}^{t} = \text{MAX}\left(\text{MIN}\left(\frac{^{k-1}\text{Factor Input}_{i}{}^{t} - {}^{k-1}\text{Group Average Input}_{G}{}^{t}}{^{k-1}\text{Group Input Std Dev}_{G}{}^{t}}, 3\right), -3\right)$$

Where:

$^{k-1}\text{Factor Input}_{i}{}^{t}$ means in respect of Rebalance Selection Date (t) and Eligible Stock (i):

(x) for the first iteration of the above formula (k=1), the Preliminary Quality Factor Score in respect of Rebalance Selection Date (t) and Eligible Stock (i), and

(y) for the second through tenth iterations of the above formula (k=2 to k=10), the Group Normalized Quality Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{k-1}\text{Group Normalized Quality Factor Score}_{i}{}^{t}$") in respect of Rebalance Selection Date (t) and Eligible Stock (i)

$^{k-1}\text{Group Average Input}_{G}{}^{t}$ means in respect of Rebalance Selection Date (t) and Group (G), the quantity computed in accordance with the following formula:

$$^{k-1}\text{Group Average Input}_{G}{}^{t} = \frac{\sum_{j=1}^{n} {}^{k-1}\text{Factor Input}_{j}{}^{t} \times w_{M,j}^{t}}{\sum_{j=1}^{n} w_{M,j}^{t}}$$

Where:

n means the number of Eligible Stocks within Group (G)

j means an integer representing each Eligible Stock within Group (G)

$^{k-1}\text{Factor Input}_{j,F}{}^{t}$ means:

(x) for the first iteration of the above formula (k=1):

(a) if the Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t) is not considered missing, means such Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t), or

(b) if the Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t) is considered missing, means zero.

(y) for the second through tenth iterations of the above formula (k=2 to k=10):

(a) if the Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t) is not considered missing, means the Group Normalized Quality Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{k-1}\text{Group Normalized Quality Factor Score}_{j,F}{}^{t}$") for Eligible Stock (j) in respect of Rebalance Selection Date (t), or

(b) if the Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t) is considered missing, means zero.

$w_{M,j}^{t}$ means the Base Reference Weight in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 4.2.

$^{k-1}\text{Group Input Std Dev}_{G}{}^{t}$ means in respect of Rebalance Selection Date (t) and Group (G):

(x) for the first iteration of the above formula (k=1), the standard deviation, as defined in Section 3.12(a), of the Preliminary Quality Factor Scores for all Eligible Stocks within Group (G), but excluding any Preliminary Quality Factor Score that is considered missing, and

(y) for the second through tenth iterations of the above formula (k=2 to k =10), the standard deviation, as defined in Section 3.12(a), of the (k-1)th Group Normalized Quality Factor Scores for all Eligible Stocks within Group (G) (where the (k-1)th Group Normalized Quality Factor Score is the Group Normalized Quality Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{k-1}\text{Group Normalized Quality Factor Score}_{i}{}^{t}$") in respect of Rebalance Selection Date (t) and Eligible Stock (i)), but excluding any (k-1)th Group Normalized Quality Factor Score that is considered missing.

The Final Quality Factor Score is the value obtained as a result of the 10th iteration (k=10):

$$\text{Final Quality Factor Score}_{i}{}^{t} = {}^{10}\text{Group Normalized Quality Factor Score}_{i}{}^{t}$$

4.8 Optimization Methodology

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Output Portfolio in accordance with Sections 4.8 and 4.9.

The Output Portfolio, determined by the Constituent Stock Determination Agent in accordance with the methodology described below, shall be the result of maximizing the objective function specified in Section 4.8(a) (the "**Objective Function**") subject to the optimization constraints specified in Section 4.8(b) (the "**Optimization Constraints**"), using the Optimizer Software.

If, in respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent is unable to determine the Output Portfolio using the Optimizer Software before 11.00 am local time in London, United Kingdom, on the day that falls two London Scheduled Business Days after Rebalance Selection Date (t), owing to a temporary technical failure such as, without limitation, a corruption of relevant software libraries or a temporary failure in the computing facilities (a "**Temporary Optimizer Software Failure**"), then: (i) the Constituent Stocks comprised in the Index shall not be rebalanced and re-weighted on the Scheduled Rebalancing Date immediately following Rebalance Selection Date (t) and (ii) the Constituent Stocks of the Index shall remain the same as immediately prior to the Scheduled Rebalancing Date, subject to any adjustments to Constituent Stocks pursuant to these Index Rules (although the percentage contribution of each Constituent Stock to the Index Level may differ from the weight applicable on the previous Effective Rebalancing Date). If a Temporary Optimizer Software Failure occurs for two consecutive Rebalance Selection Dates, then the provisions set out in Section 11.10 shall apply.

(a) Objective Function

In respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Objective Function in accordance with the following formula:

$$\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t + S_{Size,i}^t + S_{Momentum,i}^t + S_{Low\ Vol,i}^t + S_{Quality,i}^t\right)$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
w_i^t	means the Output Weight associated with Eligible Stock (i) in the Output Portfolio (the "**Output Weight**") in respect of Rebalance Selection Date (t).
$S_{Value,i}^t$	means the Final Value Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Value Factor Score is not considered missing, or means 0 (zero) if such Final Value Factor Score is considered missing.
$S_{Size,i}^t$	means the Final Size Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Size Factor Score is not considered missing, or means 0 (zero) if such Final Size Factor Score is considered missing.
$S_{Momentum,i}^t$	means the Final Momentum Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Momentum Factor Score is not considered missing, or means 0 (zero) if such Final Momentum Factor Score is considered missing.
$S_{Low\ Vol,i}^t$	means the Final Low Volatility Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Low Volatility Factor Score is not considered missing, or means 0 (zero) if such Final Low Volatility Factor Score is considered missing.
$S_{Quality,i}^t$	means the Final Quality Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Quality Factor Score is not considered missing, or means 0 (zero) if such Final Quality Factor Score is considered missing.

(b) Optimization Constraints

In respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Optimization Constraints in accordance with the following formulas:

1. Factor Balance Constraint: For each pair of Final Factor Scores, the absolute difference between the aggregate sums of such Final Factor Scores, for the Output Portfolio and weighted by the Output Weights, is constrained to be less than or equal to the Maximum Absolute Factor Score Difference, in accordance with the following formulas:

$$\begin{cases} \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t - S_{Size,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t - S_{Momentum,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t - S_{Low\ Vol,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t - S_{Quality,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Size,i}^t - S_{Momentum,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Size,i}^t - S_{Low\ Vol,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Size,i}^t - S_{Quality,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Momentum,i}^t - S_{Low\ Vol,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Momentum,i}^t - S_{Quality,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Low\ Vol,i}^t - S_{Quality,i}^t\right)\right| \leq MAD \end{cases}$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
w_i^t	means the Output Weight for Eligible Stock (i) in respect of Rebalance Selection Date (t).
$S_{Value,i}^t$	means the Final Value Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Value Factor Score is not considered missing, or means 0 (zero) if such Final Value Factor Score is considered missing.
$S_{Size,i}^t$	means the Final Size Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Size Factor Score is not considered missing, or means 0 (zero) if such Final Size Factor Score is considered missing.
$S_{Momentum,i}^t$	means the Final Momentum Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Momentum Factor Score is not considered missing, or means 0 (zero) if such Final Momentum Factor Score is considered missing.

$S^t_{Low\,Vol,i}$ means the Final Low Volatility Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Low Volatility Factor Score is not considered missing, or means 0 (zero) if such Final Low Volatility Factor Score is considered missing.

$S^t_{Quality,i}$ means the Final Quality Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Quality Factor Score is not considered missing, or means 0 (zero) if such Final Quality Factor Score is considered missing.

MAD means the Maximum Absolute Factor Score Difference specified in Section 3.1.

2. Beta Constraint: The absolute beta of the Output Portfolio is constrained to be less than or equal to the Maximum Absolute Beta, in accordance with the following formulas:

$$\left|\sum_{i=1}^{N(t)} w_i^t \times \beta_i^t\right| \leq MAB$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

β_i^t means the beta in respect of Eligible Stock (i) and Rebalance Selection Date (t), which is calculated in accordance with the following formula:

$$\beta_i^t = \frac{\sum_{j=1}^{N(t)} w_{M,j}^t \times K_{i,j}^t}{\sum_{j=1}^{N(t)} \sum_{k=1}^{N(t)} w_{M,j}^t \times w_{M,k}^t \times K_{j,k}^t}$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$w_{M,j}^t$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

$w_{M,k}^t$ means the Base Reference Weight in respect of Eligible Stock (k) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

$K_{i,j}^t$ means the Risk Model Covariance between Eligible Stock (i) and Eligible Stock (j) in respect of Rebalance Selection Date (t), determined pursuant to Section 3.9.

$K_{j,k}^t$ means the Risk Model Covariance between Eligible Stock (j) and Eligible Stock (k) in respect of Rebalance Selection Date (t), determined pursuant to Section 3.9.

MAB means the Maximum Absolute Beta specified in Section 3.1.

3. Net Country Exposure Constraint: In respect of each Eligible Country, the absolute difference between the exposure of the Output Portfolio to such Eligible Country and the exposure of the "**Base Reference Portfolio**", which is defined as the Portfolio of all Eligible Stocks associated with their Base Reference Weights in respect of Rebalance Selection Date (t), to such Eligible Country is constrained to be less than or equal to the Maximum Net Country Exposure Deviation, in accordance with the following formula:

For each Eligible Country (j):

$$\left|\sum_{i=1}^{N(t)}\left(C_{i,j}^{t} \times w_{i}^{t}\right)-\sum_{i=1}^{N(t)}\left(w_{i}^{t}\right) \times \sum_{i=1}^{N(t)}\left(C_{i,j}^{t} \times w_{M,i}^{t}\right)\right| \leq MD$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$C_{i,j}^{t}$ means the country exposure of Eligible Stock (i) in respect of Eligible Country (j) and Rebalance Selection Date (t), which is a quantity defined as:

- 1 (one) if the Country of Incorporation of Eligible Stock (i) is Eligible Country (j)
- 0 (zero) if the Country of Incorporation of Eligible Stock (i) is not Eligible Country (j)

w_{i}^{t} means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{M,i}^{t}$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

MD means the Maximum Net Country Exposure Deviation specified in Section 3.1.

4. Net Sector Exposure Constraint: In respect of each Eligible Sector, the absolute difference between the exposure of the Output Portfolio to such Eligible Sector and the exposure of the Base Reference Portfolio to such Eligible Sector is constrained to be less than or equal to the Maximum Net Sector Exposure Deviation, in accordance with the following formula:

For each Eligible Sector (j):

$$\left|\sum_{i=1}^{N(t)}\left(S_{i,j}^{t} \times w_{i}^{t}\right)-\sum_{i=1}^{N(t)}\left(w_{i}^{t}\right) \times \sum_{i=1}^{N(t)}\left(S_{i,j}^{t} \times w_{M,i}^{t}\right)\right| \leq MD$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$S_{i,j}^{t}$ means the sector exposure of Eligible Stock (i) in respect of Eligible Sector (j) and Rebalance Selection Date (t), which is a quantity defined as:

- 1 (one) if the Stock Sector of Eligible Stock (i) is Eligible Sector (j)
- 0 (zero) if the Stock Sector of Eligible Stock (i) is not Eligible Sector (j)

w_{i}^{t} means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{M,i}^{t}$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

MD means the Maximum Net Sector Exposure Deviation specified in Section 3.1.

5. Long Country Exposure Constraint: In respect of each Eligible Country, the exposure of the "**Long Output Portfolio**", which is defined as the Portfolio of all Eligible Stocks whose Output Weights are positive, associated with their Output Weights, to such Eligible Country is constrained to be less than or equal to a quantity defined of the sum of (i) the exposure of the Base Reference Portfolio to such Eligible Country and (ii) the Maximum Long Country Exposure Deviation, in accordance with the following formula:

For each Eligible Country (j):

$$\sum_{i=1}^{N(t)} C_{i,j}^t \times \mathrm{MAX}(w_i^t, 0) \leq \sum_{i=1}^{N(t)} \left(C_{i,j}^t \times w_{M,i}^t\right) + MD$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$C_{i,j}^t$ means the country exposure of Eligible Stock (i) in respect of Eligible Country (j) and Rebalance Selection Date (t), which is a quantity defined as:

- 1 (one) if the Country of Incorporation of Eligible Stock (i) is Eligible Country (j)
- 0 (zero) if the Country of Incorporation of Eligible Stock (i) is not Eligible Country (j)

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{M,i}^t$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

MD means the Maximum Long Country Exposure Deviation specified in Section 3.1.

6. Long Sector Exposure Constraint: In respect of each Eligible Sector, the exposure of the Long Output Portfolio to such Eligible Sector is constrained to be less than or equal to a quantity defined of the sum of (i) the exposure of the Base Reference Portfolio to such Eligible Sector and (ii) the Maximum Long Sector Exposure Deviation, in accordance with the following formula:

   For each Eligible Sector (j):

$$\sum_{i=1}^{N(t)} S_{i,j}^t \times \mathrm{MAX}(w_i^t, 0) \leq \sum_{i=1}^{N(t)} \left(S_{i,j}^t \times w_{M,i}^t\right) + MD$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$S_{i,j}^t$ means the sector exposure of Eligible Stock (i) in respect of Eligible Sector (j) and Rebalance Selection Date (t), which is a quantity defined as:

- 1 (one) if the Stock Sector of Eligible Stock (i) is Eligible Sector (j)
- 0 (zero) if the Stock Sector of Eligible Stock (i) is not Eligible Sector (j)

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{M,i}^t$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

MD means the Maximum Long Sector Exposure Deviation specified in Section 3.1.

7. Net Delta Constraint: The net delta of the Output Portfolio is constrained to be greater than or equal to zero, in accordance with the following formula:

$$\sum_{i=1}^{N(t)} w_i^t \geq 0$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

8. Long Delta Constraint: The Long Delta (as defined below) of the Output Portfolio is constrained to be less than or equal to one, in accordance with the following formula:

$$LongDelta_t \leq 1$$

Where:

$LongDelta_t$ means the long delta (the "**Long Delta**") of the Output Portfolio in respect of Rebalance Selection Date (t), which is an amount calculated in accordance with the following formula:

$$LongDelta_t = \sum_{i=1}^{N(t)} \mathrm{MAX}(w_i^t, 0)$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

9. Volatility Constraint: The volatility of the Output Portfolio is constrained to be less than or equal to the Maximum Volatility, in accordance with the following formula:

$$\sqrt{\sum_{i=1}^{N(t)} \sum_{j=1}^{N(t)} w_i^t \times w_j^t \times K_{i,j}^t} \leq MV$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

w_j^t means the Output Weight in respect of Eligible Stock (j) and Rebalance Selection Date (t).

$K_{i,j}^t$ means the Risk Model Covariance between Eligible Stock (i) and Eligible Stock (j) in respect of Rebalance Selection Date (t), determined pursuant to Section 3.9.

MV means the Maximum Volatility specified in Section 3.1.

10. Excluded Stocks Constraint: The Output Weight in respect of each Excluded Stock (as defined below) is constrained to be equal to zero.

Each Eligible Stock that:
(i) is a member of the J.P. Morgan group of companies; or
(ii) in respect of which the number of Final Factor Scores considered missing, in respect of Rebalance Selection Date (t), is greater than the Maximum Missing Final Factor Scores Number

shall be deemed to be an "**Excluded Stock**".

11. Per-Stock Constraint: The Output Weight of each Eligible Stock that is not an Excluded Stock is constrained to be greater than or equal to a lower bound in respect of such Eligible Stock and Rebalance Selection Date (t) (the "**Final Lower Bound**") and less than or equal to an upper bound in respect of such Eligible Stock and Rebalance Selection Date (t) (the "**Final Upper Bound**"). The Final Lower Bound and Final Upper Bound are determined taking into account the Maximum Absolute Weight, borrow rate, trading liquidity and holding liquidity, as specified below.

a. Maximum Absolute Weight and Short Stock Borrow: The first preliminary lower bound ("**First Preliminary Lower Bound**") and first preliminary upper bound ("**First Preliminary Upper Bound**") in respect of Rebalance Selection Date (t) for each Eligible Stock (i) are calculated in accordance with the following formulas:

If BR_i^t is not missing and $BR_i^t > MSBR$:

$$FPLB_i^t = 0$$

Otherwise (BR_i^t is missing or $BR_i^t \leq MSBR$):

$$FPLB_i^t = -MAW$$

In all cases:

$$FPUB_i^t = MAW$$

Where:

BR_i^t	means the Defined Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).
$MSBR$	means the Maximum Short Stock Borrow Rate specified in Section 3.1.
$FPLB_i^t$	means the First Preliminary Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$FPUB_i^t$	means the First Preliminary Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).
MAW	means the Maximum Absolute Weight specified in Section 3.1.

b. Trading Liquidity: The second preliminary lower bound ("**Second Preliminary Lower Bound**") and second preliminary upper bound ("**Second Preliminary Upper Bound**") in respect of Rebalance Selection Date (t) for each Eligible Stock (i) are calculated in accordance with the following formulas:

i. If Rebalance Selection Date (t) falls on or before the Index Base Date or if $DNTE_i^t$ is considered missing:

$$SPLB_i^t = FPLB_i^t$$
$$SPUB_i^t = FPUB_i^t$$

ii. If Rebalance Selection Date (t) falls after the Index Base Date and if $DNTE_i^t$ is not considered missing:

If $w_{C,i}^t - MTW_i^t > FPUB_i^t$:

$$SPLB_i^t = MAX\left(FPLB_i^t, FPUB_i^t - \frac{MTW_i^t}{2}\right)$$
$$SPUB_i^t = FPUB_i^t$$

If $w_{C,i}^t - MTW_i^t \leq FPUB_i^t$ and $w_{C,i}^t + MTW_i^t < FPLB_i^t$:

$$SPLB_i^t = FPLB_i^t$$
$$SPUB_i^t = MIN\left(FPUB_i^t, FPLB_i^t + \frac{MTW_i^t}{2}\right)$$

If $w_{C,i}^t - MTW_i^t \leq FPUB_i^t$ and $w_{C,i}^t + MTW_i^t \geq FPLB_i^t$:

$$SPLB_i^t = MAX\left(FPLB_i^t, w_{C,i}^t - MTW_i^t\right)$$
$$SPUB_i^t = MIN\left(FPUB_i^t, w_{C,i}^t + MTW_i^t\right)$$

Where:

$DNTE_i^t$	means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.
$SPLB_i^t$	means the Second Preliminary Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$FPLB_i^t$	means the First Preliminary Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$SPUB_i^t$	means the Second Preliminary Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$FPUB_i^t$	means the First Preliminary Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$w_{C,i}^t$	means the Current Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined by the Index Calculation Agent pursuant to Section 5.2(d), if Eligible Stock (i) is a Constituent Stock in respect of the Effective Rebalancing Date immediately preceding Rebalance Selection Date (t), or otherwise means zero.
MTW_i^t	means the maximum absolute trading weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), which is an amount calculated in accordance with the following formula:

$$MTW_i^t = \frac{MTLR \times DNTE_i^t}{LN}$$

Where:

$MTLR$	means the Maximum Trading Liquidity Ratio specified in Section 3.1.
$DNTE_i^t$	means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.
LN	means the Liquidity Notional specified in Section 3.1.

c. Holding Liquidity: The Final Upper Bound and Final Lower Bound in respect of Rebalance Selection Date (t) for each Eligible Stock (i) are calculated in accordance with the following formulas:

i. If $DNTE_i^t$ is considered missing:

$$LB_i^t = SPLB_i^t$$
$$UB_i^t = SPUB_i^t$$

ii. If $DNTE_i^t$ is not considered missing:

If $SPLB_i^t > MHW_i^t$:

$$LB_i^t = SPLB_i^t$$
$$UB_i^t = MIN\left(SPUB_i^t, SPLB_i^t + \frac{MTW_i^t}{2}\right)$$

If $SPUB_i^t < -MHW_i^t$:

$$LB_i^t = MAX\left(SPLB_i^t, SPUB_i^t - \frac{MTW_i^t}{2}\right)$$
$$UB_i^t = SPUB_i^t$$

If $SPLB_i^t \leq MHW_i^t$ and $SPUB_i^t \geq -MHW_i^t$:

$$LB_i^t = MAX(SPLB_i^t, -MHW_i^t)$$
$$UB_i^t = MIN(SPUB_i^t, MHW_i^t)$$

Where:

$DNTE_i^t$ means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.

LB_i^t means the Final Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$SPLB_i^t$ means the Second Preliminary Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

UB_i^t means the Final Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$SPUB_i^t$ means the Second Preliminary Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

MHW_i^t means the maximum absolute holding weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), which is an amount calculated in accordance with the following formula:

$$MHW_i^t = \frac{MHLR \times DNTE_i^t}{LN}$$

Where:

$MHLR$ means the Maximum Holding Liquidity Ratio specified in Section 3.1.

$DNTE_i^t$ means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.

LN means the Liquidity Notional specified in Section 3.1.

MTW_i^t means the maximum absolute trading weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), which is an amount calculated in accordance with the following formula:

$$MTW_i^t = \frac{MTLR \times DNTE_i^t}{LN}$$

Where:

$MTLR$ means the Maximum Trading Liquidity Ratio specified in Section 3.1.

$DNTE_i^t$ means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.

LN means the Liquidity Notional specified in Section 3.1.

12. Turnover Constraint:
    a. In respect of a Rebalance Selection Date that falls on or before the Index Base Date, no turnover constraint is applied.
    b. In respect of a Rebalance Selection Date that falls after the Index Base Date, the following constraint is applied: The turnover of the Output Portfolio is constrained to be less than or equal to the maximum turnover, in accordance with the following formula:

$$\frac{1}{2}\sum_{i=1}^{N(t)}\left|w_i^t - w_{C,i}^t\right| \leq \frac{MMT}{RPM}$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

i means an integer representing each stock that is an Eligible Stock in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{C,i}^t$ means the Current Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined by the Index Calculation Agent pursuant to Section 5.2(d), if Eligible Stock (i) is a Constituent Stock in respect of the Effective Rebalancing Date immediately preceding Rebalance Selection Date (t), or otherwise means zero.

MMT means the Maximum Monthly Turnover specified in Section 3.1.

RPM means the average number of rebalances per month, which is an amount calculated as the ratio of (i) the number of Scheduled Rebalancing Dates that occur in the 365 calendar days immediately succeeding and including Rebalance Selection Date (t), as determined by the Constituent Stock Determination Agent at approximately the Data Reference Time, to (ii) 12 (twelve).

13. Short Leg Borrow Rate Constraint:
    a. If BR_i^t is missing for every Eligible Stock (i), no short leg borrow rate constraint is applied.
    b. If BR_i^t is not missing for at least one Eligible Stock (i), the following constraint is applied: The borrow rate of the "**Short Output Portfolio**", which is defined as the Portfolio of all Eligible Stocks whose Output Weights are negative, associated with their Output Weights, is constrained to be less than or equal to the Maximum Borrow Rate, in accordance with the following formula:

$$\sum_{i=1}^{N(t)} FBR_i^t \times \mathrm{MAX}(-w_i^t, 0) \leq MLBR$$

Where:

BR_i^t means the Defined Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

FBR_i^t means the Filled Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(b).

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$MLBR$ means the Maximum Short Leg Borrow Rate specified in Section 3.1.

(c) Optimizer Software result

The Optimizer Software which is used as part of the Optimization Methodology will return a primal status. If: (i) the primal status equals "Optimal" and (ii) the Long Delta of the Output Portfolio is greater than or equal to the Minimum Long Delta Accepted, subject to any adjustment of the Minimum Long Delta Accepted in accordance with Section 4.9(a) (the "**Acceptance Conditions**"), then the Constituent Stock Determination Agent shall use such Output Portfolio which satisfies the Acceptance Conditions (the "**Selected Output Portfolio**") for the purposes of Section 4.10. If the Acceptance Conditions are not satisfied, then the

Constituent Stock Determination Agent shall apply the optimization relaxation procedure (the "**Optimization Relaxation Procedure**") specified in Section 4.9.

4.9 Relaxation Procedure

(a) Optimization Relaxation Procedure

The Optimization Relaxation Procedure is determined by the Constituent Stock Determination Agent, in accordance with the provisions set out herein, and it is a process which consists in iterating the Relaxed Optimization Methodology set out in Section 4.9(d) over the Relaxation Steps set out in Section 4.9(b) until an Output Portfolio satisfying the Acceptance Conditions is obtained. The Minimum Long Delta Accepted, which is used as a parameter to one of the Acceptance Conditions, shall be adjusted in accordance with the Relaxed Value for Minimum Long Delta Accepted in respect of Relaxation Step (k), when Minimum Long Delta Accepted is listed as a Relaxed Parameter for Relaxation Step (k), as set out in the table contained in Section 4.9(b). When an Output Portfolio satisfying the Acceptance Conditions is obtained, the Constituent Stock Determination Agent shall use such Output Portfolio (the "**Selected Output Portfolio**") for the purposes of Section 4.10.

(b) Optimization Relaxation Steps

Relaxation Step	Relaxed Parameter	Default Value	Relaxed Value
1	Maximum Long Country Exposure Deviation	0.10%	0.20%
2	Maximum Short Leg Borrow Rate	0.35%	0.45%
3	Maximum Monthly Turnover	50%	60%
4	Maximum Long Sector Exposure Deviation	0.10%	0.20%
5	Maximum Long Country Exposure Deviation	0.10%	0.30%
6	Maximum Short Leg Borrow Rate	0.35%	0.55%
7	Maximum Monthly Turnover	50%	70%
8	Maximum Long Sector Exposure Deviation	0.10%	0.30%
9	Maximum Net Country Exposure Deviation	0.50%	0.80%
10	Maximum Net Sector Exposure Deviation	0.50%	0.80%
11	Maximum Holding Liquidity Ratio	70%	90%
12	Maximum Volatility	5%	7%
13	Maximum Monthly Turnover	50%	80%
14	Maximum Trading Liquidity Ratio	20%	25%
15	Maximum Short Leg Borrow Rate	0.35%	0.65%
16	Minimum Long Delta Accepted	85%	80%
17	Minimum Long Delta Accepted	85%	80%
	Maximum Long Country Exposure Deviation	0.10%	1.10%
	Maximum Net Country Exposure Deviation	0.50%	0.70%
18	Minimum Long Delta Accepted	85%	80%
	Maximum Long Sector Exposure Deviation	0.10%	1.60%
	Maximum Net Sector Exposure Deviation	0.50%	0.70%
19	Minimum Long Delta Accepted	85%	80%
	Maximum Long Country Exposure Deviation	0.10%	1.10%
	Maximum Net Country Exposure Deviation	0.50%	0.70%
	Maximum Short Leg Borrow Rate	0.35%	0.95%
	Maximum Monthly Turnover	50%	80%
20	Minimum Long Delta Accepted	85%	80%
	Maximum Long Sector Exposure Deviation	0.10%	1.60%
	Maximum Net Sector Exposure Deviation	0.50%	0.70%

	Maximum Short Leg Borrow Rate	0.35%	0.95%
	Maximum Monthly Turnover	50%	80%
21	Minimum Long Delta Accepted	85%	80%
	Maximum Monthly Turnover	50%	100%
	Maximum Short Leg Borrow Rate	0.35%	0.65%
22	Minimum Long Delta Accepted	85%	80%
	Maximum Monthly Turnover	50%	100%
	Maximum Short Leg Borrow Rate	0.35%	0.65%
	Maximum Volatility	5%	9%
23	Minimum Long Delta Accepted	85%	80%
	Maximum Long Country Exposure Deviation	0.10%	1.10%
	Maximum Net Country Exposure Deviation	0.50%	0.70%
	Maximum Short Leg Borrow Rate	0.35%	0.95%
	Maximum Monthly Turnover	50%	80%
	Maximum Volatility	5%	7%
24	Minimum Long Delta Accepted	85%	80%
	Maximum Long Sector Exposure Deviation	0.10%	1.60%
	Maximum Net Sector Exposure Deviation	0.50%	0.70%
	Maximum Short Leg Borrow Rate	0.35%	0.95%
	Maximum Monthly Turnover	50%	80%
	Maximum Volatility	5%	7%
25	Minimum Long Delta Accepted	85%	80%
	Maximum Monthly Turnover	50%	200%
	Maximum Short Leg Borrow Rate	0.35%	0.65%

(c) Relaxation Event

If an Output Portfolio satisfying the Acceptance Conditions has not been obtained, in accordance with the Optimization Relaxation Procedure described in Section 4.9(a), then a relaxation event (a "**Relaxation Event**") shall be deemed to have occurred and: (i) the Constituent Stocks comprised in the Index shall not be rebalanced and re-weighted on the Scheduled Rebalancing Date immediately following Rebalance Selection Date (t) and (ii) the Constituent Stocks of the Index shall remain the same as immediately prior to the Scheduled Rebalancing Date, subject to any adjustment to a Constituent Stock pursuant to these Index Rules (although the percentage contribution of each Constituent Stock to the Index Level may differ from the weight applicable on the previous Effective Rebalancing Date).

(d) Relaxed Optimization Methodology

In respect of a Relaxation Step (k), the Output Portfolio, determined by the Constituent Stock Determination Agent in accordance with the methodology described below, shall be the result of maximizing the relaxed objective function specified in Section 4.9(e) (the "**Relaxed Objective Function**") subject to the relaxed optimization constraints specified in Section 4.9(f) (the "**Relaxed Optimization Constraints**") in respect of Relaxation Step (k), using the Optimizer Software.

If, in respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent is unable to determine the Output Portfolio using the Optimizer Software before 11.00 am local time in London, United Kingdom, on the day that falls two London Scheduled Business Days after Rebalance Selection Date (t), owing to a Temporary Optimizer Software Failure, then the consequences of that Temporary Optimizer Software Failure shall be as specified in Section 4.8.

(e) Relaxed Objective Function

In respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Relaxed Objective Function in accordance with the following formula:

$$\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t + S_{Size,i}^t + S_{Momentum,i}^t + S_{Low\ Vol,i}^t + S_{Quality,i}^t\right) - \lambda_C \times \sum_{j=1}^{NC(t)} z_{C,j}^t - \lambda_S \times \sum_{j=1}^{NS(t)} z_{S,j}^t - \lambda_B \times z_B^t$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
w_i^t	means the Output Weight associated with Eligible Stock (i) in the Output Portfolio in respect of Rebalance Selection Date (t).
$S_{Value,i}^t$	means the Final Value Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Value Factor Score is not considered missing, or means 0 (zero) if such Final Value Factor Score is considered missing.
$S_{Size,i}^t$	means the Final Size Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Size Factor Score is not considered missing, or means 0 (zero) if such Final Size Factor Score is considered missing.
$S_{Momentum,i}^t$	means the Final Momentum Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Momentum Factor Score is not considered missing, or means 0 (zero) if such Final Momentum Factor Score is considered missing.
$S_{Low\ Vol,i}^t$	means the Final Low Volatility Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Low Volatility Factor Score is not considered missing, or means 0 (zero) if such Final Low Volatility Factor Score is considered missing.
$S_{Quality,i}^t$	means the Final Quality Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Quality Factor Score is not considered missing, or means 0 (zero) if such Final Quality Factor Score is considered missing.
λ_C	means the Country Exposure Penalty Multiplier specified in Section 3.1.
$NC(t)$	means the number of Eligible Countries in respect of Rebalance Selection Date (t).
$z_{C,j}^t$	means the country exposure penalty variable (the "**Country Exposure Penalty Variable**") in respect of Eligible Country (j) and Rebalance Selection Date (t).
λ_S	means the Sector Exposure Penalty Multiplier specified in Section 3.1.
$NS(t)$	means the number of Eligible Sectors in respect of Rebalance Selection Date (t).
$z_{S,j}^t$	means the sector exposure penalty variable (the "**Sector Exposure Penalty Variable**") in respect of Eligible Sector (j) and Rebalance Selection Date (t).
λ_B	means the Borrow Penalty Multiplier specified in Section 3.1.
z_B^t	means the borrow penalty variable (the "**Borrow Penalty Variable**") in respect of Rebalance Selection Date (t).

(f) Relaxed Optimization Constraints

In respect of Rebalance Selection Date (t) and Relaxation Step (k), the Constituent Stock Determination Agent shall determine the Relaxed Optimization Constraints in accordance with the following formulas, with the exception that where a parameter that is listed as a Relaxed Parameter for Relaxation Step (k) in Section 4.9(b) is referred to, the Relaxed Value for such Relaxed Parameter shall be used instead of the Default Value.

Optimization Constraints 1 to 13 from Section 4.8 are incorporated herein.

14. Country Exposure Penalty Constraint: In respect of each Eligible Country, the sum of the Country Exposure Penalty Variables is constrained to be greater than or equal to the sum of the excess long country exposure deviations, in accordance with the following formula:

For each Eligible Country (j):

$$z_{C,j}^{t} \geq MAX\left(0, \sum_{i=1}^{N(t)} \left(C_{i,j}^{t} \times \mathrm{MAX}(w_{i}^{t}, 0)\right) - \left(\sum_{i=1}^{N(t)} \left(C_{i,j}^{t} \times w_{M,i}^{t}\right) + MD\right)\right)$$

Where:

$z_{C,j}^{t}$ means the Country Exposure Penalty Variable in respect of Eligible Country (j) and Rebalance Selection Date (t).

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$C_{i,j}^{t}$ means the country exposure of Eligible Stock (i) in respect of Eligible Country (j) and Rebalance Selection Date (t), which is a quantity defined as:

- 1 (one) if the Country of Incorporation of Eligible Stock (i) is Eligible Country (j)
- 0 (zero) if the Country of Incorporation of Eligible Stock (i) is not Eligible Country (j)

w_{i}^{t} means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{M,i}^{t}$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

MD means the Maximum Long Country Exposure Deviation specified in Section 3.1.

15. Sector Exposure Penalty Constraint: In respect of each Eligible Sector, the sum of the Sector Exposure Penalty Variables is constrained to be greater than or equal to the sum of the excess long sector exposure deviations, in accordance with the following formula:

For each Eligible Sector (j):

$$z_{S,j}^{t} \geq MAX\left(0, \sum_{i=1}^{N(t)} \left(S_{i,j}^{t} \times \mathrm{MAX}(w_{i}^{t}, 0)\right) - \left(\sum_{i=1}^{N(t)} \left(S_{i,j}^{t} \times w_{M,i}^{t}\right) + MD\right)\right)$$

Where:

$z_{S,j}^{t}$ means the Sector Exposure Penalty Variable in respect of Eligible Sector (j) and Rebalance Selection Date (t).

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$S_{i,j}^{t}$ means the sector exposure of Eligible Stock (i) in respect of Eligible Sector (j) and Rebalance Selection Date (t), which is a quantity defined as:

- 1 (one) if the Stock Sector of Eligible Stock (i) is Eligible Sector (j)
- 0 (zero) if the Stock Sector of Eligible Stock (i) is not Eligible Sector (j)

w_{i}^{t} means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{M,i}^{t}$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

MD means the Maximum Long Sector Exposure Deviation specified in Section 3.1.

16. Borrow Penalty Constraint:
    a. If BR_i^t is missing for every Eligible Stock (i), the Borrow Penalty Variable is constrained to be greater than or equal to 0.
    b. If BR_i^t is not missing for at least one Eligible Stock (i), the following constraint is applied: The Borrow Penalty Variable is constrained to be greater than or equal to the short leg borrow rate deviation, in accordance with the following formula:

$$z_B^t \geq MAX\left(0, \sum_{i=1}^{N(t)} \left(FBR_i^t \times \mathrm{MAX}(-w_i^t, 0)\right) - MLBR\right)$$

Where:

BR_i^t	means the Defined Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).
z_B^t	means the Borrow Penalty Variable in respect of Rebalance Selection Date (t).
$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
FBR_i^t	means the Filled Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(b).
w_i^t	means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$MLBR$	means the Maximum Short Leg Borrow Rate specified in Section 3.1.

4.10 Filtering small weights and providing the Preliminary Long Basket Constituent Stocks and Weights, and the Preliminary Short Basket Constituent Stocks and Weights

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall remove from the Selected Output Portfolio all Eligible Stocks associated with a weight whose absolute value is less than the Small Weight Threshold, and the remaining Eligible Stocks within the Selected Output Portfolio shall compose the "**Filtered Output Portfolio**".

Subject to Section 4.9(c) and subject to the occurrence of a Temporary Optimizer Software Failure, the set of stocks within the Filtered Output Portfolio that are associated with a positive weight shall be deemed to be the "**Preliminary Long Basket Constituent Stocks**" and their associated weights shall be deemed to be the "**Preliminary Long Basket Constituent Weights**"; the set of stocks within the Filtered Output Portfolio that are associated with a negative weight shall be deemed to be the "**Preliminary Short Basket Constituent Stocks**" and their associated weights shall be deemed to be the "**Preliminary Short Basket Constituent Weights**".

The Constituent Stock Determination Agent, in respect of each Rebalance Selection Date (t) and subject to Section 4.9(c) and subject to the occurrence of a Temporary Optimizer Software Failure, shall provide the Index Calculation Agent with the list of the Preliminary Long Basket Constituent Stocks, the Preliminary Long Basket Constituent Weights, the list of the Preliminary Short Basket Constituent Stocks and the Preliminary Short Basket Constituent Weights. The Index Calculation Agent shall use the list of the Preliminary Long Basket Constituent Stocks, the Preliminary Long Basket Constituent Weights, the list of the Preliminary Short Basket Constituent Stocks and the Preliminary Short Basket Constituent Weights for the calculation set forth in Section 5.

5. Determining the Constituent Stocks and Constituent Weights, Rebalancing the Index and Determining the Index Level

5.1 Determination of the Constituent Stocks and Constituent Weights

The Index Calculation Agent, in respect of each Effective Rebalancing Date (k), using the information provided by the Constituent Stock Determination Agent pursuant to Section 4.10 in respect of the immediately preceding Rebalance Selection Date ("**Rebalance Selection Date (t)**"), will determine whether, from and including Rebalance Selection Date (t) to and including Effective Rebalancing Date (k) (the "**Determination Period**"), a Preliminary Long Basket Constituent Stock or a Preliminary Short Basket Constituent Stock has been delisted from the relevant Exchange (each a "**Delisted Stock**"). The Index Calculation Agent shall remove from the list of the Preliminary Long Basket Constituent Stocks and the list of the Preliminary Short Basket Constituent Stocks (as the case may be) each of the Delisted Stocks and shall adjust the list of the Preliminary Long Basket Constituent Stocks and the list of the Preliminary Short Basket Constituent Stocks (as the case may be) to account for such removal. The remaining stocks, within the adjusted Preliminary Long Basket and the adjusted Preliminary Short Basket (as applicable) that are not affected by the occurrence of a delisting event during the Determination Period shall be deemed to be the "**Long Basket Constituent Stocks**" and the "**Short Basket Constituent Stocks**", respectively, in respect of Effective Rebalancing Date (k) (the Long Basket Constituent Stocks and the Short Basket Constituent Stocks together, the "**Constituent Stocks**"). The Preliminary Long Basket Constituent Weights in respect of the Long Basket Constituent Stocks shall be deemed to be the "**Long Basket Constituent Weights**" in respect of Effective Rebalancing Date (k). The Preliminary Short Basket Constituent Weights in respect of the Short Basket Constituent Stocks shall be deemed to be the "**Short Basket Constituent Weights**" in respect of Effective Rebalancing Date (k) (the Long Basket Constituent Weights and the Short Basket Constituent Weights together, the "**Constituent Weights**"). The number of Long Basket Constituent Stocks shall be deemed to be the "**Number of Long Stocks**" in respect of Effective Rebalancing Date (k) and the number of Short Basket Constituent Stocks shall be deemed to be the "**Number of Short Stocks**" in respect of Effective Rebalancing Date (k).

5.2 Calculation of Index Level in respect of a Calculation Day (t)

(a) Calculation of the Long Basket Level

In respect of each Calculation Day (t), the Index Calculation Agent will calculate the level of the Long Basket (the "**Long Basket Level**" or "**Long Basket**$_t$") as follows:

In respect of the Basket Base Date:

$$\text{Long Basket}_t = \text{Index Base Level}$$

On each Calculation Day (t) after the Basket Base Date:

$$\text{Long Basket}_t = \frac{\sum_{i=1}^{NL(k)}\left(\text{NOSH}_{Long,i}^{k} \times \text{P}_i^t \times \text{FX}_i^t\right)}{\text{Divisor}_{Long}^{t}}$$

Where:

Index Base Level — means the Index Base Level specified in Section 3.1

Effective Rebalancing Date (k) — means, in respect of a Calculation Day (t) that falls after the Basket Base Date, the immediately preceding Effective Rebalancing Date.

$NL(k)$ — means the Number of Long Stocks in respect of Effective Rebalancing Date (k) as determined pursuant to Section 5.1.

$\text{NOSH}_{Long,i}^{k}$ — means the number of shares (the "**Number of Shares**") in respect of Long Basket Constituent Stock (i) and Effective Rebalancing Date (k), which is an amount calculated in accordance with the following formula:

$$\text{NOSH}_{Long,i}^{k} = \frac{\text{W}_{Long,i}^{k}}{\text{P}_i^{RSD} \times \text{FX}_i^{RSD}}$$

Where:

Rebalance Selection Date (RSD) — means, in respect of Effective Rebalancing Date (k), the immediately preceding Rebalance Selection Date.

$\text{W}_{Long,i}^{k}$ — means, in respect of Long Basket Constituent Stock (i) and Effective Rebalancing Date (k), the Long Basket Constituent Weight, as determined pursuant to Section 5.1.

P_i^{RSD}	means the Closing Price of Long Basket Constituent Stock (i) in respect of Rebalance Selection Date (RSD)
FX_i^{RSD}	means the FX Rate of Long Basket Constituent Stock (i) in respect of Rebalance Selection Date (RSD)

P_i^t means, in respect of Calculation Day (t), the Closing Price of the "i^{th}" Long Basket Constituent Stock, "**Long Basket Constituent Stock (i)**", in respect of Calculation Day (t)

FX_i^t means the FX Rate of Long Basket Constituent Stock (i) in respect of Calculation Day (t)

Divisor_{Long}^t means the divisor of the Long Basket (the "**Long Basket Divisor**") in respect of Calculation Day (t), which is an amount calculated in accordance with the following formulas:

(a) If Calculation Day (t) is the Basket Base Date:

$$\text{Divisor}_{Long}^t = \frac{\sum_{i=1}^{NL(k)} \left(\text{NOSH}_{Long,i}^k \times P_i^t \times FX_i^t\right)}{Index\ Base\ Level}$$

(b) If Calculation Day (t) is not the Basket Base Date and is not immediately after Effective Rebalancing Date (k):

$$\text{Divisor}_{Long}^t = \text{Divisor}_{Long}^{t-1} \times \frac{\sum_{i=1}^{NL(k)} \left(\text{NOSH}_{Long,i}^k \times (P_i^{t-1} \times FX_i^{t-1} - \text{Gross } d_i^t \times \text{FXDiv}_i^{t-1})\right)}{\sum_{i=1}^{NL(k)} \left(\text{NOSH}_{Long,i}^k \times P_i^{t-1} \times FX_i^{t-1}\right)}$$

(c) If Calculation Day (t) is not the Basket Base Date and is immediately after Effective Rebalancing Date (k):

$$\text{Divisor}_{Long}^t = \frac{1}{\text{Long Basket}_k} \times \sum_{i=1}^{NL(k)} \left(\text{NOSH}_{Long,i}^k \times (P_i^{t-1} \times FX_i^{t-1} - \text{Gross } d_i^t \times \text{FXDiv}_i^{t-1})\right)$$

Where:

Calculation Day (t-1)	means, in respect of Calculation Day (t), the Calculation Day immediately preceding such Calculation Day (t)
$\text{Divisor}_{Long}^{t-1}$	means the Long Basket Divisor in respect of Calculation Day (t-1).
P_i^{t-1}	means the Closing Price of Long Basket Constituent Stock (i) in respect of Calculation Day (t-1)
FX_i^{t-1}	means the FX Rate of Long Basket Constituent Stock (i) in respect of Calculation Day (t-1)
$\text{Gross } d_i^t$	means, in respect of Long Basket Constituent Stock (i), the Gross Dividend Amount of such Long Basket Constituent Stock (i) for the period from, but excluding, Calculation Day (t-1) to, and including, Calculation Day (t)
FXDiv_i^{t-1}	means the FX Rate of the Gross Dividend Amount of Long Basket Constituent Stock (i) in respect of Calculation Day (t-1)
Long Basket_k	means the Long Basket Level in respect of Effective Rebalancing Date (k)

(b) Calculation of the Short Basket Level

In respect of each Calculation Day (t), the Index Calculation Agent will calculate the level of the Short Basket (the "**Short Basket Level**" or "**Short Basket$_t$**") as follows:

In respect of the Basket Base Date:

$$\text{Short Basket}_{\text{t}} = \text{Index Base Level}$$

On each Calculation Day (t) after the Basket Base Date:

$$\text{Short Basket}_{\text{t}} = \frac{\sum_{i=1}^{NS(k)} \left(\text{NOSH}_{Short,i}^{k} \times \text{P}_{i}^{t} \times \text{FX}_{i}^{t} \right)}{\text{Divisor}_{Short}^{t}}$$

Where:

Index Base Level means the Index Base Level specified in Section 3.1

Effective Rebalancing Date (k) means, in respect of a Calculation Day (t) that falls after the Basket Base Date, the immediately preceding Effective Rebalancing Date.

$NS(k)$ means the Number of Short Stocks in respect of Effective Rebalancing Date (k) as determined pursuant to Section 5.1.

$\text{NOSH}_{Short,i}^{k}$ means the Number of Shares in respect of Short Basket Constituent Stock (i) and Effective Rebalancing Date (k), which is an amount calculated in accordance with the following formula:

$$\text{NOSH}_{Short,i}^{k} = \frac{-1 \times \text{W}_{Short,i}^{k}}{\text{P}_{i}^{RSD} \times \text{FX}_{i}^{RSD}}$$

Where:

Rebalance Selection Date (RSD) means, in respect of Effective Rebalancing Date (k), the immediately preceding Rebalance Selection Date.

$\text{W}_{Short,i}^{k}$ means, in respect of Short Basket Constituent Stock (i) and Effective Rebalancing Date (k), the Short Basket Constituent Weight, as determined pursuant to Section 5.1.

P_{i}^{RSD} means the Closing Price of Short Basket Constituent Stock (i) in respect of Rebalance Selection Date (RSD)

FX_{i}^{RSD} means the FX Rate of Short Basket Constituent Stock (i) in respect of Rebalance Selection Date (RSD)

P_{i}^{t} means, in respect of Calculation Day (t), the Closing Price of the "i^{th}" Short Basket Constituent Stock, "**Short Basket Constituent Stock (i)**".

FX_{i}^{t} means the FX Rate of Short Basket Constituent Stock (i) in respect of Calculation Day (t)

$\text{Divisor}_{Short}^{t}$ means the divisor of the Short Basket (the "**Short Basket Divisor**") in respect of Calculation Day (t), which is an amount calculated in accordance with the following formulas:

(a) If Calculation Day (t) is the Basket Base Date:

$$\text{Divisor}_{Short}^{t} = \frac{\sum_{\text{i}=1}^{\text{NS(k)}} \left(\text{NOSH}_{Short,i}^{k} \times \text{P}_{i}^{t} \times \text{FX}_{i}^{t} \right)}{Index\ Base\ Level}$$

(b) If Calculation Day (t) is not the Basket Base Date and is not immediately after an Effective Rebalancing Date (k):

$$\text{Divisor}_{Short}^{t} = \text{Divisor}_{Short}^{t-1} \times \frac{\sum_{\text{i}=1}^{\text{NS(k)}} \left(\text{NOSH}_{Short,i}^{k} \times (\text{P}_{i}^{t-1} \times \text{FX}_{i}^{t-1} - \text{Gross d}_{i}^{t} \times \text{FXDiv}_{i}^{t-1})\right)}{\sum_{\text{i}=1}^{\text{NS(k)}} \left(\text{NOSH}_{Short,i}^{k} \times \text{P}_{i}^{t-1} \times \text{FX}_{i}^{t-1}\right)}$$

(c) If Calculation Day (t) is not the Basket Base Date and is immediately after an Effective Rebalancing Date (k):

$$\text{Divisor}_{Short}^{t} = \frac{1}{\text{Short Basket}_{\text{k}}} \times \sum_{\text{i}=1}^{\text{NS(k)}} \left(\text{NOSH}_{Short,i}^{k} \times (\text{P}_{i}^{t-1} \times \text{FX}_{i}^{t-1} - \text{Gross d}_{i}^{t} \times \text{FXDiv}_{i}^{t-1})\right)$$

Where:

Calculation Day (t-1)	means, in respect of Calculation Day (t), the Calculation Day immediately preceding such Calculation Day (t)
$\text{Divisor}_{Short}^{t-1}$	means the Short Basket Divisor in respect of Calculation Day (t-1).
P_{i}^{t-1}	means the Closing Price of Short Basket Constituent Stock (i) in respect of Calculation Day (t-1)
FX_{i}^{t-1}	means the FX Rate of Short Basket Constituent Stock (i) in respect of Calculation Day (t-1)
Gross d_{i}^{t}	means, in respect of Short Basket Constituent Stock (i), the Gross Dividend Amount of such Short Basket Constituent Stock (i) for the period from, but excluding, Calculation Day (t-1) to, and including, Calculation Day (t).
FXDiv_{i}^{t-1}	means the FX Rate of the Gross Dividend Amount of Short Basket Constituent Stock (i) in respect of Calculation Day (t-1)
$\text{Short Basket}_{\text{k}}$	means the Short Basket Level in respect of Effective Rebalancing Date (k)

(c) Determination of the Long Number of Units, Short Number of Units and Cash Number of Units

In respect of each Effective Rebalancing Date (k), the Index Calculation Agent will calculate the Long Number of Units (the "**Long NOU**$_{\text{k}}$"), the Short Number of Units (the "**Short NOU**$_{\text{k}}$") and the Cash Number of Units (the "**Cash NOU**$_{\text{k}}$") as follows:

$$\text{Long NOU}_{\text{k}} = \frac{\text{Index}_{\text{ND}} \times \text{Long Weight}_{\text{k}}}{\text{Long Basket}_{\text{ND}}}$$

$$\text{Short NOU}_{\text{k}} = \frac{\text{Index}_{\text{ND}} \times \text{Short Weight}_{\text{k}}}{\text{Short Basket}_{\text{ND}}}$$

$$\text{Cash NOU}_{\text{k}} = \frac{-(\text{Long NOU}_{\text{k}} \times \text{Long Basket}_{\text{k}} + \text{Short NOU}_{\text{k}} \times \text{Short Basket}_{\text{k}})}{\text{Cash Index}_{\text{k}}}$$

Where:

Calculation Day (ND) means, in respect of Effective Rebalancing Date (k):

- if Effective Rebalancing Date (k) is the Index Base Date, the Index Base Date

- if Effective Rebalancing Date (k) is not the Index Base Date, the Rebalance Selection Date immediately preceding Effective Rebalancing Date (k)

$\mathrm{Index}_{\mathrm{ND}}$ means the Index Level in respect of Calculation Day (ND)

$\mathrm{Long\ Weight}_{\mathrm{k}}$ means, in respect of Effective Rebalancing Date (k), an amount calculated in accordance with the following formula:

$$\mathrm{Long\ Weight}_{\mathrm{k}} = \sum_{i=1}^{NL(k)} \mathrm{W}_{Long,i}^{k}$$

Where:

$NL(k)$ means the Number of Long Stocks in respect of Effective Rebalancing Date (k) as determined pursuant to Section 5.1.

$\mathrm{W}_{Long,i}^{k}$ means, in respect of Long Basket Constituent Stock (i) and Effective Rebalancing Date (k), the Long Basket Constituent Weight, as determined pursuant to Section 5.1.

$\mathrm{Long\ Basket}_{\mathrm{ND}}$ means the Long Basket Level in respect of Calculation Day (ND)

$\mathrm{Short\ Weight}_{\mathrm{k}}$ means, in respect of Effective Rebalancing Date (k), an amount calculated in accordance with the following formula:

$$\mathrm{Short\ Weight}_{\mathrm{k}} = \sum_{i=1}^{NS(k)} \mathrm{W}_{Short,i}^{k}$$

Where:

$NS(k)$ means the Number of Short Stocks in respect of Effective Rebalancing Date (k) as determined pursuant to Section 5.1.

$\mathrm{W}_{Short,i}^{k}$ means, in respect of Short Basket Constituent Stock (i) and Effective Rebalancing Date (k), the Short Basket Constituent Weight, as determined pursuant to Section 5.1.

$\mathrm{Short\ Basket}_{\mathrm{ND}}$ means the Short Basket Level in respect of Calculation Day (ND)

$\mathrm{Long\ Basket}_{\mathrm{k}}$ means the Long Basket Level in respect of Effective Rebalancing Date (k)

$\mathrm{Short\ Basket}_{\mathrm{k}}$ means the Short Basket Level in respect of Effective Rebalancing Date (k)

$\mathrm{Cash\ Index}_{\mathrm{k}}$ means the Cash Index Level in respect of Effective Rebalancing Date (k)

(d) Determination of the Current Weights

In respect of each Rebalance Selection Date (t) that falls after the Index Base Date, the Index Calculation Agent shall determine the current weight (the "**Current Weight**") in respect of each stock that is a Constituent Stock in respect of the Effective Rebalancing Date immediately preceding Rebalance Selection Date (t) ("**Effective Rebalancing Date (k)**"), as follows:

In respect of a Constituent Stock (i) that is a Long Basket Constituent Stock in respect of Effective Rebalancing Date (k):

$$\mathrm{Current\ Weight}_{i}^{t} = \frac{\mathrm{Long\ NOU}_{\mathrm{k}} \times \dfrac{\mathrm{NOSH}_{Long,i}^{k}}{\mathrm{Divisor}_{Long}^{t}} \times \mathrm{P}_{\mathrm{i}}^{\mathrm{t}} \times \mathrm{FX}_{\mathrm{i}}^{\mathrm{t}}}{\mathrm{Index}_{t}}$$

In respect of a Constituent Stock (i) that is a Short Basket Constituent Stock in respect of Effective Rebalancing Date (k):

$$\text{Current Weight}_i^t = \frac{\text{Short NOU}_\text{k} \times \frac{\text{NOSH}_\text{Short,i}^\text{k}}{\text{Divisor}_\text{Short}^\text{t}} \times \text{P}_\text{i}^\text{t} \times \text{FX}_\text{i}^\text{t}}{\text{Index}_\text{t}}$$

Where:

Long NOU_k	means the Long Number of Units in respect of Effective Rebalancing Date (k), as determined pursuant to Section 5.2(c).
$\text{NOSH}_{Long,i}^k$	means the Number of Shares in respect of Long Basket Constituent Stock (i) and Effective Rebalancing Date (k), as determined pursuant to Section 5.2(a).
Divisor_{Long}^t	means the Long Basket Divisor in respect of Rebalance Selection Date (t) as determined pursuant to Section 5.2(a)
$\text{Short NOU}_\text{k}$	means the Short Number of Units in respect of Effective Rebalancing Date (k), as determined pursuant to Section 5.2(c).
$\text{NOSH}_{Short,i}^k$	means the Number of Shares in respect of Short Basket Constituent Stock (i) and Effective Rebalancing Date (k), as determined pursuant to Section 5.2(b).
Divisor_{Short}^t	means the Short Basket Divisor in respect of Rebalance Selection Date (t), as determined pursuant to Section 5.2(b)
P_i^t	means the Closing Price of Eligible Stock (i) in respect of Rebalance Selection Date (t)
FX_i^t	means the FX Rate of Eligible Stock (i) in respect of Rebalance Selection Date (t)
Index_t	means the Index Level in respect of Rebalance Selection Date (t)

(e) Calculation of the Rebalance Adjustment Factor

In respect of each Calculation Day (t), the Index Calculation Agent will calculate the Rebalance Adjustment Factor (the "$\textbf{RAF}_\text{t}$") as follows:

In respect of a Calculation Day (t) that is the Index Base Date or that is not an Effective Rebalancing Date:

$$\text{RAF}_\text{t} = 0$$

In respect of a Calculation Day (t) that is an Effective Rebalancing Date falling after the Index Base Date:

$$\text{RAF}_\text{t} = \sum_i \left| \text{W}_i^t - \text{W}_{C,i}^{RSD} \right| \times \text{Index}_{\text{t}-1} \times \text{RP}$$

Where:

Effective Rebalancing Date (k)	means, in respect of Effective Rebalancing Date (t), the Effective Rebalancing Date immediately preceding Effective Rebalancing Date (t)
i	means, in respect of Effective Rebalancing Date (t), an integer representing each stock that is a Constituent Stock in respect of Effective Rebalancing Date (t) and/or that is a Constituent Stock in respect of Effective Rebalancing Date (k)
W_i^t	means, in respect of Constituent Stock (i) and Effective Rebalancing Date (t), the Constituent Weight, as determined pursuant to Section 5.1, if Constituent Stock (i) is a Constituent Stock in respect of Effective Rebalancing Date (t), or otherwise means zero.
Rebalance Selection Date (RSD)	means, in respect of Effective Rebalancing Date (t), the immediately preceding Rebalance Selection Date.

$W_{C,i}^{RSD}$ means, in respect of Constituent Stock (i) and Rebalance Selection Date (RSD), the Current Weight, as determined pursuant to Section 5.2(d), if Constituent Stock (i) is a Constituent Stock in respect of Effective Rebalancing Date (k), or otherwise means zero.

Calculation Day (t-1) means, in respect of Calculation Day (t), the Calculation Day immediately preceding such Calculation Day (t)

Index_{t-1} means the Index Level in respect of Calculation Day (t-1)

RP means the Rebalancing Cost Percentage specified in Section 3.1

(f) Calculation of the Index Level

Subject to the Adjustment Provisions, the Index Calculation Agent will calculate the Index Level for each Calculation Day (t) as follows:

For the Index Base Date:

$$\text{Index}_t = \text{Index Base Level}$$

For each Calculation Day (t) after the Index Base Date, whether or not such Calculation Day is an Effective Rebalancing Date:

$$\begin{aligned}\text{Index}_t = \text{MAX}(0, \text{Index}_{t-1} &+ \text{Long NOU}_k \times (\text{Long Basket}_t - \text{Long Basket}_{t-1}) + \text{Short NOU}_k \\ &\times (\text{Short Basket}_t - \text{Short Basket}_{t-1}) + \text{Cash NOU}_k \times (\text{Cash Index}_t - \text{Cash Index}_{t-1}) \\ &- \text{RAF}_t - \text{Running Factor}_t)\end{aligned}$$

Where:

Index_t means the Index Level in respect of Calculation Day (t)

Calculation Day (t-1) means, in respect of Calculation Day (t), the Calculation Day immediately preceding such Calculation Day (t)

Index_{t-1} means the Index Level in respect of Calculation Day (t-1)

Effective Rebalancing Date (k) means in respect of a Calculation Day (t) that falls after the Index Base Date, the immediately preceding Effective Rebalancing Date.

Long NOU_k means the Long Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).

Long Basket_t means the Long Basket Level in respect of Calculation Day (t) determined pursuant to Section 5.2(a)

Long Basket_{t-1} means the Long Basket Level in respect of Calculation Day (t-1) determined pursuant to Section 5.2(a)

Short NOU_k means the Short Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).

Short Basket_t means the Short Basket Level in respect of Calculation Day (t) determined pursuant to Section 5.2(b)

$\text{Short Basket}_{t-1}$ means the Short Basket Level in respect of Calculation Day (t-1) determined pursuant to Section 5.2(b)

Cash NOU_k means the Cash Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).

Cash Index_t means the Cash Index Level in respect of Calculation Day (t)

$\mathrm{Cash\ Index}_{t-1}$ means the Cash Index Level in respect of Calculation Day (t-1)

RAF_t means the Rebalance Adjustment Factor in respect of Calculation Day (t) determined pursuant to Section 5.2(e).

$\mathrm{Running\ Factor}_t$ means the Running Adjustment Factor in respect of Calculation Day (t), which is an amount calculated in accordance with the following formula:

$$\mathrm{Running\ Factor}_t = (\mathrm{Index}_{t-1} \times \mathrm{IAF} + \mathrm{Long\ NOU}_k \times \mathrm{Long\ Basket}_{t-1} \times \mathrm{FAF} - \mathrm{Short\ NOU}_k \times \mathrm{Short\ Basket}_{t-1} \times \mathrm{BAF}) \times \frac{DC_{t-1,t}}{360}$$

Where:

Index_{t-1} means the Index Level in respect of Calculation Day (t-1)

IAF means the Index Adjustment Cost Factor specified in Section 3.1

Effective Rebalancing Date (k) means in respect of a Calculation Day (t) that falls after the Index Base Date, the immediately preceding Effective Rebalancing Date.

$\mathrm{Long\ NOU}_k$ means the Long Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).

$\mathrm{Long\ Basket}_{t-1}$ means the Long Basket Level in respect of Calculation Day (t-1) determined pursuant to Section 5.2(a)

FAF means the Assumed Financing Cost Adjustment Factor specified in Section 3.1

$\mathrm{Short\ NOU}_k$ means the Short Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).

$\mathrm{Short\ Basket}_{t-1}$ means the Short Basket Level in respect of Calculation Day (t-1) determined pursuant to Section 5.2(b)

BAF means the Assumed Borrow Cost Adjustment Factor specified in Section 3.1

$DC_{t-1,t}$ means the number of calendar days from but excluding Calculation Day (t-1) to and including Calculation Day (t)

If on a Calculation Day (t) the Index Level is equal to zero (0) then for all subsequent Calculation Days the Index Level shall be equal to zero (0) and in such case the formula above shall not be used to calculate the Index Level for any subsequent Calculation Day.

6. Certain General Terms relating to the Index

6.1 Publication and availability of the Index Rules

The Index Rules are published by J.P. Morgan Securities plc of 25 Bank Street, Canary Wharf, London E14 5JP, in its capacity as the Index Sponsor.

Copies of the Index Rules may be obtained by holders or potential holders of investments linked to the Index free of charge on request from the Index Sponsor at its principal office in London against such proof of status as the Index Sponsor may in its reasonable discretion require.

6.2 Amendments

Economic, market, regulatory, legal, financial or other circumstances may arise that may necessitate or make desirable an amendment of the Index Rules.

Notwithstanding the foregoing, the Index Sponsor may amend the Index Rules as it deems appropriate. Such amendments may include (without limitation):

- correcting or curing any errors, omissions or contradictory provisions; or
- modifications to the methodology described in the Index Rules (including, without limitation, a change in the frequency of calculation of the Index Level) that are necessary or desirable in order for the calculation of the Index to continue notwithstanding any economic, market, regulatory, legal, financial or other circumstances as of the Index Base Date; or
- modifications of a formal, minor or technical nature; or

The Index Sponsor will notify the Index Calculation Agent and the Constituent Stock Determination Agent (if a different entity than the Index Sponsor) before making an amendment pursuant to this Section 6.2. The Index Sponsor may, but is not obliged to, take into account the views of the Index Calculation Agent or the Constituent Stock Determination Agent regarding any proposed amendment.

Following any amendment, the Index Sponsor will make available (as soon as practicable) the amended version of the Index Rules and will include the effective date of such amendment in the new version of the Index Rules. However, the Index Sponsor is under no obligation to inform any person about any amendments to the Index (except as required by law or regulation).

The Index Sponsor may, in its reasonable discretion, at any time and without notice, terminate the calculation and publication of the Index.

6.3 No advice or offer of securities

The Index Rules do not constitute investment, tax, legal, accounting, regulatory or other advice, including within the meaning of Article 53 of the Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 or investment advice within the meaning of Article 4(4) of the Markets in Financial Instruments Directive 2004/39/EC or otherwise.

The Index Rules neither constitute an offer to purchase or sell securities nor constitute specific advice in whatever form (investment, tax, legal, accounting or regulatory) in respect of any investment that may be linked to the Index.

6.4 The Index is synthetic

The Index references a “notional” or synthetic exposure to the Constituent Stocks and there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Index merely references certain synthetic exposures the performance of which are used as reference points for calculating Index Levels.

7. Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent

7.1 Identity of Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent

The sponsor of the Index specified in Section 3 (the "**Index Sponsor**", which term includes any successor in such capacity) may delegate or transfer any of its obligations or responsibilities in connection with the Index to one or more entities that it determines are appropriate.

The Index Sponsor is responsible for, among other things, the creation and design of the Index, the documentation of the Index Rules, and the appointment of (i) the calculation agent of the Index (the "**Index Calculation Agent**"), which may be the Index Sponsor, an unrelated third party or an affiliate or subsidiary of the Index Sponsor, (ii) the determination agent of the Constituent Stocks (the "**Constituent Stock Determination Agent**"), which may be the Index Sponsor, an unrelated third party or an affiliate or subsidiary of the Index Sponsor and (iii) the determination agent of disruption events (the "**Disruption Determination Agent**"), which may be the Index Sponsor, an unrelated third party or an affiliate or subsidiary of the Index Sponsor. The Index Sponsor is also responsible for determining whether an Extraordinary Event has occurred and the related adjustments set forth in Section 11 of these Index Rules.

Each of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent and the Disruption Determination Agent, each as of the Index Live Date, is specified in Section 3.1. In the case of an Index Calculation Agent, a Constituent Stock Determination Agent or a Disruption Determination Agent that is not at such time an affiliate of the Index Sponsor, such entity must obtain written permission from the Index Sponsor prior to any delegation or transfer of such entity's responsibilities or obligations in connection with the Index.

The Index Sponsor may at any time or for any reason terminate the appointment of any of the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent and appoint an alternative entity (or entities) as such entity's replacement.

The Index Calculation Agent is responsible for:

(i) determining the Constituent Stocks and the Constituent Weights in respect of each Effective Rebalancing Date, in accordance with Section 5.1 of the Index Rules; and

(ii) calculating the Index Level in respect of each Calculation Day, in accordance with Section 5.2 of the Index Rules; and

(iii) determining the Current Weights in respect of each Rebalance Selection Date (t) that falls after the Index Base Date, in accordance with Section 5.2(d) of the Index Rules; and

(iv) determining any adjustment upon the occurrence of certain events set forth in Section 11.8 of the Index Rules.

The Disruption Determination Agent is responsible for determining whether a Market Disruption Event has occurred and for making related determinations pursuant to the provisions set forth in Sections 10.1 and 10.2 of the Index Rules, and informing the Index Calculation Agent of any such determinations.

If the Index Sponsor determines that a relevant event has occurred, and if the Index Calculation Agent, Constituent Stock Determination Agent or the Disruption Determination Agent fails to make that determination, then the Index Sponsor may instruct one or more of the Index Calculation Agent, the Constituent Stock Determination Agent and the Disruption Determination Agent to consider such event and whether there should be related consequences and adjustments in accordance with the Index Rules to take account of such event.

The Constituent Stock Determination Agent is responsible for determining the Eligible Stocks, the Preliminary Long Basket Constituent Stocks, the Preliminary Long Basket Constituent Weights, the Preliminary Short Basket Constituent Stocks and the Preliminary Short Basket Constituent Weights in accordance with the Index Rules.

The Index Sponsor may delegate or transfer any of its obligations or responsibilities in connection with the Index to one or more entities as it determines appropriate.

The Index is a rules-based Index and none of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent and the Disruption Determination Agent will exercise any discretion or independent judgment in the implementation of the methodology of the selection, weighting and ongoing rebalancing of the Index apart from limited circumstances that are expressly contemplated in these Index Rules.

7.2 Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent standards

Each of the Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent shall act in good faith and in a commercially reasonable manner in respect of determinations, interpretations and calculations made by it pursuant to the Index Rules.

7.3 Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent determinations

An action (or failure to act) on the part of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent in relation to the Index may have a detrimental effect on the Index Level or the volatility of the Index.

The Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent may make certain determinations or calculations based on information obtained from publicly available sources without independently verifying such information and accepts no responsibility or liability for any consequent loss or damage.

All determinations, interpretations and calculations of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent relating to the Index Rules shall be final, conclusive and binding, provided that if the Index Sponsor identifies an error or omission in any of the determinations, interpretations or calculations in respect of the Index made by the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent, the Index Sponsor may, if the Index Sponsor determines that such error, omission or correction (as the case may be) is material and that it is practicable, adjust or correct the relevant determination, interpretation or calculation to take into account such correction as soon as it is reasonably practicable to do so. No person shall be entitled to make any claim against the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent, the Disruption Determination Agent or any Relevant Person in respect of any such determinations, interpretations or calculations of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent. None of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent, the Disruption Determination Agent or any Relevant Person shall:

(a) be under any obligation to revise any determination, interpretation or calculation made or action taken for any reason in connection with the Index Rules or the Index; or

(b) have any responsibility to any person for any determination, interpretation or calculation made or anything done (or omitted to be done) (whether as a result of negligence or otherwise) in respect of the Index Rules or the Index or in respect of the publication of the Index Level (or failure to publish such level) or any use to which any person may put the Index or the Index Levels.

8. Index Levels

8.1 Index Base Level, Index Base Date and Basket Base Date

The Index Base Level, Index Base Date and Basket Base Date are specified in Section 3.1.

8.2 Publication of Index Levels

Subject to the Adjustment Provisions and the Disruption Provisions set out in Section 10, the Index Calculation Agent will publish the Index Level of the Index in respect of each Calculation Day as soon as reasonably practicable on or after such Calculation Day. The Index Level or any subsequent correction to the Index Level will be published on Bloomberg on the Index Bloomberg Ticker page (as specified in Section 3.1) or by means of such other information source as the Index Sponsor may determine in its reasonable discretion. Notwithstanding anything to the contrary, the Index Sponsor may cease calculation and publication of the Index Level at any time in its sole discretion and nothing in this document shall be construed as an agreement by the Index Sponsor to continue to calculate the Index Level if the Index Sponsor has elected to cease publication.

All Index Levels are rounded to 2 decimal places for purposes of publication only before being published. The Index Calculation Agent may vary its rounding convention in its sole discretion provided that it will not publish the Index Level with fewer than two decimal places. Notwithstanding anything to the contrary, the Index Calculation Agent may calculate and maintain the Index Level to greater accuracy for the determination of upcoming Index Levels or other calculations.

8.3 Index Live Date

Subject to the Adjustment Provisions, the Index Calculation Agent has been calculating the Index Level and publishing it in respect of each Calculation Day in accordance with the methodology set forth in these Index Rules from the Index Live Date specified in Section 3.1.

9. Corrections in respect of the Index

If any publicly available financial or other information (including, but not limited to, the Closing Price of a Constituent Stock or any other level, price or rate related to a Constituent Stock or any variable, input or other matter used for any calculation or determination relevant to the Index Level for any Calculation Day) published or otherwise made available by the relevant recognized financial or other information source selected by the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent and used in any calculation or determination is subsequently corrected, or the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent identifies an error or omission in any of its calculations or determinations in respect of the Index or the Index Sponsor identifies an error or omission in any of the Index Calculation Agent's, the Constituent Stock Determination Agent's or the Disruption Determination Agent's calculations or determinations in respect of the Index, the Index Sponsor may or the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent may only with the prior consent of the Index Sponsor, in any case if the Index Sponsor determines that such error, omission or correction (as the case may be) is material and that it is practicable, adjust or correct the relevant calculation or determination to take into account such correction as soon as it is reasonably practicable to do so.

10. Disruption Provisions

10.1 Consequences of Market Disruption Event on a Calculation Day that is not an Effective Rebalancing Date and is not a Disruption Resolution Calculation Day

If a Calculation Day (i) that is not an Effective Rebalancing Date and (ii) that is not a Disruption Resolution Calculation Day, is a Disrupted Day (a "**Disrupted Stock Calculation Day**") in respect of any Constituent Stock (for the purposes of this Section 10.1, a "**Disrupted Constituent**"), then:

A. if the Disruption Determination Agent determines that the Disrupted Constituents comprise less than 20 percent of the level of the Index, then the Disruption Determination Agent shall notify the Index Calculation Agent of such determination, and the Index Calculation Agent shall calculate the Index Level for such Disrupted Stock Calculation Day, using (i) in respect of the each of the Constituent Stocks that are not affected by a Market Disruption Event, the Closing Price of such Constituent Stock in respect of such Disrupted Stock Calculation Day, and (ii) in respect of each of the Disrupted Constituents, the official closing price of such Disrupted Constituent for the Constituent Scheduled Trading Day for such Disrupted Constituent immediately preceding such Disrupted Stock Calculation Day that was not a Disrupted Day for such Disrupted Constituent; or

B. if the Disruption Determination Agent determines that the Disrupted Constituents comprise 20 percent or more of the level of the Index, then the Disruption Determination Agent shall notify the Index Calculation Agent of such determination, and the Index Calculation Agent will suspend the publication of the Index Level until the earlier of (i) the first following Calculation Day that is either (x) not a Disrupted Day for any Constituent Stock or (y) is a Disrupted Day in respect of which the Disrupted Constituents comprise less than 20 percent of the level of the Index, in which case the provisions set forth in Section 10.1(A) shall apply, and (ii) the Effective Rebalancing Date immediately following such Disrupted Stock Calculation Day if such Effective Rebalancing Date is a Disrupted Day, in which case the provisions of Section 10.2(B) will apply.

10.2 Consequences of Market Disruption Event on an Effective Rebalancing Date or on a Disruption Resolution Calculation Day

If the Disruption Determination Agent has determined that an Effective Rebalancing Date is a Disrupted Day (the "**Disrupted Effective Rebalancing Date**") in respect of any Incoming Constituent or any Outgoing Constituent (for the purposes of this Section 10.2, each a "**Disrupted Constituent**") then the Disruption Determination Agent shall notify the Index Calculation Agent of such determination, and:

A. the relevant Effective Rebalancing Date shall remain the Effective Rebalancing Date, as originally scheduled for each Incoming Constituent and each Outgoing Constituent that is not a Disrupted Constituent (for the purposes of this Section 10.2, a "**Non-Disrupted Constituent**") and the Closing Price for each such Non-Disrupted Constituent for such Effective Rebalancing Date will be used in the calculation of the Index Level pursuant to Section 5.2 for such Effective Rebalancing Date; and
B. for each Disrupted Constituent that is an Outgoing Constituent, the Index Calculation Agent shall use the Closing Price for such Disrupted Constituent as of the first following Constituent Scheduled Trading Day for such Disrupted Constituent that is not a Disrupted Day for the Disrupted Constituent (the "**First Following Non-Disrupted Day**"), unless such Disrupted Constituent remains a Disrupted Constituent for each of the Calculation Days immediately following the Effective Rebalancing Date to and including the seventh Calculation Day following the Effective Rebalancing Date (the "**Disruption Determination Date**" for such Disrupted Constituent that is an Outgoing Constituent), in which case, the Disruption Determination Agent shall determine its good faith estimate of the Closing Price of such Disrupted Constituent for such Effective Rebalancing Date (notwithstanding that such Disrupted Constituent remains a Disrupted Constituent) acting in good faith using such information or methods as it determines, in its reasonable discretion, are appropriate, in which case the Disruption Determination Agent shall notify the Index Sponsor and the Index Calculation Agent of its determination of a good faith estimate, and the Disrupted Constituent shall be removed from the Index, and the Index Sponsor shall adjust the Index and the Index Rules as appropriate to account for such removal as soon as practicable; and

C. for each Disrupted Constituent that is an Incoming Constituent, the Index Calculation Agent shall use the Closing Price for such Disrupted Constituent as of the first following Constituent Scheduled Trading Day that is not a Disrupted Day for the Disrupted Constituent (the "**First Following Non-Disrupted Day**") as the Closing Price of the Disrupted Constituent for such Effective Rebalancing Date, unless such Disrupted Constituent remains a Disrupted Constituent for each of the Calculation Days immediately following the Effective Rebalancing Date to and including the seventh Calculation Day following the Effective Rebalancing Date (the "**Disruption Determination Date**" for such Disrupted Constituent that is an Incoming Constituent), in which case, the Disruption Determination Agent (i) shall not include such Disrupted Constituent as a Constituent Stock of the Index and (ii) shall adjust the Index and the Index Rules as appropriate to account for not including such Disrupted Constituent as soon as practicable following such determination not to include the Disrupted Constituent and notify the Index Calculation Agent of any such determination.

D. The Index Calculation Agent shall calculate the Index Level in respect of any Disruption Resolution Calculation Day on the last day on which a valuation is determined in accordance with the provisions set out in paragraphs (B) and (C) above, but the Index Calculation Agent shall not publish the Index Level in respect of such Disruption Resolution Calculation Day.

"**Disruption Resolution Calculation Day**" means, each Calculation Day, from but excluding the Disrupted Effective Rebalancing Date to and including the earlier date to occur of: (i) the last First Following Non-Disrupted Day for an Outgoing Constituent or an Incoming Constituent and (ii) the Disruption Determination Date, if any, for an Outgoing Constituent or an Incoming Constituent.

10.3 Consequences of Data Source Disruption Event in respect of a Rebalance Selection Date

Unless a Data Source Disruption Event occurs on a Rebalance Selection Date (t) (the "**Data Source Disrupted Date**"), the Constituent Stock Determination Agent shall carry out the methodology as set forth in Section 4.

In respect of a Data Source Disrupted Date: (i) the Constituent Stocks comprised in the Index shall not be rebalanced and re-weighted on the Scheduled Rebalancing Date immediately following such Data Source Disrupted Date and (ii) the Constituent Stocks of the Index shall remain the same as immediately prior to the Scheduled Rebalancing Date, subject to any adjustment to a Constituent Stock pursuant to these Index Rules (although the percentage contribution of each Constituent Stock to the Index Level may differ from the weight applicable on the previous Effective Rebalancing Date).

10.4 Consequences of a Disrupted Day for the Cash Index

With respect to a Calculation Day that is a Disrupted Day (a "**Disrupted Cash Calculation Day**") in respect of the Cash Index (whether or not such Calculation Date is also an Effective Rebalancing Date), the Index Calculation Agent shall calculate the Index Level for such Calculation Day using the official closing level of the Cash Index for the Calculation Day immediately preceding such Disrupted Cash Calculation Day that was not a Disrupted Day for the Cash Index.

11. Extraordinary Events

11.1 Cancellation of relevant license or other right

If, at any time, any relevant license or other right granted to the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent (or any of their Affiliates) (together the "**Relevant Parties**") to use or refer to the level of or other information for any Constituent Stock or any licenses or other rights used in any of the determinations or calculations set forth in these Index Rules (including but not limited to in respect of or from the Base Reference Index, the Identified Reference Index, the Optimizer Software, the Share Data Source, the Fundamentals Data Source, the Estimates Data Source, the FX Data Source, the Base Reference Data Source, the Risk Model Data Source, or the Borrow Data Provider) ("**Affected Information**") is terminated, or is otherwise disputed, impaired, replaced by the third party data provider or ceases (for any reason), then the Index Sponsor may: (i) (a) find a replacement data source or provider or select an alternative source of information having characteristics substantially similar to information available from the relevant source of the Affected Information used by the Relevant Parties in the context of any determination or calculation set forth in these Index Rules, (b) determine a date on which such replacement is effective, and (c) adjust the Index Rules as it determines to be appropriate to account for such replacement or (ii) cease publication of the Index on such date as is determined by the Index Sponsor.

11.2 Change in Law

Without prejudice to the ability of the Index Sponsor to amend the Index Rules, the Index Sponsor may, in respect of the Index, exclude any Constituent Stock (an "**Affected Constituent**") affected by the occurrence of a Change in Law, and if it excludes an Affected Constituent, then the Index Sponsor may adjust the Index Rules as it determines to be appropriate to account for such exclusion on such date(s) selected by the Index Sponsor.

11.3 Dividend

If an issuer of a Constituent Stock fails to pay the full amount of any Declared Dividend by the scheduled payment date for the Constituent Stock (an "**Affected Stock**") then the Index Sponsor may if practicable and if it considers such failure material make the corresponding adjustment(s), if any, to any one or more of (i) the Index Level, (ii) the Closing Price of the Affected Stock, (iii) the Gross Dividend Amount and (iv) any other variable or term of the Index Rules that the Index Sponsor determines appropriate to account for the failure of the issuer of the Constituent Stock to pay the full amount of the Declared Dividend and determine the effective date(s) of such adjustment(s).

11.4 Successor currency or change to an underlying currency

If, at any time, any Associated Currency or other currency used in connection with these Index Rules is lawfully eliminated, converted, redenominated or exchanged for any successor currency, then such currency shall be deemed replaced by such successor currency.

To the extent that any such elimination, conversion, redenomination or exchange results in two or more currencies that were formerly associated with the original currency, the Index Sponsor may modify these Index Rules to account for such elimination, conversion, redenomination or exchange. For example, the Index Sponsor may select one of the applicable currencies to be a successor currency or amend the formulas for calculating the Index to account for the new exchange rate, if any.

11.5 Cash Index

If the level of the Cash Index: is (a) not calculated and is not announced by the Cash Index Sponsor, but is calculated and announced by a successor sponsor acceptable to the Index Sponsor, or (b) replaced by a successor index using, in the determination of the Index Sponsor, the same or a substantially similar formula for and method of calculation as used in the calculation of the Cash Index, then the Cash Index will be deemed to be the successor index so calculated and announced by that successor sponsor described in clause (a) above or that successor index described in clause (b) above, as the case may be, with effect from the date of such relevant event, and the Index Sponsor may make such adjustments to the Index Rules as it determines are appropriate to account for such change.

If on or prior to any Calculation Day, (a) the Cash Index Sponsor makes a material change in the formula for or the method of calculating the Cash Index or in any other way materially modifies the Cash Index (other than a modification prescribed in that formula or method to maintain the Cash Index in the event of routine occurrences), (b) the Cash Index Sponsor cancels the Cash Index or (c) there are ten (10) consecutive Calculation Days that are Disrupted Days for the Cash Index, then the Index Sponsor shall select a replacement index for the Cash Index with the same or a substantially similar formula for and method of calculation as used in calculation of the Cash Index, provided that if the Index Sponsor determines that it cannot select such a replacement index, then the Index Sponsor (i) may make such adjustment(s) that it determines to be appropriate to any variable, calculation methodology, valuation terms or any other rule in relation to the Index to account for such event, which may include, without limitation, selecting a replacement index for the Cash Index that does not have the same or a substantially similar formula for and method of calculation as used in calculation of the Cash Index or (ii) may terminate the Index.

11.6 Base Reference Index

If the level of the Base Reference Index: is (a) not calculated and is not announced by the Base Reference Index Sponsor, but is calculated and announced by a successor sponsor acceptable to the Index Sponsor, or (b) replaced by a successor index using, in the determination of the Index Sponsor, the same or a substantially similar formula for and method of calculation as used in the calculation of the Base Reference Index, then the Base Reference Index will be deemed to be the successor index so calculated and announced by that successor sponsor described in clause (a) above or that successor index described in clause (b) above, as the case may be, with effect from the date of such relevant event, and the Index Sponsor may make such adjustments to the Index Rules as it determines are appropriate to account for such change.

If on or prior to any Calculation Day, (a) the Base Reference Index Sponsor makes a material change in the formula for or the method of calculating the Base Reference Index or in any other way materially modifies the Base Reference Index (other than a modification prescribed in that formula or method to maintain the Base Reference Index in the event of routine occurrences), (b) the Base Reference Index Sponsor cancels the Base Reference Index or (c) there are ten (10) consecutive Calculation Days that are Disrupted Days for the Base Reference Index, then the Index Sponsor shall select a replacement index for the Base Reference Index with the same or a substantially similar formula for and method of calculation as used in calculation of the Base Reference Index, provided that if the Index Sponsor determines that it cannot select such a replacement index, then the Index Sponsor (i) may make such adjustment(s) that it determines to be appropriate to any variable, calculation methodology, valuation terms or any other rule in relation to the Index to account for such event, which may include, without limitation, selecting a replacement index for the Base Reference Index that does not have the same or a substantially similar formula for and method of calculation as used in calculation of the Base Reference Index or (ii) may terminate the Index.

11.7 Identified Reference Index

If the level of the Identified Reference Index: is (a) not calculated and is not announced by the Identified Reference Index Sponsor, but is calculated and announced by a successor sponsor acceptable to the Index Sponsor, or (b) replaced by a successor index using, in the determination of the Index Sponsor, the same or a substantially similar formula for and method of calculation as used in the calculation of the Identified Reference Index, then the Identified Reference Index will be deemed to be the successor index so calculated and announced by that successor sponsor described in clause (a) above or that successor index described in clause (b) above, as the case may be, with effect from the date of such relevant event, and the Index Sponsor may make such adjustments to the Index Rules as it determines are appropriate to account for such change.

If on or prior to any Calculation Day, (a) the Identified Reference Index Sponsor makes a material change in the formula for or the method of calculating the Identified Reference Index or in any other way materially modifies the Identified Reference Index (other than a modification prescribed in that formula or method to maintain the Identified Reference Index in the event of routine occurrences), (b) the Identified Reference Index Sponsor cancels the Identified Reference Index or (c) there are ten (10) consecutive Calculation Days that are Disrupted Days for the Identified Reference Index, then the Index Sponsor shall select a replacement index for the Identified Reference Index with the same or a substantially similar formula for and method of calculation as used in calculation of the Identified Reference Index, provided that if the Index Sponsor determines that it cannot select such a replacement index, then the Index Sponsor (i) may make such adjustment(s) that it determines to be appropriate to any variable, calculation methodology, valuation terms or any other rule in relation to the Index to account for such event, which may include, without limitation, selecting a replacement index for the Identified Reference Index that does not have the same or a substantially similar formula for and method of calculation as used in calculation of the Identified Reference Index or (ii) may terminate the Index.

11.8 Index Calculation Agent Adjustments Due to Corporate Actions, Corporate Events and Changes to the Composition of the Identified Reference Index

With respect to any determination (each, an "**Actual Identified Reference Index Adjustment Determination**") in respect of an Identified Reference Index as to whether or not (1) any change to the composition of the Identified Reference Index will be made or (2) any adjustment will be made, in any case by the Identified Reference Index Sponsor or the Identified Reference Index Calculation Agent pursuant to the established methodology, procedures and guidelines for the Identified Reference Index, the Index Calculation Agent shall consider each such Actual Identified Reference Index Adjustment Determination. Each Identified Reference Index Adjustment Determination will be a determination to make or not make an adjustment and to make or not make a change (such adjustment, omission of an adjustment, change and omission of a change, each being considered an "**Actual Identified Reference Index Adjustment Outcome**"). An Actual Identified Reference Index Adjustment Outcome includes an adjustment or change that (x) is already effective or has already been implemented in the Identified Reference Index or (y) will be effective or implemented in the Identified Reference Index in the future. An Actual Identified Reference Index Adjustment Outcome includes the omission of an adjustment or change that results from an Actual Identified Reference Index Adjustment Determination.

If any Constituent Stock of the Index is not at any time also a current component of an Identified Reference Index, the Index Calculation Agent shall make a determination (each, a "**Simulated Identified Reference Index Adjustment Determination**") in respect of an Identified Reference Index as to whether or not if such Constituent Stock were also a current component of an Identified Reference Index (1) any change to the composition of the Identified Reference Index would be made or (2) any adjustment would be made, in any case by the Identified Reference Index Sponsor or the Identified Reference Index Calculation Agent pursuant to the established methodology, procedures and guidelines for the Identified Reference Index, and the Index Calculation Agent shall consider each such Simulated Identified Reference Index Adjustment Determination. Each Simulated Identified Reference Index Adjustment Determination will be a determination to make or not make an adjustment and to make or not make a change (such adjustment, omission of an adjustment, change and omission of a change, each being considered a "**Simulated Identified Reference Index Adjustment Outcome**"). A Simulated Identified Reference Index Adjustment Outcome includes an adjustment or change that (x) would already be effective or would have already been implemented in the Identified Reference Index or (y) would be effective or implemented in the Identified Reference Index in the future. A Simulated Identified Reference Index Adjustment Outcome includes the omission of an adjustment or change that results from a Simulated Identified Reference Index Adjustment Determination.

In respect of each such Actual Identified Reference Index Adjustment Outcome and each Simulated Identified Reference Index Adjustment Outcome, the Index Calculation Agent shall make a consistent adjustment to the Index hereunder (each, a "**Consistent Adjustment Outcome**"), taking into account the similarities and differences between the methodology and composition of the Identified Reference Index and the methodology and composition of the relevant Index. In respect of an Actual Identified Reference Index Adjustment Outcome that did involve an adjustment or a change or a Simulated Reference Index Adjustment Outcome that would involve an adjustment or a change, the Index Calculation Agent may determine that the appropriate Consistent Adjustment Outcome is to make no adjustment or change, due to the differences between the methodology and composition of the Identified Reference Index and the methodology and composition of the relevant Index. In respect of an Actual Identified Reference Index Adjustment Outcome that did not involve an adjustment or a change or a Simulated Identified Reference Index Adjustment Outcome that would not involve an adjustment or a change, the Index Calculation Agent may determine that the appropriate Consistent Adjustment Outcome is to make an adjustment or change, due to the differences between the methodology and composition of the Identified Reference Index and the methodology and composition of the relevant Index.

The Index Calculation Agent shall determine the timing and manner of making effective any such Consistent Adjustment Outcome, taking into account the methodology and composition of the relevant Index. In addition, the Index Calculation Agent may, with the prior consent of the Index Sponsor, make adjustments to the rules of the relevant Index to the extent necessary to account for such Consistent Adjustment Outcome.

The Index Calculation Agent will be solely responsible for the determination and calculation of any such Consistent Adjustment or the determination that no adjustment should be made, and any related determinations and calculations.

It is expected that the Identified Reference Index Calculation Agent will make Actual Identified Reference Index Adjustment Determinations and will determine Actual Identified Reference Index Adjustment Outcomes for the Identified Reference Index and will make Simulated Identified Reference Index Adjustment Determinations and will determine Simulated Identified Reference Index Adjustment Outcomes for the Identified Reference Index from time to time (1) in respect of Corporate Actions that impact a Constituent Stock, (2) in respect of Corporate Events that impact a Constituent Company and (3) in respect of other circumstances or events (collectively, "**Constituent Stock Events**"). In respect of a particular Constituent Stock Event, it is expected that the Consistent Adjustment Outcome in respect of an Actual Identified Reference Index Adjustment Outcome or Simulated Identified Reference Index Adjustment Outcome will be similar to the adjustment or change (or lack of an adjustment or change) that the relevant index calculation agent or the Base Reference Index Sponsor would choose to make to the Base Reference Index.

A "**Corporate Action**" is an event that impacts shares or shareholders with a prescribed ex-date and includes, without limitation, distributions, capital increases, capital repayments, rights issues, entitlement offers, stock conversions, share splits (sub-division), reverse share splits (consolidation) and scrip issues (capitalization or bonus issue). A "**Corporate Event**" is an event that impacts a company or its shares or shareholders and that may impact an index (depending on its rules), including without limitation, a de-listing, liquidation, bankruptcy, insolvency, winding-up, nationalisation, consolidation, amalgamation, merger, binding share exchange, acquisition, takeover offer, exchange offer, tender offer or similar event.

11.9 Index Cancellation

If the Index Sponsor determines that no adjustment, exclusion or substitution that the Index Calculation Agent or it could make following an Extraordinary Event or any other event described in these Index Rules will produce a commercially reasonable result in respect of the Index, then the Index Sponsor may request (i) the Constituent Stock Determination Agent cease performing its role as Constituent Stock Determination Agent, (ii) the Disruption Determination Agent cease performing its role as Disruption Determination Agent and (iii) Index Calculation Agent cease calculating and publishing the Index from a date determined by the Index Sponsor. Notwithstanding this section, none of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent is under any obligation to continue the calculation, publication and dissemination of the Index.

11.10 Prolonged Technical Issue related to the Optimizer Software

If the Constituent Stock Determination Agent determines that on any Rebalance Selection Date (the "**Affected Rebalance Selection Date**") a Temporary Optimizer Software Failure has occurred, subject to the provisions set out in Sections 4.8 and 4.9, and that a second Temporary Optimizer Software Failure occurs for the Rebalance Selection Date immediately following the Affected Rebalance Selection Date, then the Index Sponsor may, but is not obliged to, replace the Optimizer Software with a substitute optimizer that has the same or substantially similar characteristics as the current Optimizer Software that is available on commercially reasonable terms and the Index Sponsor may make such adjustments to these Index Rules as it determines to be appropriate to account for such event on such dates as selected by the Index Sponsor; provided that if the Index Sponsor determines that there is no such substitute optimizer available on commercially reasonable terms, then the Index Sponsor (i) may replace the Optimizer Software with a substitute optimizer that has similar characteristics as the current Optimizer Software and may make such adjustments to these Index Rules as it determines to be appropriate to account for such event on such dates as selected by the Index Sponsor or (ii) may terminate the Index.

12. Hypothetical Back-Tested Levels

Any Index Level prior to the Index Live Date is a hypothetical, back-tested level. Such levels should not be taken as an indication of future performance, and no assurance can be given as to the levels or performance of the Index on a future date. Back-tested results are achieved by means of a retroactive application of a back-tested model designed with the benefit of hindsight. The Index Sponsor or the Index Calculation Agent, in calculating hypothetical back-tested index levels, may have applied the disruption provisions and any other provisions (including but not limited to the Extraordinary Events) specified in these Index Rules differently than it otherwise would have applied such provisions in a “live” calculation scenario. Additionally, the precision and rounding of the levels of the Index or a Constituent Stock (or other calculated values) may differ from the methodology applied on a going-forward basis. In calculating the hypothetical back-tested levels, the Index Sponsor or the Index Calculation Agent may have made certain assumptions in respect of the timing surrounding the publication of certain indicators, Closing Prices and Index Levels. These assumptions may have a material impact on the hypothetical back-tested levels occurring on or before the Index Live Date. No representation is made that any investment that references the Index will or is likely to achieve returns similar to any hypothetical back-tested returns. Alternative modelling techniques or assumptions might provide different results. Finally, hypothetical back-tested past performance is neither an indicator nor a guarantee of future performance or returns. Actual results and performance may vary compared to such hypothetical back-tested levels.

13. Definitions of Terms

In respect of the Index, the terms defined below have the following meaning in the Index Rules:

"**Acceptance Conditions**" has the meaning given to it in Section 4.8.

"**Actual Identified Reference Index Adjustment Determination**" has the meaning given to it in Section 11.8.

"**Actual Identified Reference Index Adjustment Outcome**" has the meaning given to it in Section 11.8.

"**Adjustment Multiplier**" means, in respect of an Eligible Stock and a Calculation Day, the Corporate Action Multiplier for such Eligible Stock associated with the most recent Corporate Action Effective Date that falls on or before such Calculation Day.

"**Adjustment Provisions**" means in relation to these Index Rules or any Eligible Stock or Constituent Stock (as applicable), all relevant provisions of these Index Rules that provide for any adjustment, delay, modification, cancellation or determination in relation to the Index, any Eligible Stock or Constituent Stock (as applicable), the valuation procedure for a Constituent Stock or the Index Rules (including, without limitation, as set forth in Sections 9, 10 and 11).

"**Affected Constituent**" has the meaning given to it in Section 11.2.

"**Affected Information**" has the meaning given to it in Section 11.1.

"**Affected Stock**" has the meaning given to it in Section 11.3.

"**Affiliate**" means in relation to any entity (the "**First Entity**"), any entity controlled, directly or indirectly, by the First Entity, any entity that controls, directly or indirectly, the First Entity or any entity directly or indirectly under common control with the First Entity. For these purposes "**control**" means ownership of a majority of the voting power of an entity.

"**Associated Currency**" means, in respect of an Eligible Stock or a Constituent Stock (as applicable), the currency in respect of which the Eligible Stock or the Constituent Stock (as applicable) is denominated, as determined by the Constituent Stock Determination Agent or the Index Calculation Agent (as applicable).

"**Assumed Borrow Cost Adjustment Factor**" has the meaning given to it in Section 3.1

"**Assumed Financing Cost Adjustment Factor**" has the meaning given to it in Section 3.1

"**Base Factor Definitions**" has the meaning given to it in Section 3.5.

"**Base Factor Eligibility Requirement**" means the additional criteria (if any) specified in Section 3.2.

"**Base Factor Weight In Composite Factor**" has the meaning given to it in Section 3.3.

"**Base Factor**" has the meaning given to it in Section 3.2.

"**Base Reference Data Source**" means MSCI data, which is accessed via QA Direct

"**Base Reference Index Level**" means the official closing level of the Base Reference Index, as calculated and published by the Base Reference Index Sponsor.

"**Base Reference Index Sponsor**" has the meaning given to it in Section 3.

"**Base Reference Index**" has the meaning given to it in Section 3.

"**Base Reference Portfolio**" has the meaning given to it in Section 4.8.

"**Base Reference Weight**" has the meaning given to it in Section 4.2.

"**Basket Base Date**" has the meaning given to it in Section 3.

"**Borrow Data Provider**" has the meaning given to it in Section 3

"**Borrow Penalty Multiplier**" has the meaning given to it in Section 3.1

"**Borrow Penalty Variable**" has the meaning given to it in Section 4.9.

"**Calculation Day (t)**" means the Calculation Day in respect of which a calculation or determination is being made.

"**Calculation Day**" has the meaning given to it in the Section 3

"**Cash Index Level**" means, in respect of a Calculation Day, the official closing level of the Cash Index, as calculated and published by the Cash Index Sponsor, or if such Calculation Day is a day on which the Cash Index Sponsor is not scheduled to publish the Cash Index Level, then the official closing level for such Cash Index in respect of the Constituent Scheduled Trading Day immediately preceding such Calculation Day that is not a Disrupted Day.

"**Cash Index Sponsor**" has the meaning given to it in Section 3

"**Cash Index**" has the meaning given to it in Section 3

"**Cash NOU_k**" has the meaning given to it in Section 5.2(c).

"**Change in Law**" means, in respect of the Index, on or after the Index Live Date for the Index, the adoption of, or any change in, any applicable law, regulation, order or rule (including, without limitation, any tax law) or the promulgation of, or any change in, the interpretation, application, exercise or operation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, as implemented by any exchange or trading facility), the Index Sponsor determines that it is or will be contrary to such law, regulation, order or rule for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) any transaction or interest in or relating to a Universe Stock, Eligible Stock or Constituent Stock (as applicable).

"**Closing Price**" means, subject to the provisions set out in Section 10 (Disruption Provisions) in respect of a Constituent Stock and a Calculation Day, the official closing price expressed in the relevant currency unit for such Constituent Stock for such Calculation Day, or if such Calculation Day is a Disrupted Day in respect of such Constituent Stock or is a day on which the Exchange in respect of such Constituent Stock is not scheduled to be open for trading during its regular trading session, the official closing price expressed in the relevant currency unit for such Constituent Stock in respect of the Constituent Scheduled Trading Day for such Constituent Stock immediately preceding such Calculation Day that is not a Disrupted Day.

"**Composite Factor**" has the meaning given to it in Section 3.3.

"**Consistent Adjustment Outcome**" has the meaning given to it in Section 11.8.

"**Consolidated Traded Notional Quantity**" has the meaning given to it in Section 3.7.

"**Constituent Company**" means, in respect of an Eligible Stock or a Constituent Stock (as applicable) and the Index, the issuer of such Eligible Stock or Constituent Stock (as applicable).

"**Constituent Scheduled Trading Day**" means, (i) in respect of a Constituent Stock, any day on which the relevant Exchange and the relevant Related Exchange in respect of such Constituent Stock are scheduled to be open for trading during their respective regular trading session(s) and (ii) in respect of the Cash Index, any day on which the Cash Index Sponsor is scheduled to calculate and publish the official closing level of the Cash Index.

"**Constituent Stock (i)**" means, in respect of a Calculation Day, each Constituent Stock as determined pursuant to Sections 4 and 5.

"**Constituent Stock Determination Agent**" has the meaning given to it in Section 7.

"**Constituent Stock Events**" has the meaning given to it in Section 11.8.

"**Constituent Stock**" means, in respect of a Calculation Day each of a Long Basket Constituent Stock or a Short Basket Constituent Stock as determined pursuant to Sections 4 and 5.

"**Constituent Stocks**" has the meaning given to it in Section 5.1.

"**Constituent Weights**" has the meaning given to it in Section 5.1.

"**Corporate Action Effective Date**" means, in respect of a Corporate Action Multiplier for an Eligible Stock and a calendar day, the corporate action effective date associated with such Corporate Action Multiplier, as identified by the "AdjDate" identifier in the Share Data Source.

"**Corporate Action Multiplier**" means, in respect of an Eligible Stock and a calendar day, the corporate action multiplier for such Eligible Stock in respect of such calendar day, as identified by the "CumAdjFactor" identifier in the Share Data Source.

"**Corporate Action**" has the meaning given to it in Section 11.8.

"**Corporate Event**" has the meaning given to it in Section 11.8.

"**Country Exposure Penalty Multiplier**" has the meaning given to it in Section 3.1

"**Country Exposure Penalty Variable**" has the meaning given to it in Section 4.9.

"**Country of Incorporation**" means, in respect of an Eligible Stock or a Constituent Stock (as applicable), the jurisdiction where a company is incorporated (as reported by a relevant or recognized information provider chosen by the Constituent Stock Determination Agent, such as the Base Reference Data Source, Bloomberg or Thomson Reuters Datastream)

"**Country**" means, in respect of an Eligible Stock or a Constituent Stock (as applicable), its Country of Incorporation

"**Current Weight**" has the meaning given to it in Section 5.2(d).

"**Data Reference Time**" has the meaning given to it in Section 3.1

"**Data Source Disrupted Date**" has the meaning given to it in Section 10.4.

"**Data Source Disruption Event**" means, in respect of a Rebalance Selection Date, the occurrence of an event where the number of Eligible Stocks that are not Excluded Stocks is less than the Source Data Threshold Number for any reason (including, without limitation, due to missing data or data considered missing for some Eligible Stocks or due to technology issues affecting the Constituent Stock Determination Agent, the applicable Data Source or Data Sources, or the means by which such data is accessed or other factors that result in such unavailability)

"**Data Source**" has the meaning given to it in Section 3.6, and shall also include as applicable the Share Data Source, the Fundamentals Data Source, the

Estimates Data Source, the FX Data Source, the Base Reference Data Source, the Risk Model Data Source, the Borrow Data Provider, and any data source selected by the Constituent Stock Determination Agent that provides the composition of the Base Reference Index or the Base Reference Index Level.

"**Declared Dividend**" means, in respect of a Calculation Day (t) and a Constituent Stock (i), 100 percent of the cash dividend per share of the Constituent Stock for the related Ex-Dividend Date as declared by the issuer of the Constituent Stock to a non-domestic institutional investor (i.e., an institutional investor located outside of the jurisdiction of organisation of the issuer of the Constituent Stock) in shares of that Constituent Stock as determined by the Index Calculation Agent or the Index Sponsor (as applicable) by reference to published dividends rates (as published by the relevant or recognized information providers such as Bloomberg, Datastream or Markit).

"**Defined Borrow Rate**" has the meaning given to it in Section 3.10(a).

"**Delisted Stock**" has the meaning given to it in Section 5.1.

"**Determination Period**" has the meaning given to it in Section 5.1.

"**Disrupted Cash Calculation Day**" has the meaning given to it in Section 10.1.

"**Disrupted Constituent**" has the meaning given to it in Section 10.1 or Section 10.2 (as the case may be).

"**Disrupted Day**" means (i) in respect of a Constituent Stock, any Constituent Scheduled Trading Day or Calculation Day (as the case may be) on which a relevant Exchange or any relevant Related Exchange fails to open for trading during its regular trading session or on which a Market Disruption Event for that Constituent Stock has occurred and (ii) in respect of the Cash Index, any Constituent Scheduled Trading Day on which the Cash Index Sponsor fails to publish the Cash Index Level.

"**Disrupted Effective Rebalancing Date**" has the meaning given to it in Section 10.2.

"**Disrupted Rebalance Constituent**" has the meaning given to it in Section 10.1.

"**Disrupted Stock Calculation Day**" has the meaning given to it in Section 10.1.

"**Disruption Determination Agent**" has the meaning given to it in Section 3.1

"**Disruption Determination Date**" has the meaning given to it in Section 10.2.

"**Disruption Resolution Calculation Day**" has the meaning given to it in Section 10.2.

"**Dollar Base Reference Consolidated Market Capitalization**" has the meaning given to it in Section 3.8(a).

"**Dollar Base Reference Free-Float Market Capitalization**" has the meaning given to it in Section 3.8(c).

"**Dollar Consolidated Market Capitalization**" has the meaning given to it in Section 3.8(b).

"**Dollar Notional Trading Estimate**" has the meaning given to it in Section 3.7.

"**Early Closure**" means the closure on any Exchange Business Day of any relevant Exchange(s) or any relevant Related Exchange(s) prior to its Scheduled Closing Time unless such earlier closing time is announced by such Exchange(s) or such Related Exchange(s), as the case may be, at least one hour prior to the earlier of (a) the actual closing time for the regular trading session on such Exchange(s) or such Related Exchange(s) on such Exchange Business Day and (b) the submission deadline for orders to be entered into the Exchange or Related

	Exchange system for execution at the Scheduled Closing Time on such Exchange Business Day.
"**Effective Rebalancing Date**"	has the meaning given to it in Section 3.
"**Eligible Countries**"	means, in respect of a Rebalance Selection Date (t), the set of all Countries of Incorporation associated with an Eligible Stock
"**Eligible Sectors**"	means, in respect of a Rebalance Selection Date (t), the set of all Stock Sectors associated with an Eligible Stock
"**Eligible Stock (i)**"	means the Eligible Stock corresponding to integer (i)
"**Eligible Stocks**"	means, in respect of a Rebalance Selection Date, each of the stocks selected in accordance with the selection methodology set forth in Section 4.1.
"**Enhanced Ratio**"	has the meaning given to it in Section 3.12(b).
"Estimates Data Source"	means monthly I/B/E/S history data, which is accessed via QA Direct
"**Exchange Business Day**"	means, in respect of a Constituent Stock, any Constituent Scheduled Trading Day on which the relevant Exchange and the relevant Related Exchange, if any, in respect of such Constituent Stock are open for trading during their respective regular trading session(s), notwithstanding any such relevant Exchange or relevant Related Exchange closing prior to their Scheduled Closing Time.
"**Exchange Disruption**"	means any event (other than an Early Closure) that disrupts or impairs (as determined by the Disruption Determination Agent) the ability of market participants in general (i) to effect transactions in, or obtain market values for the Constituent Stock on an Exchange or (ii) to effect transactions in, or obtain market values for, futures or options contracts relating to the Constituent Stock on any relevant Related Exchange.
"**Exchange**"	means in respect of an Eligible Stock or a Constituent Stock (as applicable), the principal exchange or quotation system on which the Eligible Stock or the Constituent Stock (as applicable) is listed (or any successor to such exchange or quotation system or any substitute exchange or quotation system to which trading in such Eligible Stock or Constituent Stock (as applicable) has temporarily relocated, provided that the Disruption Determination Agent or the Index Calculation Agent (as applicable) has determined that there is comparable liquidity for such Eligible Stock or Constituent Stock (as applicable) on such temporary substitute exchange or quotation system as on the original Exchange), as determined by the Disruption Determination Agent or the Index Calculation Agent (as applicable).
"**Excluded Stock**"	has the meaning given to it in Section 4.8(b).
"**Ex-Dividend Date**"	means, in respect of a Declared Dividend for a Constituent Stock, the first day on which the relevant Constituent Stock commences trading ex-dividend on the Exchange in respect of the dividend as determined by the Index Calculation Agent or the Index Sponsor (as applicable).
"**Extraordinary Event**"	means any event described in Section 11 (*Extraordinary Events*).
"**Factor Definitions**"	has the meaning given to it in Section 3.5.
"**Filled Borrow Rate**"	has the meaning given to it in Section 3.10(b).
"**Filtered Output Portfolio**"	has the meaning given to it in Section 4.10.

“**Final Factor Score**”	has the meaning given to it in Section 3.4.means, in respect of an Eligible Stock, a Final Factor and a Rebalance Selection Date, the Factor Score in respect of such Eligible Stock, such Final Factor and such Rebalance Selection Date
“**Final Factor**”	has the meaning given to it in Section 3.4.
“**Final Low Volatility Factor Score**”	has the meaning given to it in Section 4.3.
“**Final Lower Bound**”	has the meaning given to it in Section 4.8(b).
“**Final Momentum Factor Score**”	has the meaning given to it in Section 4.3.
“**Final Quality Factor Score**”	has the meaning given to it in Section 4.7.
“**Final Size Factor Score**”	has the meaning given to it in Section 4.3.
“**Final Upper Bound**”	has the meaning given to it in Section 4.8(b).
“**Final Value Factor Score**”	has the meaning given to it in Section 4.5.
“**First Following Non-Disrupted Day**”	has the meaning given to it in Section 10.2.
“**First Preliminary Lower Bound**”	has the meaning given to it in Section 4.8.
“**First Preliminary Upper Bound**”	has the meaning given to it in Section 4.8.
“**Fundamentals Data Source**”	means Reuters Fundamentals, which is accessed via QA Direct
“FX Data Source”	means (a) Thomson Reuters Datastream, which is accessed via QA Direct, for Selection Currency Rate determinations made by the Constituent Stock Determination Agent, or (b) the WM Company, which is accessed via Bloomberg by reference to page WMCO (or any successor to such page or service) in respect of FX Rate determinations made by the Index Calculation Agent
“**FX Rate**”	means, in respect of a Constituent Stock and a calendar day (t), (a) the most recent closing spot rate corresponding to the number of units of the Index Currency for which one unit of the relevant Associated Currency may be exchanged in respect of a calendar day that falls on or before calendar day (t) (the “**First Rate**”) as determined by the Constituent Stock Determination Agent by reference to the FX Data Source, or (b) one (1) divided by the most recent closing spot rate corresponding to the number of units of the relevant Associated Currency for which one unit of the Index Currency may be exchanged in respect of a calendar day that falls on or before calendar day (t) (the “**Second Rate**”) as determined by the Constituent Stock Determination Agent by reference to the FX Data Source, if the Second Rate is more recent than the First Rate.
“**Gross Dividend Amount**”	means, in respect of a Constituent Stock (i), the Declared Dividend
“**Group**”	has the meaning given to it in Section 4.1
“**Grouping Criteria**”	has the meaning given to it in Section 3.1.
“**Identified Reference Index Sponsor**”	has the meaning given to it in Section 3.1
“**Identified Reference Index**”	has the meaning given to it in Section 3.1
“**Incoming Constituent**”	means, in respect of an Effective Rebalancing Date, a stock that has been selected pursuant to Sections 4 and 5 to be included in the Index with effect from but excluding such Effective Rebalancing Date.
“**Index Adjustment Cost Factor**”	has the meaning given to it in the Section 3.1.
“**Index Base Date**”	has the meaning given to it in the Section 3.1.

"**Index Base Level**" has the meaning given to it in the Section 3.1.

"**Index Bloomberg Ticker**" has the meaning given to it in Section 3.1.

"**Index Calculation Agent**" has the meaning given in Section 7.1.

"**Index Currency**" has the meaning given to it in the Section 3.1.

"**Index Level**" means the level of the Index as determined and calculated in accordance with Section 5.2(f).

"**Index Live Date**" has the meaning given to it in the Section 3.1.

"**Index Rationale**" has the meaning given to it in the Section 3.1.

"**Index Rules**" has the meaning set forth in Section 1.

"**Index Scheduled Trading Day**" has the meaning given to it in Section 3.1

"**Index Sponsor**" has the meaning given in Section 7.1.

"**Index**" has the meaning set forth in Section 1.

"**kth Group Normalized Base Factor Score**" has the meaning given to it in Section 4.3.

"**kth Group Normalized Quality Factor Score**" has the meaning given to it in Section 4.7.

"**kth Group Normalized Value Factor Score**" has the meaning given to it in Section 4.5.

"**Liquidity Notional**" has the meaning given to it in Section 3.1

"**London Scheduled Business Day**" means each day that is both (i) a Calculation Day and (ii) a day on which the London Stock Exchange is scheduled to be open for its regular trading session.

"**Long Basket Constituent Stock**" means any stock included in the Long Basket.

"**Long Basket Constituent Weights**" has the meaning given to it in Section 5.1.

"**Long Basket Divisor**" has the meaning given to it in Section 5.2(a).

"**Long Basket Level**" has the meaning given to it in Section 5.2(a).

"**Long Basket**" has the meaning given to it in Section 2.

"**Long Delta**" has the meaning given to it in Section 4.8(b).

"**Long NOU_k**" has the meaning given to it in Section 5.2(c).

"**Long Output Portfolio**" has the meaning given to it in Section 4.8(b).

"**Low Volatility Factor**" has the meaning given to it in Section 3.2.

"**Market Disruption Event**" means, in relation to a Constituent Stock, the occurrence or existence of (i) a Trading Disruption, (ii) an Exchange Disruption, in the case of clause (i) or clause (ii) at any time during the one hour period that ends at the Scheduled Closing Time for such Constituent Stock, or (iii) an Early Closure, which in the case of clause (i), clause (ii) or clause (iii) the Disruption Determination Agent determines is material.

"**Maximum Absolute Beta**" has the meaning given to it in Section 3.1

"**Maximum Absolute Factor Score Difference**" has the meaning given to it in Section 3.1

"**Maximum Absolute Weight**" has the meaning given to it in Section 3.1

"**Maximum Holding Liquidity Ratio**" has the meaning given to it in Section 3.1

"**Maximum Long Country Exposure Deviation**" has the meaning given to it in Section 3.1

"**Maximum Long Sector Exposure Deviation**" has the meaning given to it in Section 3.1

"**Maximum Missing Final Factor Scores Number**" has the meaning given to it in Section 3.1

"**Maximum Monthly Turnover**" has the meaning given to it in Section 3.1

"**Maximum Net Country Exposure Deviation**" has the meaning given to it in Section 3.1

"**Maximum Net Sector Exposure Deviation**" has the meaning given to it in Section 3.1

"**Maximum Short Leg Borrow Rate**" has the meaning given to it in Section 3.1

"**Maximum Short Stock Borrow Rate**" has the meaning given to it in Section 3.1

"**Maximum Trading Liquidity Ratio**" has the meaning given to it in Section 3.1

"**Maximum Volatility**" has the meaning given to it in Section 3.1

"**Mean Analyst Consensus Estimate**" has the meaning given to it in Section 3.1

"**Minimum Long Delta Accepted**" has the meaning given to it in Section 3.1

"**Missing Factor Input Event**" has the meaning given to it in Section 4.1.

"**Missing Value Event**" has the meaning given to it in Section 4.1.

"**Non-Disrupted Constituent**" has the meaning given to it in Section 10.2.

"**Normalized Base Factor Score**" has the meaning given to it in Section 4.3.

"**Number of Long Stocks**" has the meaning given to it in Section 5.1.

"**Number of Shares**" has the meaning given to it in Section 5.2(a).

"**Number of Short Stocks**" has the meaning given to it in Section 5.1.

"**Objective Function**" has the meaning given to it in Section 4.8.

"**Optimization Constraints**" has the meaning given to it in Section 4.8.

"**Optimization Methodology**" has the meaning given to it in Section 2.

"**Optimization Relaxation Procedure**" has the meaning given to it in Section 4.8(c).

"**Optimizer Software**" has the meaning given to it in Sections 2 and 3.1.

"**Original Sectors**" has the meaning given to it in Section 3.12.

"**Outgoing Constituent**" means, in respect of an Effective Rebalancing Date, a stock that was a Constituent Stock immediately before such Effective Rebalancing Date.

"**Output Portfolio**" has the meaning given to it in Sections 2.

"**Output Weight**" has the meaning given to it in Section 4.8(a).

"**Preliminary Base Factor Score**" has the meaning given to it in Section 4.1.

"**Preliminary Composite Factor Score**" has the meaning given to it in Section 4.4.

"**Preliminary Constituent Stock**" means, in respect of a Rebalance Selection Date, each of a Preliminary Long Basket Constituent Stock or a Preliminary Short Basket Constituent Stock as determined pursuant to Section 4.

"**Preliminary Constituent Weight**" means, in respect of a Rebalance Selection Date, each of a Preliminary Long Basket Constituent Weight or a Preliminary Short Basket Constituent Weight as determined pursuant to Section 4.

"**Preliminary Long Basket Constituent Stocks**" has the meaning given to it in Section 4.10.

"**Preliminary Long Basket Constituent Weights**" has the meaning given to it in Section 4.10.

"**Preliminary Quality Factor Score**" has the meaning given to it in Section 4.6.

"**Preliminary Short Basket Constituent Stocks**" has the meaning given to it in Section 4.10.

"**Preliminary Short Basket Constituent Weights**"	has the meaning given to it in Section 4.10.
"**Price Momentum Factor**"	has the meaning given to it in Section 3.4.
"**Price Reference Date**"	has the meaning given to it in Section 3.5.1 or in Section 3.5.2.
"**Primary Traded Notional Quantity**"	has the meaning given to it in Section 3.7.
"**Product**"	has the meaning given to it in the Section entitled "Notices, Disclaimers and Conflicts"
"**QG GScore Factor**"	has the meaning given to it in Section 3.3.
"**QV FScore Factor**"	has the meaning given to it in Section 3.3.
"**RAF_t**"	has the meaning given to it in Section 5.2(e).
"**Rebalance Adjustment Factor**"	has the meaning given to it in 5.2(c).
"**Rebalance Selection Date (t)**"	means the Rebalance Selection Date in respect of which the rebalancing selection is made.
"**Rebalance Selection Date**"	has the meaning given to it in Section 3.1.
"**Rebalancing Cost Percentage**"	has the meaning given to it in Section 3.1.
"**Related Exchange**"	means, in relation to an Eligible Stock or a Constituent Stock (as applicable), each exchange or quotation system where trading has a material effect (as determined by the Constituent Stock Determination Agent or the Index Calculation Agent, as applicable) on the overall market for futures or options contracts relating to the relevant Eligible Stock or Constituent Stock (as applicable).
"**Relaxation Event**"	has the meaning given to it in Section 4.9(c).
"**Relaxation Steps**"	has the meaning given to it in Section 4.9(b).
"**Relaxed Objective Function**"	has the meaning given to it in Section 4.9(d).
"**Relaxed Optimization Constraints**"	has the meaning given to it in Section 4.9(f).
"**Relevant Parties**"	has the meaning given to it in Section 11.1.
"**Relevant Person**"	has the meaning given to it in the Section entitled "Notices, Disclaimers and Conflicts"
"**Risk Model Covariance**"	has the meaning given to it in Section 3.9.
"**Risk Model Data Source**"	means MSCI Barra
"**Risk Model Factor**"	has the meaning given to it in Section 3.9.
"**Risk Model Variance**"	has the meaning given to it in Section 3.9.
"**Risk Model**"	has the meaning given to it in Section 3.1.
"**Scheduled Closing Time**"	means, in respect of an Exchange or Related Exchange and a Constituent Scheduled Trading Day, the scheduled weekday closing time of such Exchange or Related Exchange on such Constituent Scheduled Trading Day, without regard to after hours or any other trading outside of the regular trading session hours.
"**Scheduled Rebalancing Date**"	has the meaning given to it in Section 3.1.
"**Second Preliminary Lower Bound**"	has the meaning given to it in Section 4.8(b).
"**Second Preliminary Upper Bound**"	has the meaning given to it in Section 4.8(b).
"**Sector Exposure Penalty Multiplier**"	has the meaning given to it in Section 3.1
"**Sector Exposure Penalty Variable**"	has the meaning given to it in Section 4.9(e).

"**Selected Output Portfolio**" has the meaning given to it in Sections 4.8(c) or 4.9(a).

"**Selected Traded Notional Quantity**" has the meaning given to it in Section 3.7.

"**Selection Currency Rate**" means, in respect of a calendar day (t) and a currency in which a relevant financial metric is denominated (a "**Metric Currency**"), as specified in the relevant table, (a) the most recent closing spot rate corresponding to the number of units of the Index Currency for which one unit of the Metric Currency may be exchanged in respect of a calendar day that falls on or before calendar day (t) (the "**First Rate**") as determined by the Constituent Stock Determination Agent by reference to the FX Data Source, or (b) one (1) divided by the most recent closing spot rate corresponding to the number of units of the Metric Currency for which one unit of the Index Currency may be exchanged in respect of a calendar day that falls on or before calendar day (t) (the "**Second Rate**") as determined by the Constituent Stock Determination Agent by reference to the FX Data Source, if the Second Rate is more recent than the First Rate.

"**Share Data Source**" means Thomson Reuters Datastream, which is accessed via QA Direct

"**Short Basket Constituent Stock**" means any stock that is included in the Short Basket.

"**Short Basket Constituent Stocks**" has the meaning given to it in Section 5.1.

"**Short Basket Constituent Weights**" has the meaning given to it in Section 5.1.

"**Short Basket Divisor**" has the meaning given to it in Section 5.2(b).

"**Short Basket Level**" has the meaning given to it in Section 5.2(b).

"**Short Basket**" has the meaning given to it in Section 2.

"**Short NOU_k**" has the meaning given to it in Section 5.2(c).

"**Short Output Portfolio**" has the meaning given to it in Section 4.8(b).

"**Simulated Identified Reference Index Adjustment Determination**" has the meaning given to it in Section 11.8.

"**Simulated Identified Reference Index Adjustment Outcome**" has the meaning given to it in Section 11.8.

"**Size Factor**" has the meaning given to it in Section 3.2.

"**Small Weight Threshold**" has the meaning given to it in Section 3.1

"**Source Data Threshold Number**" has the meaning given to it in Section 3.1.

"**Stock Region**" has the meaning given to it in Section 3.12.

"**Stock Sector Region Pair Group**" has the meaning given to it in Section 3.12.

"**Stock Sector**" has the meaning given to it in Section 3.12.

"**Temporary Optimizer Software Failure**" has the meaning given to it in Section 4.8 or 4.9.

"**Trading Disruption**" means any suspension of or limitation imposed on trading by the relevant Exchange or Related Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the relevant Exchange or Related Exchange or otherwise: (a) relating to the Constituent Stock on the Exchange; or (b) in futures or options contracts relating to the relevant Constituent Stock on any relevant Related Exchange.

"**Universe Stock**" has the meaning given to it in Section 4.1.

"**Value Factor**" has the meaning given to it in Section 3.3.

14. Versions of the Index Rules and Index Adjustments

Any amendment or adjustment to the Index Rules for the Index and the effective date of any such amendment or adjustment may but does not have to be reflected in a revised version of the Index Rules. Copies of the latest issue of the Index Rules or details of relevant adjustments (where not reflected in a revised version of the Index Rules) are available as specified in Section 6.1.

Version	Date	Amendment
1.0	7 September 2017	Not applicable (First release)

15. Disclaimers

MSCI

The MSCI Daily Total Return Gross World USD Index (the "**MSCI World Index**") was used by the Index Sponsor as the reference universe for selection of the companies included in the Index. MSCI does not in any way sponsor, support, promote or endorse the Index. MSCI was not and is not involved in any way in the creation, calculation, maintenance or review of the Index. The MSCI World Index was provided to the Index Sponsor on an "as is" basis. MSCI, each of its affiliates and each other person involved in or related to compiling, computing or creating the MSCI World Index (collectively, the "**MSCI Parties**") expressly disclaim all warranties (including, without limitation, any warranties of originality, accuracy, completeness, timeliness, non-infringement, merchantability and fitness for a particular purpose). Without limiting any of the foregoing, in no event shall any MSCI Party have any liability for any direct, indirect, special, incidental, punitive, consequential (including, without limitation, lost profits) or any other damages in connection with the MSCI World Index or the Index.

Barra

Barra, LLC ("Barra") data was used by J.P. Morgan in the selection and weighting process of companies included in the Index. Barra does not in any way sponsor, support, promote or endorse the Index.Barra was not and is not involved in any way in the creation, calculation, maintenance or review of the Index. The Barra data was provided on an "as is" basis. Barra each of its affiliates and each other person involved in or related to compiling, computing or creating the data (collectively, the "Barra Parties") expressly disclaim all warranties (including, without limitation, any warranties of originality, accuracy, completeness, timeliness, non infringement, merchantability and fitness for a particular purpose). Without limiting any of the foregoing, in no event shall any of the Barra Parties have any liability for any direct, indirect, special, incidental, punitive, consequential (including, without limitation, lost profits) or any other damages in connection with the Barra data or the Index.

Solactive AG

The Index (and any financial instrument referencing the Index) is not sponsored, promoted, sold or supported in any other manner by Solactive AG nor does Solactive AG offer any express or implicit guarantee or assurance either with regard to the results of using the Index and/or Index trade mark or the Index Level at any time or in any other respect. The Index is calculated and published by Solactive AG. Solactive AG uses its best efforts to ensure that the Index is calculated correctly. Irrespective of its obligations towards the issuer of any financial instrument, Solactive AG has no obligation to point out errors in the Index to third parties including but not limited to investors and/or financial intermediaries of any financial instrument. Neither publication of the Index by Solactive AG nor the licensing of the Index or Index trade mark for the purpose of use in connection with the financial instrument constitutes a recommendation by Solactive AG to invest capital in said financial instrument nor does it in any way represent an assurance or opinion of Solactive AG with regard to any investment in this financial instrument.

J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 2)

Index Rules

J.P.Morgan

7 September 2017

Notices, Disclaimers and Conflicts

Each capitalised term used in this section but not otherwise defined has the meaning set forth in other parts of the Index Rules.

None of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent endorses or makes any representation or warranty, express or implied, in connection with any security, transaction, fund, structured deposit or other financial product or investment (each, a "**Product**") that references the Index including as to the advisability of purchasing or entering into a Product or the results to be obtained by any party using the Index in connection with a Product. Furthermore, none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent has any obligation or liability in connection with the administration, marketing or trading of any Product and is not obliged to enter into or promote any Product.

The Index is the exclusive property of the Index Sponsor and no one may reproduce, distribute or disseminate this document or any information contained in this document (the Index Rules, such Index Rules being subject to the Adjustment Provisions) or any Index Level without the prior written consent of the Index Sponsor. This document is not intended for distribution to, or use by, any person in a jurisdiction in which such distribution or use is prohibited by law or regulation.

None of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent has any liability whatsoever in such capacity to any person who uses the Index or any Index Level in any circumstances.

None of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent is under any obligation to continue the calculation, publication or dissemination of the Index or the Index Level. The Index Sponsor may terminate the calculation and publication of the Index or the Index Level at any time without notice. The Index Sponsor may delegate or transfer to a third party some or all of the functions of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent in relation to the Index.

Except as provided in the following paragraph, none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent gives any representation, warranty or undertaking, of any type (whether express or implied, statutory or otherwise) in relation to the Index, as to (i) the condition, satisfactory quality, performance or fitness for purpose of the Index, (ii) the results to be achieved by an investment in any Product, (iii) any data included in or omitted from the Index, (iv) the use of the Index in connection with a Product, (v) the level of the Index at any time on any day, (vi) the veracity, currency, completeness or accuracy of the information on which the Index is based (and without limitation, none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent accepts any liability to any investor in a Product for any errors or omissions in that information or the results of any interruption to it and none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent shall be under any obligation to advise any person of any such error, omission or interruption), or (vii) any other matter. To the extent any such representation, warranty or undertaking could be deemed to have been given by any of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent, it is excluded save to the extent that such exclusion is prohibited by law.

To the fullest extent permitted by law, none of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent and the Index Calculation Agent shall have any liability or responsibility to any person or entity (including, without limitation, any investor in any Product) for any loss, damages, costs, charges, expenses or other liabilities howsoever arising, including, without limitation, liability for any special, punitive, indirect or consequential damages (including loss of business, loss of profit, loss of time and loss of goodwill), even if notified of the possibility of the same, arising in connection with the design, compilation, calculation, maintenance or sponsoring of the Index or the Index Level or in connection with any Product.

Each of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent or the Index Calculation Agent may make certain determinations or calculations based on information obtained from publicly available sources without independently verifying such information, and none of them accepts any responsibility or liability in respect of such determinations, calculations or information.

Each of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent and the Index Calculation Agent, and each of their respective affiliates, directors, officers, employees and agents, does not assume any obligation or duty to any party in connection with the Index or the Index Level and does not assume any relationship of agency, trust or of a fiduciary nature with any party, and any information or communication that any such party may provide is not intended to be impartial investment advice..

Potential conflicts of interest may arise in connection with or exist between the structure and operation of the Index and the conduct of business activities of the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent, the Index Calculation Agent or any Affiliate of the Index Sponsor or Index Calculation Agent (each, a "**Relevant Person**").

In connection with its businesses, the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent, the Index Calculation Agent or any Relevant Person may enter into or promote, offer or sell transactions or investments (structured or otherwise) that reference the Index, the Index Level or any Constituent Stock of the Index. In addition, the Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent, the Index Calculation Agent and any Relevant Person may have, or may have had, interests (including general commercial interests related to this Index or any Constituent Stock) or positions, or may buy, sell or otherwise trade positions in or relating to the Index, the Index Level, or any Constituent Stock of the Index, or may invest or engage in transactions with other persons, or on behalf of such persons relating to any of these. Such activity could give rise to a conflict of interest, and such conflict may have an impact, positive or negative, on the level of the Index. The Index Sponsor, the Constituent Stock Determination Agent, the Disruption Determination Agent, the Index Calculation Agent and the Relevant Persons do not have (a) any duty to consider the circumstances of any person when participating in such transactions or (b) any duty to conduct themselves in a manner that is favourable to anyone with exposure to the Index.

The foregoing notices, disclaimers and conflicts disclosure is not intended to be exhaustive. Anyone reading the Index Rules should seek such advice as that person considers necessary from that person's professional, legal, tax or other advisers or otherwise, without reliance on the Index Sponsor, Constituent Stock Determination Agent, Disruption Determination Agent, Index Calculation Agent or any Relevant Person to satisfy that person that such person fully understands the Index Rules and the risks associated with the Index. Any person interested in obtaining exposure to the Index shall make and shall be deemed to make its own investment decision based upon its own judgment and its own examination of the Relevant Persons and the relevant security or financial instrument.

The Index Rules have been developed with the possibility of one or more entities, with the written permission of the Index Sponsor, entering into or promoting, offering or selling Products (structured or otherwise) linked to the Index and hedging such Products in any manner that such entity sees fit.

Further information relating to (i) the internal governance framework and (ii) the identity and role of third parties that are non-affiliates of J.P. Morgan, in respect of this Index, is available on request to the Index Sponsor.

THIS DOCUMENT IS IMPORTANT. YOU SHOULD NOT INVEST IN A PRODUCT UNLESS YOU HAVE ENSURED THAT YOU FULLY UNDERSTAND THE NATURE OF SUCH AN INVESTMENT AND THE RISKS INVOLVED AND ARE SATISFIED THAT THE INVESTMENT IS SUITED TO YOUR CIRCUMSTANCES AND OBJECTIVES. IF YOU ARE IN ANY DOUBT ABOUT THIS YOU SHOULD TAKE ADVICE FROM AN APPROPRIATELY QUALIFIED ADVISER. UNLESS YOU ARE A HIGHLY SOPHISTICATED INVESTOR WHO REGULARLY TRANSACTS IN PRODUCTS LINKED TO AN INDEX OF THIS TYPE, YOU ARE STRONGLY ADVISED TO TAKE SUCH ADVICE IN ANY EVENT.

consent of the Index Sponsor (including in situations in which a third party performs certain functions in relation to the Index).

1. This Document

This document comprises the rules and methodology (the **"Index Rules"**) of the J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 2) (the "**Index**"). The provisions and variables set forth in these Index Rules are applicable to the Index.

Further information relating to (i) the internal governance framework and (ii) the identity and role of third parties that are non-affiliates of J.P. Morgan, in respect of this Index, is available from the Index Sponsor, on request.

2. Overview of the Index

The following introduction is intended merely to summarize the methodology of the Index in general terms. It is not intended to be exhaustive and the methodology set forth in Sections 4 and 5 and the remainder of these Index Rules will govern in the event of any inconsistency.

The objective of the Index is to track, in accordance with the methodology described herein, the return of a long basket of certain stocks (the "**Long Basket**") minus the return of a short basket of certain other stocks (the "**Short Basket**"), which are selected from the set of stocks comprising the Base Reference Index, subject to certain criteria and an optimization methodology, as further described below. The Constituent Stock Determination Agent and the Index Calculation Agent seek to achieve this objective by following the rules-based methodology set out in these Index Rules.

The Index is rebalanced every ten Index Scheduled Trading Days and the stocks and weights assigned to each of the stocks comprising the Long Basket and Short Basket, respectively, are selected by the Constituent Stock Determination Agent from the set of stocks comprising the Base Reference Index, in accordance with the methodology described in these Index Rules.

The Constituent Stock Determination Agent, in respect of each Rebalance Selection Date, will determine the Eligible Stocks, using the rules and methodology set forth in Section 4. The Constituent Stock Determination Agent will determine the Preliminary Constituent Stocks that will compose the Long Basket and the Short Basket of the Index, subject to Sections 5.1, 10 and 11, in respect of each Rebalancing Date, based on the Eligible Stocks, the Final Factor Scores and third-party optimization software (the "**Optimizer Software**") using the methodology set forth in Section 4. The Constituent Stock Determination Agent and the Index Calculation Agent (as applicable) will perform their respective roles in accordance with the methodology set forth in Sections 3, 4 and 5.

The Index Calculation Agent, subject to the occurrence of any Market Disruption Event or any Extraordinary Event, will calculate and publish the Index Level in respect of each Calculation Day (each, a "**Calculation Day (t)**"), subject to and in accordance with these Index Rules by implementing the following four steps:

Step 1: Determining the Eligible Stocks and the Final Factor Scores: The Constituent Stock Determination Agent, in respect of each Rebalance Selection Date, using the methodology and rules set forth in Section 4 will determine the Eligible Stocks and the Final Factor Scores.

Step 2: Selecting the Constituent Stocks and determining the Constituent Weights: The Constituent Stock Determination Agent, in respect of each Rebalance Selection Date, shall use, among other things, the Eligible Stocks, the Final Factor Scores and an optimization methodology in order to determine the Preliminary Constituent Stocks and the Preliminary Constituent Weights. The optimization methodology, further described in Sections 4.8 and 4.9 (the "**Optimization Methodology**"), shall involve, among other parameters further described below, the use of the Optimizer Software, which will be subject to certain constraints as described in Section 4.8(b) and 4.9(b). The aim of the Optimization Methodology is to find the portfolio of stocks and associated weights (the "**Output Portfolio**") that maximizes the aggregate exposure of such portfolio to certain factors, within the given constraints, as further described in the methodology set out in Sections 4.8 and 4.9.

The Preliminary Constituent Stocks and Preliminary Constituent Weights will compose the Long Basket and the Short Basket of the Index, subject to Sections 5.1, 5.2, 10 and 11, for the period from but excluding the Rebalancing Date immediately following such Rebalance Selection Date to and including the immediately following Rebalancing Date.

The Constituent Stock Determination Agent will provide the Index Calculation Agent with information regarding the Preliminary Constituent Stocks and the Preliminary Constituent Weights in respect of each

Rebalance Selection Date so that the Index Calculation Agent can perform the calculations in connection with the Index Calculation Agent's role, as further described below.

Step 3: Rebalancing the Index: Subject to Section 10 and Section 11, the Index will be rebalanced every ten Index Scheduled Trading Days, using the Preliminary Constituent Stocks and the Preliminary Constituent Weights determined by the Constituent Stock Determination Agent in the previous step, as determined by the Index Calculation Agent subject to and in accordance with Sections 5.1 and 5.2.

Step 4: Calculating the Index Level: The final step is for the Index Calculation Agent to calculate and publish the Index Level in respect of each Calculation Day (t), using the methodology set forth in Section 5.2. The Index Calculation Agent will also apply the following set of adjustments, when determining the Index Level, in accordance with the formulas set forth in Section 5.2(f):

- If Calculation Day (t) is a Rebalancing Date, the Rebalance Adjustment Factor set forth in Section 5.2(e), which is determined in part based on the Rebalancing Cost Percentage specified in Section 3.1; and
- The Index Adjustment Cost Factor, Assumed Financing Cost Adjustment Factor and Assumed Borrow Cost Adjustment Factor, which are each per annum amounts, specified in Section 3.

The Index Adjustment Cost Factor, Assumed Financing Cost Adjustment Factor and Assumed Borrow Cost Adjustment Factor and (when applicable) the Rebalance Adjustment Factor will each act as a drag on the performance of the Index.

The Index Level will never be less than zero.

Terms not otherwise defined in these Index Rules have the meanings set forth in Section 13.

3. Index Specifics

3.1 Specific information related to the Index

Name of the Index	J.P. Morgan Equity Risk Premium – Global Balanced Multi-Factor (Long / Short) USD Index (Series 2)
Index Bloomberg Ticker	JPQFMFW2 <Index>
Index Rationale	The Index methodology selects stocks and determines stock weights based on value, size, momentum, low volatility and quality metrics. The Index methodology uses a proprietary algorithm involving an optimization methodology aiming to maximize the aggregate exposure of the Output Portfolio subject to the constraints set out in these Index Rules. The Index rebalances every ten Index Scheduled Trading Days.
Index Currency	USD
Index Base Level	100.00
Index Base Date	7 September 2017
Basket Base Date	7 September 2017
Index Live Date	7 September 2017
Index Sponsor	J.P. Morgan Securities plc or any successor or assignee. See Section 7.1.
Index Calculation Agent	Solactive AG or any successor or assignee. See Section 7.1.
Constituent Stock Determination Agent	J.P. Morgan Securities plc or any successor or assignee. See Section 7.1.
Disruption Determination Agent	J.P. Morgan Securities plc or any successor or assignee. See Section 7.1.
Grouping Criteria	Stock Sector and Stock Region. See Section 3.11.
Optimizer Software	Means the MOSEK computer program version 7.1.0.36, as available from the MOSEK ApS company, which is third-party software for solving mathematical optimization problems, used with its default parameters except for (i) parameter "cacheLicense" which shall be set to be "off" and (ii) for parameter "licenseWait" which shall be set to be "on".
Risk Model	Means the GEM3S risk model, as available from the Risk Model Data Source
Minimum Long Delta Accepted	85.0%
Maximum Absolute Factor Score Difference	0.25
Maximum Absolute Beta	1.0%

Maximum Net Country Exposure Deviation	0.5%
Maximum Net Sector Exposure Deviation	0.5%
Maximum Long Country Exposure Deviation	0.1%
Maximum Long Sector Exposure Deviation	0.1%
Maximum Volatility	5.0%
Maximum Missing Final Factor Scores Number	2
Maximum Short Stock Borrow Rate	1.5%
Maximum Absolute Weight	0.5%
Maximum Trading Liquidity Ratio	20.0%
Maximum Holding Liquidity Ratio	70.0%
Liquidity Notional	USD 2.0 billion
Maximum Monthly Turnover	50.0%
Maximum Short Leg Borrow Rate	0.35%
Country Exposure Penalty Multiplier	50
Sector Exposure Penalty Multiplier	100
Borrow Penalty Multiplier	100
Small Weight Threshold Percentage	0.0001%
Source Data Threshold Number	850 Eligible Stocks
Index Adjustment Cost Factor	0.25%
Assumed Financing Cost Adjustment Factor	0.35%
Assumed Borrow Cost	0.25%

Adjustment Factor	
Rebalancing Cost Percentage	0.04%
Borrow Data Provider	Markit Securities Finance Analytics Limited
Calculation Day	Means each week day that is not a Saturday or a Sunday
Rebalance Selection Date	Means, in respect of a Scheduled Rebalancing Date, the Calculation Day that is three London Scheduled Business Days immediately preceding that Scheduled Rebalancing Date
Index Scheduled Trading Day	Means each Calculation Day on which each of the New York Stock Exchange, the Xetra Exchange, the London Stock Exchange and the Tokyo Stock Exchange is scheduled to be open for trading during its regular trading session, whether scheduled for a full-day regular trading session or a shortened-day regular trading session
Scheduled Rebalancing Date	Means (1) the Index Base Date and (2) each Index Scheduled Trading Day that falls ten Index Scheduled Trading Days after a previous Scheduled Rebalancing Date
Effective Rebalancing Date	Means (1) the Index Base Date and (2) in respect of a Scheduled Rebalancing Date in respect of which no Data Source Disruption Event and no Relaxation Event occurs for the related Rebalance Selection Date, that Scheduled Rebalancing Date
Data Reference Time	Means, in respect of a Rebalance Selection Date, 08.00 am local time in London, United Kingdom on the London Scheduled Business Day that immediately follows that Rebalance Selection Date
Base Reference Index	MSCI Daily Total Return Gross World USD Index (Bloomberg: GDDUWI Index)
Base Reference Index Sponsor	MSCI Inc.
Identified Reference Index	Solactive FinTech 20 Index (USD) (Bloomberg: SOLFTECU Index)
Identified Reference Index Sponsor	Solactive AG
Mean Analyst Consensus Estimate	Means, for an Eligible Stock in respect of a Rebalance Selection Date (t), the arithmetic mean of all analyst estimates of the relevant data as reported by the Estimates Data Source
Cash Index	J.P. Morgan Cash Index USD 3 Month (Bloomberg: JPCAUS3M Index)
Cash Index Sponsor	J.P. Morgan Securities LLC
Universe Stocks	Means, in respect of a Rebalance Selection Date, each of the constituent stocks included in the Base Reference Index, as available to the Constituent Stock Determination Agent from the Base Reference Data Source at approximately the Data Reference Time.
Eligible Stocks	Means, in respect of a Rebalance Selection Date, the set of Universe Stocks, each of which:

	(i) is represented in the Share Data Source at approximately the Data Reference Time; and (ii) has a Dollar Base Reference Free-Float Market Capitalization in respect of Rebalance Selection Date (t), as determined pursuant to Section 3.8(c); and (iii) has available, from the Risk Model Data Source at approximately the Data Reference Time, specific risk information in respect of Rebalance Selection Date (t), as identified by the “SpecRisk%” identifier in the Risk Model Data Source. One or more than one Eligible Stock may be issued by the same issuer. This is the case when each trades separately.

3.2 Base Factors, Data Sources and Base Factor Eligibility Requirements

Base Factor name	Data Source	Base Factor Eligibility Requirement
Forward Earnings Yield Factor	Estimates Data Source, FX Data Source, Share Data Source	Six (6) or more analysts contribute to the Mean Analyst Consensus Estimate
Forward Dividend Yield Factor	Estimates Data Source, FX Data Source, Share Data Source	Six (6) or more analysts contribute to the Mean Analyst Consensus Estimate
Free Cash Flow Yield Factor	Fundamentals Data Source, FX Data Source, Share Data Source, Base Reference Data Source	None
Book to Price Factor	Fundamentals Data Source, FX Data Source, Share Data Source, Base Reference Data Source	None
Size Factor	Share Data Source, FX Data Source, Base Reference Data Source	None
Price Momentum Factor	Share Data Source	None
Low Volatility Factor	Share Data Source	None
Return on Assets Factor	Fundamentals Data Source, FX Data Source	None
Operating Cash Flow to Assets Factor	Fundamentals Data Source, FX Data Source	None
Delta Return on Assets Factor	Fundamentals Data Source, FX Data Source	None
Accruals Factor	Fundamentals Data Source, FX Data Source	None
Delta Leverage Factor	Fundamentals Data Source, FX Data Source	None
Delta Liquidity Factor	Fundamentals Data Source, FX Data Source	None
Equity Issuance Factor	Fundamentals Data Source, Share Data Source	None
Delta Gross Margin Factor	Fundamentals Data Source, FX Data Source	None
Delta Total Revenue Factor	Fundamentals Data Source, FX Data Source	None
Earnings Variability Factor	Fundamentals Data Source, FX Data Source	None
Revenue Growth Variability Factor	Fundamentals Data Source, FX Data Source	None

Research and Development (R&D) Factor	Fundamentals Data Source, FX Data Source	None
Capital Expenditure Factor	Fundamentals Data Source, FX Data Source	None
Advertising Factor	Fundamentals Data Source, FX Data Source	None

3.3 Composite Factors

Composite Factor name	Base Factor name	Base Factor Weight In Composite Factor
Value Factor	Forward Earnings Yield Factor	1/4
	Forward Dividend Yield Factor	1/4
	Free Cash Flow Yield Factor	1/4
	Book to Price Factor	1/4
QV FScore Factor	Return on Assets Factor	1/9
	Operating Cash Flow to Assets Factor	1/9
	Delta Return on Assets Factor	1/9
	Accruals Factor	1/9
	Delta Leverage Factor	1/9
	Delta Liquidity Factor	1/9
	Equity Issuance Factor	1/9
	Delta Gross Margin Factor	1/9
	Delta Total Revenue Factor	1/9
QG GScore Factor	Return on Assets Factor	1/8
	Operating Cash Flow to Assets Factor	1/8
	Accruals Factor	1/8
	Earnings Variability Factor	1/8
	Revenue Growth Variability Factor	1/8
	Research and Development (R&D)	1/8
	Capital Expenditure Factor	1/8
	Advertising Factor	1/8

3.4 Final Factor Scores

Final Factor variable name	Section location
Final Value Factor Score	Section 4.5
Final Size Factor Score	Section 4.3
Final Momentum Factor Score	Section 4.3
Final Low Volatility Factor Score	Section 4.3
Final Quality Factor Score	Section 4.7

3.5 Base Factor Definitions

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i), the Base Factors are defined in accordance with the following formulas:

3.5.1 Forward Earnings Yield Factor

$$Forward\ Earnings\ Yield_i^t = ER\left(EPSFY1_i^t \times AM_{i,EPSFY1}^t \times FX_{i,EPSFY1}^t\ ,\ Price_i^t \times AM_{i,Price}^t \times FX_{i,Price}^t\right)$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$EPSFY1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent Mean Analyst Consensus Estimate of the unadjusted earnings per share (meaning, as reported, but not adjusted for corporate actions) for the first as yet unreported financial year for the relevant company whose estimate date is within the 134 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Estimates Data Source at approximately the Data Reference Time

$AM_{i,EPSFY1}^t$ means the Adjustment Multiplier of Eligible Stock (i) in respect of the estimate date associated with $EPSFY1_i^t$, as available from the Share Data Source at approximately the Data Reference Time

$FX_{i,EPSFY1}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $EPSFY1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$Price_i^t$ means, in respect of Eligible Stock (i) and Rebalance Selection Date (t), the most recent official closing price associated with a date (the "**Price Reference Date**") that is within the period of 31 calendar days immediately preceding and including Rebalance Selection Date (t), expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time

$AM_{i,Price}^t$ means the Adjustment Multiplier of Eligible Stock (i) as available from the Share Data Source at approximately the Data Reference Time, in respect of the Price Reference Date associated with $Price_i^t$

$FX_{i,Price}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $Price_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.2 Forward Dividend Yield Factor

$$Forward\ Dividend\ Yield_i^t = \frac{DPSFY1_i^t \times AM_{i,DPSFY1}^t \times FX_{i,DPSFY1}^t}{Price_i^t \times AM_{i,Price}^t \times FX_{i,Price}^t}$$

Where:

$DPSFY1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent Mean Analyst Consensus Estimate of the unadjusted dividend per share (meaning, as reported, but not adjusted for corporate actions) for the first as yet unreported financial year for the relevant company whose estimate date is within the 134 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Estimates Data Source at approximately the Data Reference Time
$AM_{i,DPSFY1}^t$	means the Adjustment Multiplier of Eligible Stock (i) in respect of the estimate date associated with $DPSFY1_i^t$, as available from the Share Data Source at approximately the Data Reference Time
$FX_{i,DPSFY1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $DPSFY1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$Price_i^t$	means, in respect of Eligible Stock (i) and Rebalance Selection Date (t), the most recent official closing price associated with a date (the "**Price Reference Date**") that is within the 31 calendar days immediately preceding and including Rebalance Selection Date (t), expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time
$AM_{i,Price}^t$	means the Adjustment Multiplier of Eligible Stock (i) as available from the Share Data Source at approximately the Data Reference Time, in respect of the Price Reference Date associated with $Price_i^t$
$FX_{i,Price}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $Price_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.3 Free Cash Flow Yield Factor

$$Free\ Cash\ Flow\ Yield_i^t = ER\big(CashFromOperatingActivities_i^t \times FX_{i,CashFromOperatingActivities}^t + CapEx_i^t \times FX_{i,CapEx}^t\ ,\ Dollar\ Consolidated\ Market\ Capitalization_i^t\big)$$

Where:

ER	means the Enhanced Ratio function defined in Section 3.12(b)
$CashFromOperatingActivities_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cash from operating activities for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,CashFromOperatingActivities}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CashFromOperatingActivities_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$CapEx_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent capital expenditure for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as

available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,CapEx}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CapEx_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$Dollar\ Consolidated\ Market\ Capitalization_i^t$ means the Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.8(b)

In the Fundamentals Data Source, capital expenditures are recorded as negative values, hence $CapEx_i^t$ is added, not subtracted, in the formula above.

3.5.4 Book to Price Factor

$$Book\ to\ Price_i^t = ER\left(TangibleBookValue_i^t \times FX_{i,TangibleBookValue}^{t}, Dollar\ Consolidated\ Market\ Capitalization_i^t\right)$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$TangibleBookValue_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent tangible book value for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TangibleBookValue}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TangibleBookValue_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$Dollar\ Consolidated\ Market\ Capitalization_i^t$ means the Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.8(b)

3.5.5 Size Factor

$$Size_i^t = -1 \times LN\left(\frac{1}{N}\sum_{d=SD}^{t} Dollar\ Consolidated\ Market\ Capitalization_i^d\right)$$

Where:

Calculation Day (SD) means, in respect of Rebalance Selection Date (t), the first Calculation Day that falls on or after the day that is 29 calendar days before Rebalance Selection Date (t)

N means the number of Calculation Days that occur from and including Calculation Day (SD) to and including Rebalance Selection Date (t) and in respect of which a Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) is available, as determined pursuant to Section 3.8(b)

d means an integer representing each of the Calculation Days that occur from and including Calculation Day (SD) to and including Rebalance Selection Date (t) and in respect of which a Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) is available, as determined pursuant to Section 3.8(b)

$Dollar\ Consolidated\ Market\ Capitalization_i^d$ means the Dollar Consolidated Market Capitalization in respect of Eligible Stock (i) and Calculation Day (d), as determined pursuant to Section 3.8(b)

The impact of multiplying by negative one (-1) in the calculation of the Size Factor is that smaller capitalization stocks will have a higher score than higher capitalization stocks when the Size Factor is used in the optimization procedure set forth in Section 4.8.

3.5.6 Price Momentum Factor

$$Momentum_i^t = \frac{\frac{1}{N} \times \sum_{d=SD1W}^{ED1W} TRPrice_i^d}{\frac{1}{M} \times \sum_{d=SD1Y}^{ED1Y} TRPrice_i^d} - 1$$

Where:

d means an integer representing a Calculation Day

$CD1Y$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 364 calendar days before Rebalance Selection Day (t)

$SD1Y$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 10 Calculation Days before $CD1Y$

$ED1Y$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 10 Calculation Days after $CD1Y$

$SD1W$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 6 Calculation Days before Rebalance Selection Day (t)

$ED1W$ means, in respect of Rebalance Selection Day (t), the Calculation Day that falls 4 Calculation Days before Rebalance Selection Day (t)

$TRPrice_i^d$ means, for Eligible Stock (i) in respect of Calculation Day (d), the most recent total return price associated with a date that is on or before Calculation Day (d), as available from the Share Data Source at approximately the Data Reference Time

N means, in respect of Rebalance Selection Day (t), the number of Calculation Days (d) from and including Calculation Day $SD1W$ to and including Calculation Day $ED1W$ in respect of which $TRPrice_i^d$ is not missing.

M means, in respect of Rebalance Selection Day (t), the number of Calculation Days (d) from and including Calculation Day $SD1Y$ to and including Calculation Day $ED1Y$ in respect of which $TRPrice_i^d$ is not missing.

CD1Y is always a Calculation Day since Rebalance Selection Day (t) is a Calculation Day and since 364 is a multiple of 7.

3.5.7 Low Volatility Factor

$$Low\ Volatility\ Factor_i^t = -1 \times \sqrt{\frac{252}{N^2} \times \left(N \times \sum_{j=t-N+1}^{t} \left(\mathrm{LN}\left(\frac{TRPrice_i^j}{TRPrice_i^{j-1}} \right) \right)^2 - \left(\sum_{j=t-N+1}^{t} \mathrm{LN}\left(\frac{TRPrice_i^j}{TRPrice_i^{j-1}} \right) \right)^2 \right)}$$

Where:

j means an integer representing a calendar day in respect of which a total return price is available for Eligible Stock (i), as provided by the Share Data Source at approximately the Data Reference Time.

N means, for Eligible Stock (i), the sum of (1) the number of calendar days in the 365 calendar days immediately prior to and including Rebalance Selection Date (t) in respect of which a total return price is available for Eligible Stock (i), as provided by the Share Data Source at approximately the Data Reference Time and (2) negative one (-1)

$TRPrice_i^j$ means the total return price in respect of Eligible Stock (i) and calendar day (j), as available from the Share Data Source at approximately the Data Reference Time

$TRPrice_i^{j-1}$ means the total return price in respect of Eligible Stock (i) and calendar day (j-1), as available from the Share Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Low Volatility Factor is that lower volatility stocks will have a higher score than higher volatility stocks when the Low Volatility Factor is used in the optimization procedure set forth in Section 4.8.

3.5.8 Return on Assets Factor

$$Return\ on\ Assets_i^t = ER\left(NetIncomeExclExtra_i^t \times FX_{i,NetIncomeExclExtra}^t\ ,\ TotalAssets_i^t \times FX_{i,TotalAssets}^t\right)$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$NetIncomeExclExtra_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,NetIncomeExclExtra}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtra_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssets_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssets}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssets_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.9 Operating Cash Flow to Assets Factor

$$Operating\ Cash\ Flow\ to\ Assets_i^t = ER\left(CashFromOperatingActivities_i^t \times FX_{i,CashFromOperatingActivities}^t\ ,\ TotalAssets_i^t \times FX_{i,TotalAssets}^t\right)$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$CashFromOperatingActivities_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cash from operating activities for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection

Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,CashFromOperatingActivities}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CashFromOperatingActivities_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssets_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssets}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssets_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

3.5.10 Delta Return on Assets Factor

$$Return\ on\ Assets_{i}^{t} = ER\left(NetIncomeExclExtraH1_{i}^{t} \times FX_{i,NetIncomeExclExtraH1}^{t}, TotalAssetsH1_{i}^{t} \times FX_{i,TotalAssetsH1}^{t}\right) - ER\left(NetIncomeExclExtraH2_{i}^{t} \times FX_{i,NetIncomeExclExtraH2}^{t}, TotalAssetsH2_{i}^{t} \times FX_{i,TotalAssetsH2}^{t}\right)$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$NetIncomeExclExtraH1_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,NetIncomeExclExtraH1}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH1_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH1_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssetsH1}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH1_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$NetIncomeExclExtraH2_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,NetIncomeExclExtraH2}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH2_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH2_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssetsH2}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH2_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

3.5.11 Accruals Factor

$$Accruals_{i}^{t} = -1 \times ER\left(NetIncomeExclExtra_{i}^{t} \times FX_{i,NetIncomeExclExtra}^{t} - CashFromOperatingActivities_{i}^{t} \times FX_{i,CashFromOperatingActivities}^{t}, TotalAssets_{i}^{t} \times FX_{i,TotalAssets}^{t}\right)$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$NetIncomeExclExtra_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,NetIncomeExclExtra}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtra_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$CashFromOperatingActivities_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cash from operating activities for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,CashFromOperatingActivities}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CashFromOperatingActivities_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssets_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssets}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssets_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Accruals Factor is that smaller accruals stocks will have a higher score than higher accruals stocks when the Accruals Factor is used in the optimization procedure set forth in Section 4.8.

3.5.12 Delta Leverage Factor

$$Delta\ Leverage_i^t = -1 \times \left(\frac{TotalLongTermDebtH1_i^t \times FX_{i,TotalLongTermDebtH1}^t}{TotalAssetsH1_i^t \times FX_{i,TotalAssetsH1}^t} - \frac{TotalLongTermDebtH2_i^t \times FX_{i,TotalLongTermDebtH2}^t}{TotalAssetsH2_i^t \times FX_{i,TotalAssetsH2}^t} \right)$$

Where:

$TotalLongTermDebtH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total long term debt for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalLongTermDebtH1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalLongTermDebtH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalAssetsH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalAssetsH1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalLongTermDebtH2$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total long term debt for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalLongTermDebtH2}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalLongTermDebtH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalAssetsH2_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalAssetsH2}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Delta Leverage Factor is that smaller delta leverage stocks will have a higher score than higher delta leverage stocks when the Delta Leverage Factor is used in the optimization procedure set forth in Section 4.8.

3.5.13 Delta Liquidity Factor

$$Delta\ Liquidity_i^t = \frac{TotalCurrentAssetsH1_i^t \times FX_{i,TotalCurrentAssetsH1}^t}{TotalCurrentLiabilitiesH1_i^t \times FX_{i,TotalCurrentLiabilitiesH1}^t} - \frac{TotalCurrentAssetsH2_i^t \times FX_{i,TotalCurrentAssetsH2}^t}{TotalCurrentLiabilitiesH2_i^t \times FX_{i,TotalCurrentLiabilitiesH2}^t}$$

Where:

$TotalCurrentAssetsH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total current assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalCurrentAssetsH1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalCurrentAssetsH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalCurrentLiabilitiesH1_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total current liabilities for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalCurrentLiabilitiesH1}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalCurrentLiabilitiesH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time
$TotalCurrentAssetsH2$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total current assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalCurrentAssetsH2}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalCurrentAssetsH2$, as available from the FX Data Source at approximately the Data Reference Time
$TotalCurrentLiabilitiesH2_i^t$	means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total current liabilities for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
$FX_{i,TotalCurrentLiabilitiesH2}^t$	means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalCurrentLiabilitiesH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.14 Equity Issuance Factor

$$Equity\ Issuance_i^t = -1 \times \frac{TotalCommonSharesOutstandingH1_i^t}{TotalCommonSharesOutstandingH2_i^t} \times \frac{AM_{i,TotalCommonSharesOutstandingH2}^t}{AM_{i,TotalCommonSharesOutstandingH1}^t}$$

Where:

$TotalCommonSharesOutstandingH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent unadjusted total common shares outstanding (meaning, as reported, but not adjusted for corporate actions) for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$AM_{i,TotalCommonSharesOutstandingH1}^t$ means the Adjustment Multiplier of Eligible Stock (i) in respect of the period end date associated with $TotalCommonSharesOutstandingH1_i^t$, as available from the Share Data Source at approximately the Data Reference Time

$TotalCommonSharesOutstandingH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent unadjusted total common shares outstanding (meaning, as reported, but not adjusted for corporate actions) for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$AM_{i,TotalCommonSharesOutstandingH2}^t$ means the Adjustment Multiplier of Eligible Stock (i) in respect of the period end date associated with $TotalCommonSharesOutstandingH2_i^t$, as available from the Share Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Equity Issuance Factor is that smaller equity issuance stocks will have a higher score than higher equity issuance stocks when the Equity Issuance Factor is used in the optimization procedure set forth in Section 4.8.

3.5.15 Delta Gross Margin Factor

$$Delta\ Gross\ Margin_i^t = \left(1 - \frac{CostOfRevenueH1_i^t \times FX_{i,CostOfRevenueH1}^t}{TotalRevenueExtH1_i^t \times FX_{i,TotalRevenueExtH1}^t}\right) - \left(1 - \frac{CostOfRevenueH2_i^t \times FX_{i,CostOfRevenueH2}^t}{TotalRevenueExtH2_i^t \times FX_{i,TotalRevenueExtH2}^t}\right)$$

Where:

$CostOfRevenueH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cost of revenue for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,CostOfRevenueH1}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CostOfRevenueH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference

Time, is “Banks”, the most recent interest income for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not “Banks”, the most recent total revenue for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalRevenueExtH1}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$CostOfRevenueH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent cost of revenue for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,CostOfRevenueH2}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CostOfRevenueH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is “Banks”, the most recent interest income for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not “Banks”, the most recent total revenue for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalRevenueExtH2}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.16 Delta Total Revenue Factor

$$Delta\ Total\ Revenue_i^t = ER\left(TotalRevenueExtH1_i^t \times FX_{i,TotalRevenueExtH1}^t\ ,\ TotalAssetsH1_i^t \times FX_{i,TotalAssetsH1}^t\right) - ER\left(TotalRevenueExtH2_i^t \times FX_{i,TotalRevenueExtH2}^t\ ,\ TotalAssetsH2_i^t \times FX_{i,TotalAssetsH2}^t\right)$$

Where:

$TotalRevenueExtH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalRevenueExtH1}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssetsH1}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.
- if the industry of Eligible Stock (i), as available from the ;Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date

(t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalRevenueExtH2}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssetsH2}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.17 Earnings Variability Factor

$$\begin{aligned} Earnings\ Variability_i^t &= -1 \\ &\times STD\Big(ER\big(NetIncomeBeforeExtraH1_i^t \times FX_{i,NetIncomeExclExtraH1}^t\ ,\ TotalAssetsH1_i^t \\ &\times FX_{i,TotalAssetsH1}^t\big), ER\big(NetIncomeBeforeExtraH2_i^t \\ &\times FX_{i,NetIncomeExclExtraH2}^t\ ,\ TotalAssetsH2_i^t \\ &\times FX_{i,TotalAssetsH2}^t\big), ER\big(NetIncomeBeforeExtraH3_i^t \\ &\times FX_{i,NetIncomeExclExtraH3}^t\ ,\ TotalAssetsH3_i^t \\ &\times FX_{i,TotalAssetsH3}^t\big), ER\big(NetIncomeBeforeExtraH4_i^t \\ &\times FX_{i,NetIncomeExclExtraH4}^t\ ,\ TotalAssetsH4_i^t \times FX_{i,TotalAssetsH4}^t\big)\Big) \end{aligned}$$

Where:

ER means the Enhanced Ratio function defined in Section 3.12(b)

$NetIncomeExclExtraH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,NetIncomeExclExtraH1}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssetsH1}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$NetIncomeExclExtraH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,NetIncomeExclExtraH2}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH2_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH2_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssetsH2}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH2_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$NetIncomeExclExtraH3_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the third last reported financial year for the relevant company whose period end date is within the 1277 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,NetIncomeExclExtraH3}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH3_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH3_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the third last reported financial year for the relevant company whose period end date is within the 1277 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssetsH3}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH3_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$NetIncomeExclExtraH4_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent net income before extraordinary items for the fourth last reported financial year for the relevant company whose period end date is within the 1642 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,NetIncomeExclExtraH4}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $NetIncomeExclExtraH4_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

$TotalAssetsH4_{i}^{t}$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent total assets for the fourth last reported financial year for the relevant company whose period end date is within the 1642 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,TotalAssetsH4}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalAssetsH4_{i}^{t}$, as available from the FX Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Earnings Variability Factor is that smaller earnings variability stocks will have a higher score than higher earnings variability stocks when the Earnings Variability Factor is used in the optimization procedure set forth in Section 4.8.

3.5.18 Revenue Growth Variability Factor

$$Revenue\ Growth\ Variability_i^t = -1 \times STD\left(\frac{TotalRevenueExtH1_i^t \times FX_{i,TRH1}^t}{TotalRevenueExtH2_i^t \times FX_{i,TRH2}^t}, \frac{TotalRevenueExtH2_i^t \times FX_{i,TRH2}^t}{TotalRevenueExtH3_i^t \times FX_{i,TRH3}^t}, \frac{TotalRevenueExtH3_i^t \times FX_{i,TRH3}^t}{TotalRevenueExtH4_i^t \times FX_{i,TRH4}^t}, \frac{TotalRevenueExtH4_i^t \times FX_{i,TRH4}^t}{TotalRevenueExtH5_i^t \times FX_{i,TRH5}^t}\right)$$

Where:

$TotalRevenueExtH1_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH1_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH1_i^t$ shall be considered missing.

$FX_{i,TRH1}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH1_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH2_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH2_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the second last reported financial year for the relevant company whose period end date is within the 912 calendar days immediately preceding and including Rebalance Selection Date

(t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH2_i^t$ shall be considered missing.

$FX_{i,TRH2}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH2_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH3_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the third last reported financial year for the relevant company whose period end date is within the 1277 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH3_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the third last reported financial year for the relevant company whose period end date is within the 1277 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH3_i^t$ shall be considered missing.

$FX_{i,TRH3}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH3_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH4_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the fourth last reported financial year for the relevant company whose period end date is within the 1642 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH4_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the fourth last reported financial year for the relevant company whose period end date is within the 1642 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH4_i^t$ shall be considered missing.

$FX_{i,TRH4}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH4_i^t$, as available from the FX Data Source at approximately the Data Reference Time

$TotalRevenueExtH5_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t):

- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is "Banks", the most recent interest income for the fifth last reported financial year for the relevant company whose period end date is within the 2007 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such interest income is negative, in which case $TotalRevenueExtH5_i^t$ shall be considered missing.
- if the industry of Eligible Stock (i), as available from the Fundamentals Data Source at approximately the Data Reference Time, is not "Banks", the most recent total revenue for the fifth last reported financial year for the relevant company whose period end date is within the 2007 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time, except if such total revenue is negative, in which case $TotalRevenueExtH5_i^t$ shall be considered missing.

$FX_{i,TRH5}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $TotalRevenueExtH5_i^t$, as available from the FX Data Source at approximately the Data Reference Time

The impact of multiplying by negative one (-1) in the calculation of the Revenue Growth Variability Factor is that smaller revenue growth variability stocks will have a higher score than higher revenue growth variability stocks when the Revenue Growth Variability Factor is used in the optimization procedure set forth in Section 4.8.

3.5.19 Research and Development (R&D) Factor

$$R\&D_i^t = ResearchAndDev_i^t \times FX_{i,ResearchAndDev}^t$$

Where:

$ResearchAndDev_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent research and development for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,ResearchAndDev}^t$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $ResearchAndDev_i^t$, as available from the FX Data Source at approximately the Data Reference Time

3.5.20 Capital Expenditure Factor

$$Capital\ Expenditure_i^t = -1 \times CapEx_i^t \times FX_{i,CapEx}^t$$

Where:

$CapEx_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent capital expenditure for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,CapEx}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $CapEx_i^t$, as available from the FX Data Source at approximately the Data Reference Time

In the Share Data Source, capital expenditures are recorded as negative values. Hence, the impact of multiplying by negative one (-1) in the calculation of the Capital Expenditure Factor is that higher capital expenditure stocks will have a higher score than lower capital expenditure stocks when the Capital Expenditure Factor is used in the optimization procedure set forth in Section 4.8.

3.5.21 Advertising Factor

$$Advertising_i^t = AdvertisingExpense_i^t \times FX_{i,AdvertisingExpense}^{t}$$

Where:

$AdvertisingExpense_i^t$ means, for Eligible Stock (i) in respect of Rebalance Selection Date (t), the most recent advertising expense for the last reported financial year for the relevant company whose period end date is within the 547 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Fundamentals Data Source at approximately the Data Reference Time.

$FX_{i,AdvertisingExpense}^{t}$ means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $AdvertisingExpense_i^t$, as available from the FX Data Source at approximately the Data Reference Time

The Base Factors Definitions described herein may differ from the factors definitions set out in other index rules that form part of the J.P. Morgan equity risk premia family of indices.

3.6 Data Source Table associated with the Base Factor Definitions and inputs for such Base Factor Definitions

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?	The Relevant Factor Definition in which the Data is used in Section 3.5
earnings per share	Estimates Data Source	"EPS"	"Currency_"	"FY1"	Yes	3.5.1 Forward Earnings Yield Factor
official closing price	Share Data Source	"Close_"	"ISOCurrCode"	Not applicable	No	3.5.1 Forward Earnings Yield Factor 3.5.2 Forward Dividend Yield Factor
dividends per share	Estimates Data Source	"DPS"	"Currency_"	"FY1"	Yes	3.5.2 Forward Dividend Yield Factor
cash from operating activities	Fundamentals Data Source	"OTLO"	"ISOCurrCode"	Not applicable	No	3.5.3 Free Cash Flow Yield Factor 3.5.9 Operating Cash Flow to Assets Factor 3.5.11 Accruals Factor
capital expenditure	Fundamentals Data Source	"SCEX"	"ISOCurrCode"	Not applicable	No	3.5.3 Free Cash Flow Yield Factor 3.5.20 Capital Expenditure Factor
tangible book value	Fundamentals Data Source	"STBV"	"ISOCurrCode"	Not applicable	No	3.5.4 Book to Price Factor
total return price	Share Data Source	"RI"	"ISOCurrCode"	Not applicable	No	3.5.6 Price Momentum Factor 3.5.7 Low Volatility Factor
total assets	Fundamentals Data Source	"ATOT"	"ISOCurrCode"	Not applicable	No	3.5.9 Operating Cash Flow to Assets Factor 3.5.10 Delta Return on Assets Factor 3.5.11 Accruals Factor 3.5.12 Delta Leverage Factor 3.5.16 Delta Total Revenue Factor 3.5.17 Earnings Variability Factor
net income before extraordinary items	Fundamentals Data Source	"NIBX"	"ISOCurrCode"	Not applicable	No	3.5.10 Delta Return on Assets Factor 3.5.11 Accruals Factor 3.5.17 Earnings Variability Factor
total long term debt	Fundamentals Data Source	"LTTD"	"ISOCurrCode"	Not applicable	No	3.5.12 Delta Leverage Factor
total current assets	Fundamentals Data Source	"ATCA"	"ISOCurrCode"	Not applicable	No	3.5.13 Delta Liquidity Factor
total current liabilities	Fundamentals Data Source	"LTCL"	"ISOCurrCode"	Not applicable	No	3.5.13 Delta Liquidity Factor
total common shares outstanding	Fundamentals Data Source	"QTCO"	Not applicable	Not applicable	No	3.5.14 Equity Issuance Factor
cost of revenue	Fundamentals Data Source	"SCOR"	"ISOCurrCode"	Not applicable	No	3.5.15 Delta Gross Margin Factor
industry	Fundamentals Data Source	"COAType Code"	Not applicable	Not applicable	No	3.5.15 Delta Gross Margin Factor 3.5.16 Delta Total Revenue Factor 3.5.18 Revenue Growth Variability Factor
interest income	Fundamentals Data Source	"SIIB"	"ISOCurrCode"	Not applicable	No	3.5.15 Delta Gross Margin Factor 3.5.16 Delta Total Revenue Factor 3.5.18 Revenue Growth Variability Factor
total revenue	Fundamentals Data Source	"RTLR"	"ISOCurrCode"	Not applicable	No	3.5.15 Delta Gross Margin Factor 3.5.16 Delta Total Revenue Factor 3.5.18 Revenue Growth Variability Factor
research and development	Fundamentals Data Source	"ERAD"	"ISOCurrCode"	Not applicable	No	3.5.19 Research and Development (R&D) Factor
advertising expense	Fundamentals Data Source	"EADV"	"ISOCurrCode"	Not applicable	No	3.5.21 Advertising Factor
Number of analysts used in computing the Mean Analyst Consensus Estimate	Estimates Data Source	"NumEst"	Not applicable	Not applicable	No	Not applicable

The prices that are inputs in Section 3.5 (*Base Factor Definitions*) are denominated in the applicable currency units. The applicable currency unit represents the standard unit of value for a particular country; for example, for the United Kingdom, the applicable currency unit is the Pound Sterling (not the Pound Sterling penny) and for the United States of America, the applicable currency unit is the U.S. Dollar (not the U.S. Dollar cent).

3.7 Calculation of Dollar Notional Trading Estimate for each Eligible Stock

In respect of each Rebalance Selection Date (t) and for each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the dollar notional trading estimate (the "**Dollar Notional Trading Estimate**"), in accordance with the following three steps:

a) In respect of each calendar day (d) that (a) occurs from but excluding the day that is 30 calendar days prior to Rebalance Selection Date (t) to and including Rebalance Selection Date (t) and (b) for which the consolidated volume in respect of Eligible Stock (i) is available from the Share Data Source at approximately the Data Reference Time, the Constituent Stock Determination Agent shall determine the consolidated traded notional quantity (the "**Consolidated Traded Notional Quantity**"). The Consolidated Traded Notional Quantity is calculated as the notional quantity (expressed in USD) traded on the Eligible Stock's exchanges on calendar day (d), in accordance with the following formula:

$$\mathrm{Consolidated\ Traded\ Notional\ Quantity}_\mathrm{i}^\mathrm{d} = \frac{Consolidated\ Volume_i^d}{AM_{i,Volume}^d} \times Price_i^d \times AM_{i,Price}^d \times FX_i^d$$

Where:

$Consolidated\ Volume_i^d$ means the consolidated volume in respect of calendar day (d) and Eligible Stock (i), as available from the Share Data Source at approximately the Data Reference Time

$AM_{i,Volume}^d$ means the Adjustment Multiplier of Eligible Stock (i) in respect of calendar day (d), as available from the Share Data Source at approximately the Data Reference Time

$Price_i^d$ means, in respect of Eligible Stock (i) and calendar day (d), the most recent official closing price, expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time

$AM_{i,Price}^d$ means the Adjustment Multiplier of Eligible Stock (i) in respect of the date associated with the official closing price of $Price_i^d$, as available from the Share Data Source at approximately the Data Reference Time

FX_i^d means the Selection Currency Rate in respect of calendar day (d) for the currency associated with $Price_i^d$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
consolidated volume	Share Data Source	"ConsolVol"	Not applicable	Not applicable	No
official closing price	Share Data Source	"Close_"	"ISOCurrCode"	Not applicable	No

b) In respect of each calendar day (d) that (a) occurs from but excluding the day that is 30 calendar days prior to Rebalance Selection Date (t) to and including Rebalance Selection Date (t) and (b) for which the primary volume in respect of Eligible Stock (i) is available from the Share Data Source at approximately the Data Reference Time, the Constituent Stock Determination Agent shall determine the primary traded notional quantity (the "**Primary Traded Notional Quantity**"). The Primary Traded Notional Quantity is calculated as the notional quantity (expressed in USD) traded on the Eligible Stock's primary exchange on calendar day (d), in accordance with the following formula:

$$\mathrm{Primary\ Traded\ Notional\ Quantity}_\mathrm{i}^\mathrm{d} = \frac{Primary\ Volume_i^d}{AM_{i,Volume}^d} \times Price_i^d \times AM_{i,Price}^d \times FX_i^d$$

Where:

$Primary\ Volume_i^d$	means the primary volume in respect of calendar day (d) and Eligible Stock (i), which is the volume traded on the primary exchange of Eligible Stock (i), as available from the Share Data Source at approximately the Data Reference Time
$AM_{i,Volume}^d$	means the Adjustment Multiplier of Eligible Stock (i) in respect of calendar day (d), as available from the Share Data Source at approximately the Data Reference Time
$Price_i^d$	means, in respect of Eligible Stock (i) and calendar day (d), the most recent official closing price, expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time
$AM_{i,Price}^d$	means the Adjustment Multiplier of Eligible Stock (i) in respect of the date associated with the official closing price of $Price_i^d$, as available from the Share Data Source at approximately the Data Reference Time
FX_i^d	means the Selection Currency Rate in respect of calendar day (d) for the currency associated with $Price_i^d$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
primary volume	Share Data Source	"Volume"	Not applicable	Not applicable	No
official closing price	Share Data Source	"Close_"	"ISOCurrCode"	Not applicable	No

c) The Constituent Stock Determination Agent shall determine the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t) as the trimmed average (being the arithmetic average of all values after first excluding certain values, as described below) of the Consolidated Traded Notional Quantities, if a sufficient number of Consolidated Traded Notional Quantities is available, as specified below, or as the trimmed average (being the arithmetic average of all values after first excluding certain values, as described below) of the Primary Traded Notional Quantities otherwise, in accordance with the following steps:

i. If the number of Consolidated Traded Notional Quantities computed in Step a) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is greater than six, the Constituent Stock Determination Agent shall select all such Consolidated Traded Notional Quantities but excluding the three highest values and the three lowest values (such selected Traded Notional Quantities, the "**Selected Traded Notional Quantities**"), and it shall compute the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t) as the arithmetic average of such Selected Traded Notional Quantities.

ii. If the number of Consolidated Traded Notional Quantities computed in Step a) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is equal to or less than six, and if the number of Primary Traded Notional Quantities computed in Step b) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is greater than six, then the Constituent Stock Determination Agent shall select as Selected Traded Notional Quantities all such Primary Traded Notional Quantities but excluding the three highest values and the three lowest values, and it shall compute the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t) as the arithmetic average of such Selected Traded Notional Quantities.

iii. If the number of Consolidated Traded Notional Quantities computed in Step a) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is equal to or less than six, and if the number of Primary Traded Notional Quantities computed in Step b) in respect of Eligible Stock (i) and Rebalance Selection Date (t) is equal to or less than six, then the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t) shall be considered missing, and (i) no trading liquidity constraint shall be applied to that Eligible Stock, pursuant to Section 4.8(b).11.b.i and (ii) no holding liquidity constraint shall be applied to that Eligible Stock, pursuant to Section 4.8(b).11.c.i.

3.8 Calculation of Dollar Base Reference Consolidated Market Capitalization and Dollar Consolidated Market Capitalization for each Eligible Stock, and of Base Reference Free-Float Market Capitalization for each Universe Stock

(a) Calculation of Dollar Base Reference Consolidated Market Capitalization for each Eligible Stock

In respect of each Rebalance Selection Date (t) and in respect of each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the dollar base reference consolidated market capitalization (the "**Dollar Base Reference Consolidated Market Capitalization**") in respect of each Calculation Day (d) that occurs within the 30 calendar days immediately preceding and including Rebalance Selection Date (t), as follows:

$$Dollar\ Base\ Reference\ Consolidated\ Market\ Capitalization_i^d = \sum_{j=1}^{NI(i,t)} \frac{Shares_j^d}{AM_{j,Shares}^d} \times Price_j^d \times AM_{j,Price}^d \times FX_j^d$$

Where:

$NI(i,t)$ means, in respect of Rebalance Selection Date (t) and Eligible Stock (i), the number of Eligible Stocks (including Eligible Stock (i)) that have been issued by the same issuer as Eligible Stock (i)

j means, in respect of Rebalance Selection Date (t) and Eligible Stock (i), an integer representing each of the Eligible Stocks (including Eligible Stock (i)) that have been issued by the same issuer as Eligible Stock (i)

$Shares_j^d$ means the end-of-day number of shares for Eligible Stock (j) in respect of Calculation Day (d), as available from the Base Reference Data Source at approximately the Data Reference Time.

$AM_{j,Shares}^d$ means the Adjustment Multiplier of Eligible Stock (j) in respect of Calculation Day (d), as available from the Share Data Source at approximately the Data Reference Time

$Price_j^d$ means, in respect of Eligible Stock (j) and Calculation Day (d), the most recent official closing price, expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time

$AM_{j,Price}^d$ means the Adjustment Multiplier of Eligible Stock (j) in respect of the date associated with the official closing price of $Price_j^d$, as available from the Share Data Source at approximately the Data Reference Time

FX_j^d means the Selection Currency Rate in respect of Calculation Day (d) for the currency associated with $Price_j^d$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
end-of-day number of shares	Base Reference Data Source	"NextShares"	Not applicable	Not applicable	No
official closing price	Share Data Source	"Close_"	"ISOCurrCode"	Not applicable	No

(b) Calculation of Dollar Consolidated Market Capitalization for each Eligible Stock

In respect of each Rebalance Selection Date (t) for each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the dollar consolidated market capitalization (the "**Dollar Consolidated Market Capitalization**") in respect of each Calculation Day (d) that occurs within the 30 calendar days immediately preceding and including Rebalance Selection Date (t), as follows:

(x) if the consolidated market value for the relevant company is available from the Share Data Source at approximately the Data Reference Time, an amount calculated in accordance with the following formula:

$$Dollar\ Consolidated\ Market\ Capitalization_i^d = Consolidated\ Market\ Value_i^d \times FX_{i,Consolidated\ Market\ Value}^d$$

Where:

$Consolidated\ Market\ Value_i^d$ means, for Eligible Stock (i) in respect of Calculation Day (d), the consolidated market value for the relevant company, as available from the Share Data Source at approximately the Data Reference Time.

$FX_{i,Consolidated\ Market\ Value}^d$ means the Selection Currency Rate in respect of Calculation Day (d) for the currency associated with $Consolidated\ Market\ Value_i^d$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
consolidated market value	Share Data Source	“ConsolMktVal”	“ISOCurrCode”	Not applicable	No

(y) if the consolidated market value for the relevant company is not available from the Share Data Source at approximately the Data Reference Time, the Dollar Base Reference Consolidated Market Capitalization in respect of Eligible Stock (i) and Calculation Day (d), as determined pursuant to Section 3.8(a)

(c) Calculation of Dollar Base Reference Free-Float Market Capitalization for each Universe Stock

In respect of each Rebalance Selection Date (t) for each Universe Stock (i), the Constituent Stock Determination Agent shall determine the dollar base reference free-float market capitalization (the “**Dollar Base Reference Free-Float Market Capitalization**”) as follows:

$$Dollar\ Base\ Reference\ FreeFloat\ Market\ Capitalization_i^t = \frac{Shares_i^t}{AM_{i,Shares}^t} \times Inclusion\ Factor_i^t \times Price_i^t \times AM_{i,Price}^t \times FX_i^t$$

Where:

$Shares_i^t$ means the end-of-day number of shares for Universe Stock (i) in respect of Rebalance Selection Date (t), as available from the Base Reference Data Source at approximately the Data Reference Time.

$AM_{i,Shares}^t$ means the Adjustment Multiplier of Eligible Stock (i) in respect of Rebalance Selection Date (t), as available from the Share Data Source at approximately the Data Reference Time

$Inclusion\ Factor_i^t$ means the inclusion factor for Universe Stock (i) in respect of Rebalance Selection Date (t), as available from the Base Reference Data Source at approximately the Data Reference Time.

$Price_i^t$ means, in respect of Universe Stock (i) and Rebalance Selection Date (t), the most recent official closing price, expressed in the relevant currency unit, as available from the Share Data Source at approximately the Data Reference Time

$AM_{i,Price}^t$ means the Adjustment Multiplier of Eligible Stock (i) in respect of the date associated with the official closing price of $Price_i^t$, as available from the Share Data Source at approximately the Data Reference Time

FX_i^t means the Selection Currency Rate in respect of Rebalance Selection Date (t) for the currency associated with $Price_i^t$, as available from the FX Data Source at approximately the Data Reference Time

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
end-of-day number of shares	Base Reference Data Source	"NextShares"	Not applicable	Not applicable	No
inclusion factor	Base Reference Data Source	"TotIncFactor"	Not applicable	Not applicable	No
official closing price	Share Data Source	"Close_"	"ISOCurrCode"	Not applicable	No

3.9 Calculation of Risk Model Covariance for each pair of Eligible Stocks

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Risk Model covariance (the "**Risk Model Covariance**") between each Eligible Stock (i) and each Eligible Stock (j), as follows:

If $i = j$:

$$K_{i,j}^t = \sum_{k=1}^{n}\left(\sum_{l=1}^{n} Y_{i,k}^t \times G_{k,l}^t \times Y_{j,l}^t\right) + (S_i^t)^2$$

If $i \neq j$:

$$K_{i,j}^t = \sum_{k=1}^{n}\sum_{l=1}^{n} Y_{i,k}^t \times G_{k,l}^t \times Y_{j,l}^t$$

Where:

$K_{i,j}^t$ means the Risk Model Covariance between Eligible Stock (i) and Eligible Stock (j) in respect of Rebalance Selection Date (t). When $i = j$, such Risk Model Covariance is the Risk Model variance (the "**Risk Model Variance**") in respect of Eligible Stock (i) and Rebalance Selection Date (t).

k means, in respect of Rebalance Selection Date (t), an integer representing each of the Risk Model factors (each, a "**Risk Model Factor**"), as available from the Risk Model Data Source at approximately the Data Reference Time.

l means, in respect of Rebalance Selection Date (t), an integer representing each of the Risk Model Factors, as available from the Risk Model Data Source at approximately the Data Reference Time.

n means, in respect of Rebalance Selection Date (t), the number of Risk Model Factors, as available from the Risk Model Data Source at approximately the Data Reference Time.

$Y_{i,k}^t$ means the asset exposure in respect of Eligible Stock (i), Risk Model Factor (k) and Rebalance Selection Date (t), as available from the Risk Model Data Source at approximately the Data Reference Time, or zero if such asset exposure is not available.

$G_{k,l}^t$ means the factor covariance between Risk Model Factor (k) and Risk Model Factor (l) in respect of Rebalance Selection Date (t), as available from the Risk Model Data Source at approximately the Data Reference Time, divided by 10,000 (ten thousand).

$Y_{j,l}^t$ means the asset exposure in respect of Eligible Stock (j), Risk Model Factor (l) and Rebalance Selection Date (t), as available from the Risk Model Data Source at approximately the Data Reference Time, or zero if such asset exposure is not available.

S_i^t means the specific risk in respect of Eligible Stock (i) and Rebalance Selection Date (t), as available from the Risk Model Data Source at approximately the Data Reference Time, divided by 100 (one hundred).

Data	Data Source	Identifier	Currency Identifier	IBES Unreported Financial Year Identifier	Does this data field represent a Mean Analyst Consensus Estimate?
asset exposure	Risk Model Data Source	"Exposure"	Not applicable	Not applicable	No
factor covariance	Risk Model Data Source	"VarCovar"	Not applicable	Not applicable	No
specific risk	Risk Model Data Source	"SpecRisk%"	Not applicable	Not applicable	No

3.10 Calculation of Defined Borrow Rate and Filled Borrow Rate for each Eligible Stock

(a) Calculation of Defined Borrow Rate for each Eligible Stock

In respect of each Rebalance Selection Date (t) for each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the defined borrow rate (the "**Defined Borrow Rate**") as the most recent borrow rate whose date falls within the 91 calendar days immediately preceding and including Rebalance Selection Date (t), as available from the Borrow Data Provider at approximately the Data Reference Time.

(b) Calculation of Filled Borrow Rate for each Eligible Stock

In respect of each Rebalance Selection Date (t) for each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the filled Borrow Rate (the "**Filled Borrow Rate**") as follows:

If BR_i^t is not missing:

$$FBR_i^t = BR_i^t$$

If BR_i^t is missing:

$$FBR_i^t = \frac{1}{NB(t)} \times \sum_j BR_j^t$$

Where:

BR_i^t means the Defined Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).

FBR_i^t means the Filled Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t).

BR_j^t means the Defined Borrow Rate in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).

$NB(t)$ means, in respect of Rebalance Selection Date (t), the number of Eligible Stocks (j) for which BR_j^t is not missing.

j means, in respect of Rebalance Selection Date (t), each Eligible Stock (j) for which BR_j^t is not missing.

3.11 Grouping Definitions

Stock Sector and Stock Region

The sector of a stock (the "**Stock Sector**") is identified as the sector associated with such stock as determined by Global industry Classification Standard (GICS®) and as reported by the Base Reference Data Source at approximately the Data Reference Time.

The region of a stock (the "**Stock Region**") is identified as the Stock Region (where the Stock Region can be "Americas"; Europe, the Middle East and Africa ("EMEA"); or "Asia/Pacific") of the Country of Incorporation of such stock, as determined by the Constituent Stock Determination Agent.

As of the Index Live Date, the number of Stock Sectors is 11 (eleven) and the Stock Sector and Stock Region pairs are listed below (each, a "**Stock Sector Region Pair Group**"):

1. Energy Americas
2. Materials Americas
3. Industrials Americas
4. Consumer Discretionary Americas
5. Consumer Staples Americas
6. Health Care Americas
7. Financials Americas
8. Information Technology Americas
9. Telecom Americas
10. Utilities Americas
11. Real Estate Americas
12. Energy EMEA
13. Materials EMEA
14. Industrials EMEA
15. Consumer Discretionary EMEA
16. Consumer Staples EMEA
17. Health Care EMEA
18. Financials EMEA
19. Information Technology EMEA
20. Telecom EMEA
21. Utilities EMEA
22. Real Estate EMEA
23. Energy Asia/Pacific
24. Materials Asia/Pacific
25. Industrials Asia/Pacific
26. Consumer Discretionary Asia/Pacific
27. Consumer Staples Asia/Pacific
28. Health Care Asia/Pacific
29. Financials Asia/Pacific
30. Information Technology Asia/Pacific
31. Telecom Asia/Pacific
32. Utilities Asia/Pacific
33. Real Estate Asia/Pacific

3.12 Mathematical functions

(a) Standard mathematical functions

Certain mathematical symbols and functions are used in the Index Rules. Unless otherwise specified, the following symbols and functions will have the following meanings:

$\sum(\ )$	means the sum of the numbers or the outputs of the formulas enclosed in parentheses from the day or number indicated below the summation symbol to the day or number indicated above the summation symbol.
$\vert\ \vert$	means the absolute value of the number or the output of the formula enclosed in vertical lines.
$ABS()$	means the absolute value of the number or the output of the formula enclosed in parentheses.
$MAX()$	means the highest value among the numbers or the outputs of the formulas enclosed in parentheses.
$MIN()$	means the lowest value among the numbers or the outputs of the formulas enclosed in parentheses.
$LN()$	means the natural logarithm of the number or the output of the formula enclosed in parentheses.
$STD()$	means the standard deviation of the numbers or the outputs of the formulas enclosed in parentheses, calculated in accordance with the following formula:

(i) If $n > 1$:

$$STD(x_1, \dots, x_n) = \sqrt{\frac{1}{n-1} \times \sum_{i=1}^{n} \left(x_i - \frac{\sum_{j=1}^{n} x_j}{n}\right)^2}$$

(ii) If $\boldsymbol{n \leq 1}$: $\boldsymbol{STD(x_1, \dots, x_n)}$ shall be considered to be a missing value.

Where:

n	means the number of inputs to the standard deviation function
x_1	means the first input to the standard deviation function
x_n	means the last input to the standard deviation function
x_i	means the $(i)^{th}$ input to the standard deviation function
x_j	means the $(j)^{th}$ input to the standard deviation function

(b) Mathematical functions specific to the Index

$ER(numerators, denominators)$ means, in respect of a set of numerators, $numerator_1$ to $numerator_n$, and in respect of a set of denominators, $denominator_1$ to $denominator_n$, the set of enhanced ratios (the "**Enhanced Ratios**", ER_1 to ER_n) calculated in accordance with the following formula:

In respect of each integer i between 1 and n:

If $numerator_i \geq 0$:

$$ER_i = \frac{numerator_i}{denominator_i}$$

If $numerator_i < 0$:

$$ER_i = \frac{numerator_i}{MAX\left(\frac{M}{2 \times m} - 1, 1\right)} \times \left(\frac{1}{m} - \frac{1}{denominator_i}\right)$$

Where:

n	means the number of numerators input to the Enhanced Ratio function, which shall be the same as the number of denominators input to the Enhanced Ratio function, and which will be the same as the number of Enhanced Ratios returned by the Enhanced Ratio function
$numerator_i$	means the (i)th numerator input to the Enhanced Ratio function
$denominator_i$	means the (i)th denominator input to the Enhanced Ratio function
ER_i	means the (i)th Enhanced Ratio
m	means the lowest value among the denominators
M	means the highest value among the denominators

4. Determining the Preliminary Constituent Stocks and Preliminary Constituent Weights

4.1 Determination of the Preliminary Base Factor Scores

In respect of each Rebalance Selection Date (the "**Rebalance Selection Date (t)**"), each Base Factor (BF), and each Eligible Stock (i), the Constituent Stock Determination Agent shall determine the preliminary Base Factor score (the "**Preliminary Base Factor Score**") at approximately the Data Reference Time, in accordance with the formulas set forth in Section 3.5 (*Base Factor Definitions*).

Subject to Section 10 (*Disruption Provisions*), if the Constituent Stock Determination Agent is unable to determine such Preliminary Base Factor Score due to the unavailability of information to the Constituent Stock Determination Agent for any reason (including, without limitation, due to missing data or data considered missing for such Eligible Stock or due to technology issues affecting the Constituent Stock Determination Agent, the applicable Data Source, or the means by which such data is accessed or other factors that result in such unavailability) using the applicable Data Source at approximately the Data Reference Time, or if the Constituent Stock Determination Agent determines such Preliminary Base Factor Score to be either positive infinity or negative infinity, then, the Base Factor Weight In Composite Factor in respect of Base Factor (BF) and in respect of any Composite Factor (CF) listed in Section 3.3 will be set to 0 (zero) (and such setting to zero shall be a "**Missing Value Event**") for the purpose of usage in formulas set forth in Section 4.4 in respect of such Rebalance Selection Date (t), Eligible Stock (i) and Base Factor (BF).

Furthermore, in order to determine the Preliminary Base Factor Score in respect of Eligible Stock (i), Rebalance Selection Date (t) and Base Factor (BF), such Eligible Stock (i) must satisfy the Base Factor Eligibility Requirement for Base Factor (BF) set forth in Section 3.2. If Eligible Stock (i) does not satisfy the Base Factor Eligibility Requirement for Base Factor (BF), then the Base Factor Weight In Composite Factor in respect of Base Factor (BF) and in respect of any Composite Factor (CF) listed in Section 3.3 will be set to 0 (zero) (and such setting to zero shall be a "**Missing Factor Input Event**") for the purpose of the formulas set forth in Section 4.4 in respect of such Rebalance Selection Date (t), Eligible Stock (i) and Base Factor (BF).

Pursuant to Section 4.3, in respect of each Rebalance Selection Date (t), each Base Factor (BF) and each Eligible Stock (i) for which either a Missing Value Event or a Missing Factor Input Event has occurred, the Constituent Stock Determination Agent shall not determine a Normalized Base Factor Score.

Furthermore, in respect of Rebalance Selection Date (t), the Eligible Stocks are categorized into different groups (each a "**Group**" or "**Group (G)**") on the basis of the Stock Sector Region Pair Group associated with an Eligible Stock. Such Groups are identified in Section 3.11.

4.2 Determination of the Base Reference Weights

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the base reference weight (the "**Base Reference Weight**") in respect of each Eligible Stock (i) in accordance with the following formula:

$$Base\ Reference\ Weight_i^t = \frac{MCap_i^t}{\sum_{j=1}^{N(t)} MCap_j^t}$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
$MCap_i^t$	means the Dollar Base Reference Free-Float Market Capitalization in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.8(c).
$MCap_j^t$	means the Dollar Base Reference Free-Float Market Capitalization in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 3.8(c).

4.3 Determination of the Normalized Base Factor Scores

In respect of each Rebalance Selection Date (t), each Base Factor (F) and each Eligible Stock (i) for which neither a Missing Value Event nor a Missing Factor Input Event has occurred, the Constituent Stock Determination Agent shall normalize the Preliminary Base Factor Score for Base Factor (F) and Eligible Stock (i) across the set of Eligible Stocks within the same Group (G) as Eligible Stock (i), sequentially a total of 10 times to determine the normalized Base Factor score (the "**Normalized Base Factor Score**") for Base Factor (F) and Eligible Stock (i), as further described below.

In respect of each Rebalance Selection Date (t), each Base Factor (F) and each Eligible Stock (i) for which either a Missing Value Event or a Missing Factor Input Event has occurred, the Constituent Stock Determination Agent shall not determine a Normalized Base Factor Score.

The Normalized Base Factor Score is calculated by iterating the below formula ten (10) times, calculating a new value with respect to each iteration k (the "**k^{th} Group Normalized Base Factor Score$_{i,F}^{t}$**", or "**^{k}Group Normalized Base Factor Score$_{i,F}^{t}$**"). For each iteration "k" from the second to the tenth iteration, the group average input and the group input std dev for such iteration "k" are based on values obtained from the previous iteration of the formula (the iteration corresponding to k-1). The Normalized Base Factor Score is the value obtained as a result of the 10th iteration (k=10) of the following formula:

$$^{k}\text{Group Normalized Base Factor Score}_{i,F}{}^{t} = \text{MAX}\left(\text{MIN}\left(\frac{^{k-1}\text{Factor Input}_{i,F}{}^{t} - {}^{k-1}\text{Group Average Input}_{G,F}{}^{t}}{^{k-1}\text{Group Input Std Dev}_{G,F}{}^{t}}, 3\right), -3\right)$$

Where:

$^{k-1}\text{Factor Input}_{i,F}{}^{t}$ means in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (i):

(x) for the first iteration of the above formula (k=1), the Preliminary Base Factor Score in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (i), and

(y) for the second through tenth iterations of the above formula (k=2 to k=10), the Group Normalized Base Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{k-1}\text{Group Normalized Base Factor Score}_{i,F}{}^{t}$") in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (i)

$^{k-1}\text{Group Average Input}_{G,F}{}^{t}$ means in respect of Rebalance Selection Date (t), Group (G) and Base Factor (F), the quantity computed in accordance with the following formula:

$$^{k-1}\text{Group Average Input}_{G,F}{}^{t} = \frac{\sum_{j=1}^{n} {}^{k-1}\text{Factor Input}_{j,F}{}^{t} \times w_{M,j}^{t}}{\sum_{j=1}^{n} w_{M,j}^{t}}$$

Where:

n means the number of Eligible Stocks within Group (G)

j means an integer representing each Eligible Stock within Group (G)

$^{k-1}\text{Factor Input}_{j,F}{}^{t}$ means:

(x) for the first iteration of the above formula (k=1):

(a) if no Missing Value Event and no Missing Factor Input Event occurs in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), means the Preliminary Base Factor Score in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), or

(b) if a Missing Value Event or a Missing Factor Input Event occurs in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), means zero.

(y) for the second through tenth iterations of the above formula (k=2 to k=10):

(a) if no Missing Value Event and no Missing Factor Input Event occurs in respect of Rebalance Selection

Date (t), Base Factor (F) and Eligible Stock (j), means the Group Normalized Base Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "${}^{k-1}\text{Group Normalized Base Factor Score}_{j,F}{}^{t}$") in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), or

(b) if a Missing Value Event or a Missing Factor Input Event occurs in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (j), means zero.

$w_{M,j}^{t}$ means the Base Reference Weight in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 4.2.

${}^{k-1}\text{Group Input Std Dev}_{G,F}{}^{t}$ means in respect of Rebalance Selection Date (t), Group (G) and Base Factor (F):

(x) for the first iteration of the above formula (k=1), the standard deviation, as defined in Section 3.12(a), of the Preliminary Base Factor Scores for all Eligible Stocks within Group (G), but excluding any Preliminary Base Factor Score in respect of which a Missing Value Event or a Missing Factor Input Event has occurred, and

(y) for the second through tenth iterations of the above formula (k=2 to k =10), the standard deviation, as defined in Section 3.12(a), of the $(k\text{-}1)^{th}$ Group Normalized Base Factor Scores for all Eligible Stocks within Group (G) (where the $(k\text{-}1)^{th}$ Group Normalized Base Factor Score is the Group Normalized Base Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "${}^{k-1}\text{Group Normalized Base Factor Score}_{i,F}{}^{t}$") in respect of Rebalance Selection Date (t), Base Factor (F) and Eligible Stock (i)), but excluding any $(k\text{-}1)^{th}$ Group Normalized Base Factor Score that is considered missing.

The Normalized Base Factor Score is the value obtained as a result of the 10^{th} iteration (k=10):

$$\text{Normalized Base Factor Score}_{i,F}{}^{t} = {}^{10}\text{Group Normalized Base Factor Score}_{i,F}{}^{t}$$

The Normalized Base Factor Score for the Size Factor for Eligible Stock (i) in respect of Rebalance Selection Date (t) shall be the "**Final Size Factor Score**" for Eligible Stock (i) in respect of Rebalance Selection Date (t).

The Normalized Base Factor Score for the Price Momentum Factor for Eligible Stock (i) in respect of Rebalance Selection Date (t) shall be the "**Final Momentum Factor Score**" for Eligible Stock (i) in respect of Rebalance Selection Date (t).

The Normalized Base Factor Score for the Low Volatility Factor for Eligible Stock (i) in respect of Rebalance Selection Date (t) shall be the "**Final Low Volatility Factor Score**" for Eligible Stock (i) in respect of Rebalance Selection Date (t).

4.4 Determination of the Preliminary Composite Factor Scores

In respect of each Rebalance Selection Date (t) and each Composite Factor (CF), the Constituent Stock Determination Agent shall determine in respect of each Eligible Stock (i) the preliminary Composite Factor score (the "**Preliminary Composite Factor Score**") in accordance with the following formula:

$$\text{Preliminary Composite Factor Score}_{i,CF}^{t} = \frac{\sum_{BF=1}^{NBF}\left(\text{Factor Weight}_{BF,CF} \times \text{Normalized Base Factor Score}_{i,BF}^{t}\right)}{\sum_{BF=1}^{NBF}\text{Factor Weight}_{BF,CF}}$$

Where:

NBF	means the total number of Base Factors in respect of Composite Factor (CF), Eligible Stock (i) and Rebalance Selection Date (t) for which no Missing Value Event and no Missing Factor Input Event occurs.
BF	means each Base Factor in respect of Composite Factor (CF), Eligible Stock (i) and Rebalance Selection Date (t) for which no Missing Value Event and no Missing Factor Input Event occurs.
$\text{Factor Weight}_{\text{BF,CF}}$	means the Base Factor Weight In Composite Factor in respect of Base Factor (BF) and Composite Factor (CF), subject to the occurrence of a Missing Value Event or a Missing Factor Input Event as described further in Section 4.1.
$\text{Normalized Base Factor Score}^{t}_{i,BF}$	means the Normalized Base Factor Score in respect of Eligible Stock (i), Base Factor (BF) and Rebalance Selection Date (t), determined in accordance with Section 4.3.

If, in respect of a Rebalance Selection Date (t), a Composite Factor (CF) and an Eligible Stock (i), all Base Factor Weight In Composite Factor in respect of all Base Factors are set at 0 (zero) as a result of any of the events set forth in Section 4.1, then the Composite Factor Score shall not be calculated for such Composite Factor (CF) and Eligible Stock (i) in respect of Rebalance Selection Date (t) and shall be considered missing.

The occurrence of a Missing Value Event or a Missing Factor Input Event in respect of any Base Factor (BF) will result in the relevant Composite Factor Score having a higher exposure to those Base Factors in respect of which neither a Missing Value Event nor a Missing Factor Input Event has occurred.

4.5 Determination of the Final Value Factor Scores

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i) for which the Preliminary Composite Factor Score for the Value Factor is not considered missing, the Constituent Stock Determination Agent shall normalize such Preliminary Composite Factor Score for the Value Factor across the set of Eligible Stocks within the same Group (G) as Eligible Stock (i), sequentially a total of 10 times to determine the final Value Factor score (the "**Final Value Factor Score**") for Eligible Stock (i), as further described below.

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i) for which the Preliminary Composite Factor Score for the Value Factor is considered missing, the Constituent Stock Determination Agent shall not determine a Final Value Factor Score.

The Final Value Factor Score is calculated by iterating the below formula ten (10) times, calculating a new value with respect to each iteration k (the "**k^{th} Group Normalized Value Factor Score$_i^t$**", or "**^{k}Group Normalized Value Factor Score$_i^t$**"). For each iteration "k" from the second to the tenth iteration, the group average input and the group input std dev for such iteration "k" are based on values obtained from the previous iteration of the formula (the iteration corresponding to k-1). The Final Value Factor Score is the value obtained as a result of the 10^{th} iteration (k=10) of the following formula:

$$^{k}\text{Group Normalized Value Factor Score}_i{}^{t} = \text{MAX}\left(\text{MIN}\left(\frac{^{k-1}\text{Factor Input}_i{}^{t} - {}^{k-1}\text{Group Average Input}_G{}^{t}}{^{k-1}\text{Group Input Std Dev}_G{}^{t}}, 3\right), -3\right)$$

Where:

$^{k-1}\text{Factor Input}_i{}^{t}$	means in respect of Rebalance Selection Date (t) and Eligible Stock (i): (x) for the first iteration of the above formula (k=1), the Preliminary Composite Factor Score for the Value Factor in respect of Rebalance Selection Date (t) and Eligible Stock (i), and (y) for the second through tenth iterations of the above formula (k=2 to k=10), the Group Normalized Value Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{k-1}\text{Group Normalized Value Factor Score}_i{}^{t}$") in respect of Rebalance Selection Date (t) and Eligible Stock (i)

$^{k-1}\text{Group Average Input}_G{}^t$ means in respect of Rebalance Selection Date (t) and Group (G), the quantity computed in accordance with the following formula:

$$^{k-1}\text{Group Average Input}_G{}^t = \frac{\sum_{j=1}^{n} {}^{k-1}\text{Factor Input}_j{}^t \times w_{M,j}^t}{\sum_{j=1}^{n} w_{M,j}^t}$$

Where:

n means the number of Eligible Stocks within Group (G)

j means an integer representing each Eligible Stock within Group (G)

$^{k-1}\text{Factor Input}_{j,F}{}^t$ means:

(x) for the first iteration of the above formula (k=1):

(a) if the Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date (t) is not considered missing, means such Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date (t), or

(b) if the Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date (t) is considered missing, means zero.

(y) for the second through tenth iterations of the above formula (k=2 to k=10):

(a) if the Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date is not considered missing, means the Group Normalized Value Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{k-1}\text{Group Normalized Value Factor Score}_{j,F}{}^t$") for Eligible Stock (j) in respect of Rebalance Selection Date (t), or

(b) if the Preliminary Composite Factor Score for the Value Factor for Eligible Stock (j) in respect of Rebalance Selection Date (t) is considered missing, means zero.

$w_{M,j}^t$ means the Base Reference Weight in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 4.2.

$^{k-1}\text{Group Input Std Dev}_G{}^t$ means in respect of Rebalance Selection Date (t) and Group (G):

(x) for the first iteration of the above formula (k=1), the standard deviation, as defined in Section 3.12(a), of the Preliminary Composite Factor Scores for the Value Factor for all Eligible Stocks within Group (G), but excluding any Preliminary Composite Factor Score for the Value Factor that is considered missing, and

(y) for the second through tenth iterations of the above formula (k=2 to k =10), the standard deviation, as defined in Section 3.12(a), of the (k-1)th Group Normalized Value Factor Scores for all Eligible Stocks within Group (G) (where the (k-1)th Group Normalized Value Factor Score is the Group Normalized Value Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "${}^{k-1}\text{Group Normalized Value Factor Score}_i^t$") in respect of Rebalance Selection Date (t) and Eligible Stock (i)), but excluding any (k-1)th Group Normalized Value Factor Score that is considered missing.

The Final Value Factor Score is the value obtained as a result of the 10th iteration (k=10):

$$\text{Final Value Factor Score}_i^t = {}^{10}\text{Group Normalized Value Factor Score}_i^t$$

4.6 Determination of the Preliminary Quality Factor Scores

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the preliminary quality factor score (the "**Preliminary Quality Factor Score**") in respect of each Eligible Stock (i) for which neither the Final Value Factor Score nor the Preliminary Composite Factor Score for the QV FScore Factor nor the Preliminary Composite Factor Score for the QG GScore Factor are considered missing, in accordance with the following formula:

If $S^t_{Value,i} \leq -1$:

$$S^t_{Quality,i} = S^t_{QG\ GScore,i}$$

If $-1 < S^t_{Value,i} < 1$:

$$S^t_{Quality,i} = QV\ FScore\ Weight^t_i \times S^t_{QV\ FScore,i} + (1 - QV\ FScore\ Weight^t_i) \times S^t_{QG\ GScore,i}$$

If $S^t_{Value,i} \geq 1$:

$$S^t_{Quality,i} = S^t_{QV\ FScore,i}$$

Where:

$S^t_{Value,i}$	means the Final Value Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t).
$S^t_{Quality,i}$	means the Preliminary Quality Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t).
$S^t_{QV\ FScore,i}$	means the Preliminary Composite Factor Score for the QV FScore Factor, for Eligible Stock (i) in respect of Rebalance Selection Date (t).
$S^t_{QG\ GScore,i}$	means the Preliminary Composite Factor Score for the QG GScore Factor, for Eligible Stock (i) in respect of Rebalance Selection Date (t).
$QV\ FScore\ Weight^t_i$	means an amount calculated in accordance with the following formula:

$$QV\ FScore\ Weight^t_i = \frac{S^t_{Value,i} + 1}{2}$$

4.7 Determination of the Final Quality Factor Scores

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i) for which the Preliminary Quality Factor Score is not considered missing, the Constituent Stock Determination Agent shall normalize such Preliminary Quality Factor Score across the set of Eligible Stocks within the same Group (G) as Eligible Stock (i), sequentially a total of 10 times to determine the final quality factor score (the "**Final Quality Factor Score**") for Eligible Stock (i), as further described below.

In respect of each Rebalance Selection Date (t) and each Eligible Stock (i) for which the Preliminary Quality Factor Score is considered missing, the Constituent Stock Determination Agent shall not determine a Final Quality Factor Score.

The Final Quality Factor Score is calculated by iterating the below formula ten (10) times, calculating a new value with respect to each iteration k (the "**k^{th} Group Normalized Quality Factor Score$_i^t$**", or "**^{k}Group Normalized Quality Factor Score$_i^t$**"). For each iteration "k" from the second to the tenth iteration, the group average input and the group input std dev for such iteration "k" are based on values obtained from the previous iteration of the formula (the iteration corresponding to k-1). The Final Quality Factor Score is the value obtained as a result of the 10^{th} iteration (k=10) of the following formula:

$$^{\mathrm{k}}\text{Group Normalized Quality Factor Score}_{\mathrm{i}}{}^{\mathrm{t}} = \mathrm{MAX}\left(\mathrm{MIN}\left(\frac{^{\mathrm{k-1}}\text{Factor Input}_{\mathrm{i}}{}^{\mathrm{t}} - {}^{\mathrm{k-1}}\text{Group Average Input}_{\mathrm{G}}{}^{\mathrm{t}}}{^{\mathrm{k-1}}\text{Group Input Std Dev}_{\mathrm{G}}{}^{\mathrm{t}}}, 3\right), -3\right)$$

Where:

$^{\mathrm{k-1}}\text{Factor Input}_{\mathrm{i}}{}^{\mathrm{t}}$ means in respect of Rebalance Selection Date (t) and Eligible Stock (i):

(x) for the first iteration of the above formula (k=1), the Preliminary Quality Factor Score in respect of Rebalance Selection Date (t) and Eligible Stock (i), and

(y) for the second through tenth iterations of the above formula (k=2 to k=10), the Group Normalized Quality Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{\mathrm{k-1}}\text{Group Normalized Quality Factor Score}_{\mathrm{i}}{}^{\mathrm{t}}$") in respect of Rebalance Selection Date (t) and Eligible Stock (i)

$^{\mathrm{k-1}}\text{Group Average Input}_{\mathrm{G}}{}^{\mathrm{t}}$ means in respect of Rebalance Selection Date (t) and Group (G), the quantity computed in accordance with the following formula:

$$^{\mathrm{k-1}}\text{Group Average Input}_{\mathrm{G}}{}^{\mathrm{t}} = \frac{\sum_{j=1}^{n} {}^{\mathrm{k-1}}\text{Factor Input}_{\mathrm{j}}{}^{\mathrm{t}} \times w_{M,j}^{t}}{\sum_{j=1}^{n} w_{M,j}^{t}}$$

Where:

n means the number of Eligible Stocks within Group (G)

j means an integer representing each Eligible Stock within Group (G)

$^{\mathrm{k-1}}\text{Factor Input}_{\mathrm{j,F}}{}^{\mathrm{t}}$ means:

(x) for the first iteration of the above formula (k=1):

(a) if the Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t) is not considered missing, means such Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t), or

(b) if the Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t) is considered missing, means zero.

(y) for the second through tenth iterations of the above formula (k=2 to k=10):

(a) if the Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t) is not considered missing, means the Group Normalized Quality Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "$^{\mathrm{k-1}}\text{Group Normalized Quality Factor Score}_{\mathrm{j,F}}{}^{\mathrm{t}}$") for Eligible Stock (j) in respect of Rebalance Selection Date (t), or

(b) if the Preliminary Quality Factor Score for Eligible Stock (j) in respect of Rebalance Selection Date (t) is considered missing, means zero.

$w_{M,j}^{t}$ means the Base Reference Weight in respect of Eligible Stock (j) and Rebalance Selection Date (t), as determined pursuant to Section 4.2.

${}^{k-1}\text{Group Input Std Dev}_G{}^t$ means in respect of Rebalance Selection Date (t) and Group (G):

(x) for the first iteration of the above formula (k=1), the standard deviation, as defined in Section 3.12(a), of the Preliminary Quality Factor Scores for all Eligible Stocks within Group (G), but excluding any Preliminary Quality Factor Score that is considered missing, and

(y) for the second through tenth iterations of the above formula (k=2 to k =10), the standard deviation, as defined in Section 3.12(a), of the (k-1)th Group Normalized Quality Factor Scores for all Eligible Stocks within Group (G) (where the (k-1)th Group Normalized Quality Factor Score is the Group Normalized Quality Factor Score determined by application of the above formula for the immediately prior iteration of the above formula (the "${}^{k-1}\text{Group Normalized Quality Factor Score}_i{}^t$") in respect of Rebalance Selection Date (t) and Eligible Stock (i)), but excluding any (k-1)th Group Normalized Quality Factor Score that is considered missing.

The Final Quality Factor Score is the value obtained as a result of the 10th iteration (k=10):

$$\text{Final Quality Factor Score}_i{}^t = {}^{10}\text{Group Normalized Quality Factor Score}_i{}^t$$

4.8 Optimization Methodology

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Output Portfolio in accordance with Sections 4.8 and 4.9.

The Output Portfolio, determined by the Constituent Stock Determination Agent in accordance with the methodology described below, shall be the result of maximizing the objective function specified in Section 4.8(a) (the "**Objective Function**") subject to the optimization constraints specified in Section 4.8(b) (the "**Optimization Constraints**"), using the Optimizer Software.

If, in respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent is unable to determine the Output Portfolio using the Optimizer Software before 11.00 am local time in London, United Kingdom, on the day that falls two London Scheduled Business Days after Rebalance Selection Date (t), owing to a temporary technical failure such as, without limitation, a corruption of relevant software libraries or a temporary failure in the computing facilities (a "**Temporary Optimizer Software Failure**"), then: (i) the Constituent Stocks comprised in the Index shall not be rebalanced and re-weighted on the Scheduled Rebalancing Date immediately following Rebalance Selection Date (t) and (ii) the Constituent Stocks of the Index shall remain the same as immediately prior to the Scheduled Rebalancing Date, subject to any adjustments to Constituent Stocks pursuant to these Index Rules (although the percentage contribution of each Constituent Stock to the Index Level may differ from the weight applicable on the previous Effective Rebalancing Date). If a Temporary Optimizer Software Failure occurs for two consecutive Rebalance Selection Dates, then the provisions set out in Section 11.10 shall apply.

(a) Objective Function

In respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Objective Function in accordance with the following formula:

$$\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t + S_{Size,i}^t + S_{Momentum,i}^t + S_{Low\ Vol,i}^t + S_{Quality,i}^t\right)$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight associated with Eligible Stock (i) in the Output Portfolio (the "**Output Weight**") in respect of Rebalance Selection Date (t).

$S_{Value,i}^t$ means the Final Value Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Value Factor Score is not considered missing, or means 0 (zero) if such Final Value Factor Score is considered missing.

$S_{Size,i}^t$ means the Final Size Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Size Factor Score is not considered missing, or means 0 (zero) if such Final Size Factor Score is considered missing.

$S_{Momentum,i}^t$ means the Final Momentum Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Momentum Factor Score is not considered missing, or means 0 (zero) if such Final Momentum Factor Score is considered missing.

$S_{Low\ Vol,i}^t$ means the Final Low Volatility Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Low Volatility Factor Score is not considered missing, or means 0 (zero) if such Final Low Volatility Factor Score is considered missing.

$S_{Quality,i}^t$ means the Final Quality Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Quality Factor Score is not considered missing, or means 0 (zero) if such Final Quality Factor Score is considered missing.

(b) Optimization Constraints

In respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Optimization Constraints in accordance with the following formulas:

1. Factor Balance Constraint: For each pair of Final Factor Scores, the absolute difference between the aggregate sums of such Final Factor Scores, for the Output Portfolio and weighted by the Output Weights, is constrained to be less than or equal to the Maximum Absolute Factor Score Difference, in accordance with the following formulas:

$$\begin{cases} \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t - S_{Size,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t - S_{Momentum,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t - S_{Low\ Vol,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t - S_{Quality,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Size,i}^t - S_{Momentum,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Size,i}^t - S_{Low\ Vol,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Size,i}^t - S_{Quality,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Momentum,i}^t - S_{Low\ Vol,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Momentum,i}^t - S_{Quality,i}^t\right)\right| \leq MAD \\ \left|\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Low\ Vol,i}^t - S_{Quality,i}^t\right)\right| \leq MAD \end{cases}$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight for Eligible Stock (i) in respect of Rebalance Selection Date (t).

$S_{Value,i}^t$ means the Final Value Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Value Factor Score is not considered missing, or means 0 (zero) if such Final Value Factor Score is considered missing.

$S_{Size,i}^t$ means the Final Size Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Size Factor Score is not considered missing, or means 0 (zero) if such Final Size Factor Score is considered missing.

$S_{Momentum,i}^t$ means the Final Momentum Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Momentum Factor Score is not considered missing, or means 0 (zero) if such Final Momentum Factor Score is considered missing.

$S^t_{Low\,Vol,i}$ means the Final Low Volatility Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Low Volatility Factor Score is not considered missing, or means 0 (zero) if such Final Low Volatility Factor Score is considered missing.

$S^t_{Quality,i}$ means the Final Quality Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Quality Factor Score is not considered missing, or means 0 (zero) if such Final Quality Factor Score is considered missing.

MAD means the Maximum Absolute Factor Score Difference specified in Section 3.1.

2. Beta Constraint: The absolute beta of the Output Portfolio is constrained to be less than or equal to the Maximum Absolute Beta, in accordance with the following formulas:

$$\left|\sum_{i=1}^{N(t)} w_i^t \times \beta_i^t\right| \leq MAB$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

β_i^t means the beta in respect of Eligible Stock (i) and Rebalance Selection Date (t), which is calculated in accordance with the following formula:

$$\beta_i^t = \frac{\sum_{j=1}^{N(t)} w_{M,j}^t \times K_{i,j}^t}{\sum_{j=1}^{N(t)} \sum_{k=1}^{N(t)} w_{M,j}^t \times w_{M,k}^t \times K_{j,k}^t}$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$w_{M,j}^t$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

$w_{M,k}^t$ means the Base Reference Weight in respect of Eligible Stock (k) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

$K_{i,j}^t$ means the Risk Model Covariance between Eligible Stock (i) and Eligible Stock (j) in respect of Rebalance Selection Date (t), determined pursuant to Section 3.9.

$K_{j,k}^t$ means the Risk Model Covariance between Eligible Stock (j) and Eligible Stock (k) in respect of Rebalance Selection Date (t), determined pursuant to Section 3.9.

MAB means the Maximum Absolute Beta specified in Section 3.1.

3. Net Country Exposure Constraint: In respect of each Eligible Country, the absolute difference between the exposure of the Output Portfolio to such Eligible Country and the exposure of the "**Base Reference Portfolio**", which is defined as the Portfolio of all Eligible Stocks associated with their Base Reference Weights in respect of Rebalance Selection Date (t), to such Eligible Country is constrained to be less than or equal to the Maximum Net Country Exposure Deviation, in accordance with the following formula:

For each Eligible Country (j):

$$\left|\sum_{i=1}^{N(t)}\left(C_{i,j}^{t}\times w_{i}^{t}\right)-\sum_{i=1}^{N(t)}\left(w_{i}^{t}\right)\times\sum_{i=1}^{N(t)}\left(C_{i,j}^{t}\times w_{M,i}^{t}\right)\right|\leq MD$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
$C_{i,j}^{t}$	means the country exposure of Eligible Stock (i) in respect of Eligible Country (j) and Rebalance Selection Date (t), which is a quantity defined as: • 1 (one) if the Country of Incorporation of Eligible Stock (i) is Eligible Country (j) • 0 (zero) if the Country of Incorporation of Eligible Stock (i) is not Eligible Country (j)
w_{i}^{t}	means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$w_{M,i}^{t}$	means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.
MD	means the Maximum Net Country Exposure Deviation specified in Section 3.1.

4. <u>Net Sector Exposure Constraint</u>: In respect of each Eligible Sector, the absolute difference between the exposure of the Output Portfolio to such Eligible Sector and the exposure of the Base Reference Portfolio to such Eligible Sector is constrained to be less than or equal to the Maximum Net Sector Exposure Deviation, in accordance with the following formula:

For each Eligible Sector (j):

$$\left|\sum_{i=1}^{N(t)}\left(S_{i,j}^{t}\times w_{i}^{t}\right)-\sum_{i=1}^{N(t)}\left(w_{i}^{t}\right)\times\sum_{i=1}^{N(t)}\left(S_{i,j}^{t}\times w_{M,i}^{t}\right)\right|\leq MD$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
$S_{i,j}^{t}$	means the sector exposure of Eligible Stock (i) in respect of Eligible Sector (j) and Rebalance Selection Date (t), which is a quantity defined as: • 1 (one) if the Stock Sector of Eligible Stock (i) is Eligible Sector (j) • 0 (zero) if the Stock Sector of Eligible Stock (i) is not Eligible Sector (j)
w_{i}^{t}	means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$w_{M,i}^{t}$	means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.
MD	means the Maximum Net Sector Exposure Deviation specified in Section 3.1.

5. <u>Long Country Exposure Constraint</u>: In respect of each Eligible Country, the exposure of the "**Long Output Portfolio**", which is defined as the Portfolio of all Eligible Stocks whose Output Weights are positive, associated with their Output Weights, to such Eligible Country is constrained to be less than or equal to a quantity defined of the sum of (i) the exposure of the Base Reference Portfolio to such Eligible Country and (ii) the Maximum Long Country Exposure Deviation, in accordance with the following formula:

For each Eligible Country (j):

$$\sum_{i=1}^{N(t)} C_{i,j}^t \times \mathrm{MAX}(w_i^t, 0) \leq \sum_{i=1}^{N(t)} \left(C_{i,j}^t \times w_{M,i}^t\right) + MD$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
$C_{i,j}^t$	means the country exposure of Eligible Stock (i) in respect of Eligible Country (j) and Rebalance Selection Date (t), which is a quantity defined as: • 1 (one) if the Country of Incorporation of Eligible Stock (i) is Eligible Country (j) • 0 (zero) if the Country of Incorporation of Eligible Stock (i) is not Eligible Country (j)
w_i^t	means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$w_{M,i}^t$	means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.
MD	means the Maximum Long Country Exposure Deviation specified in Section 3.1.

6. Long Sector Exposure Constraint: In respect of each Eligible Sector, the exposure of the Long Output Portfolio to such Eligible Sector is constrained to be less than or equal to a quantity defined of the sum of (i) the exposure of the Base Reference Portfolio to such Eligible Sector and (ii) the Maximum Long Sector Exposure Deviation, in accordance with the following formula:

For each Eligible Sector (j):

$$\sum_{i=1}^{N(t)} S_{i,j}^t \times \mathrm{MAX}(w_i^t, 0) \leq \sum_{i=1}^{N(t)} \left(S_{i,j}^t \times w_{M,i}^t\right) + MD$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
$S_{i,j}^t$	means the sector exposure of Eligible Stock (i) in respect of Eligible Sector (j) and Rebalance Selection Date (t), which is a quantity defined as: • 1 (one) if the Stock Sector of Eligible Stock (i) is Eligible Sector (j) • 0 (zero) if the Stock Sector of Eligible Stock (i) is not Eligible Sector (j)
w_i^t	means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$w_{M,i}^t$	means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.
MD	means the Maximum Long Sector Exposure Deviation specified in Section 3.1.

7. Net Delta Constraint: The net delta of the Output Portfolio is constrained to be greater than or equal to zero, in accordance with the following formula:

$$\sum_{i=1}^{N(t)} w_i^t \geq 0$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
w_i^t	means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

8. Long Delta Constraint: The Long Delta (as defined below) of the Output Portfolio is constrained to be less than or equal to one, in accordance with the following formula:

$$LongDelta_t \leq 1$$

Where:

$LongDelta_t$ means the long delta (the "**Long Delta**") of the Output Portfolio in respect of Rebalance Selection Date (t), which is an amount calculated in accordance with the following formula:

$$LongDelta_t = \sum_{i=1}^{N(t)} \text{MAX}(w_i^t, 0)$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

9. Volatility Constraint: The volatility of the Output Portfolio is constrained to be less than or equal to the Maximum Volatility, in accordance with the following formula:

$$\sqrt{\sum_{i=1}^{N(t)} \sum_{j=1}^{N(t)} w_i^t \times w_j^t \times K_{i,j}^t} \leq MV$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

w_j^t means the Output Weight in respect of Eligible Stock (j) and Rebalance Selection Date (t).

$K_{i,j}^t$ means the Risk Model Covariance between Eligible Stock (i) and Eligible Stock (j) in respect of Rebalance Selection Date (t), determined pursuant to Section 3.9.

MV means the Maximum Volatility specified in Section 3.1.

10. Excluded Stocks Constraint: The Output Weight in respect of each Excluded Stock (as defined below) is constrained to be equal to zero.

Each Eligible Stock that:
(i) is a member of the J.P. Morgan group of companies; or
(ii) in respect of which the number of Final Factor Scores considered missing, in respect of Rebalance Selection Date (t), is greater than the Maximum Missing Final Factor Scores Number

shall be deemed to be an "**Excluded Stock**".

11. Per-Stock Constraint: The Output Weight of each Eligible Stock that is not an Excluded Stock is constrained to be greater than or equal to a lower bound in respect of such Eligible Stock and Rebalance Selection Date (t) (the "**Final Lower Bound**") and less than or equal to an upper bound in respect of such Eligible Stock and Rebalance Selection Date (t) (the "**Final Upper Bound**"). The Final Lower Bound and Final Upper Bound are determined taking into account the Maximum Absolute Weight, borrow rate, trading liquidity and holding liquidity, as specified below.

a. Maximum Absolute Weight and Short Stock Borrow: The first preliminary lower bound ("**First Preliminary Lower Bound**") and first preliminary upper bound ("**First Preliminary Upper Bound**") in respect of Rebalance Selection Date (t) for each Eligible Stock (i) are calculated in accordance with the following formulas:

If BR_i^t is not missing and $BR_i^t > MSBR$:

$$FPLB_i^t = 0$$

Otherwise (BR_i^t is missing or $BR_i^t \leq MSBR$):

$$FPLB_i^t = -MAW$$

In all cases:

$$FPUB_i^t = MAW$$

Where:

BR_i^t	means the Defined Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).
$MSBR$	means the Maximum Short Stock Borrow Rate specified in Section 3.1.
$FPLB_i^t$	means the First Preliminary Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$FPUB_i^t$	means the First Preliminary Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).
MAW	means the Maximum Absolute Weight specified in Section 3.1.

b. Trading Liquidity: The second preliminary lower bound ("**Second Preliminary Lower Bound**") and second preliminary upper bound ("**Second Preliminary Upper Bound**") in respect of Rebalance Selection Date (t) for each Eligible Stock (i) are calculated in accordance with the following formulas:

i. If Rebalance Selection Date (t) falls on or before the Index Base Date or if $DNTE_i^t$ is considered missing:

$$SPLB_i^t = FPLB_i^t$$
$$SPUB_i^t = FPUB_i^t$$

ii. If Rebalance Selection Date (t) falls after the Index Base Date and if $DNTE_i^t$ is not considered missing:

If $w_{C,i}^t - MTW_i^t > FPUB_i^t$:

$$SPLB_i^t = MAX\left(FPLB_i^t, FPUB_i^t - \frac{MTW_i^t}{2}\right)$$
$$SPUB_i^t = FPUB_i^t$$

If $w_{C,i}^t - MTW_i^t \leq FPUB_i^t$ and $w_{C,i}^t + MTW_i^t < FPLB_i^t$:

$$SPLB_i^t = FPLB_i^t$$
$$SPUB_i^t = MIN\left(FPUB_i^t, FPLB_i^t + \frac{MTW_i^t}{2}\right)$$

If $w_{C,i}^t - MTW_i^t \leq FPUB_i^t$ and $w_{C,i}^t + MTW_i^t \geq FPLB_i^t$:

$$SPLB_i^t = MAX\left(FPLB_i^t, w_{C,i}^t - MTW_i^t\right)$$
$$SPUB_i^t = MIN\left(FPUB_i^t, w_{C,i}^t + MTW_i^t\right)$$

Where:

$DNTE_i^t$ means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.

$SPLB_i^t$ means the Second Preliminary Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$FPLB_i^t$ means the First Preliminary Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$SPUB_i^t$ means the Second Preliminary Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$FPUB_i^t$ means the First Preliminary Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{C,i}^t$ means the Current Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined by the Index Calculation Agent pursuant to Section 5.2(d), if Eligible Stock (i) is a Constituent Stock in respect of the Effective Rebalancing Date immediately preceding Rebalance Selection Date (t), or otherwise means zero.

MTW_i^t means the maximum absolute trading weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), which is an amount calculated in accordance with the following formula:

$$MTW_i^t = \frac{MTLR \times DNTE_i^t}{LN}$$

Where:

$MTLR$ means the Maximum Trading Liquidity Ratio specified in Section 3.1.

$DNTE_i^t$ means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.

LN means the Liquidity Notional specified in Section 3.1.

c. Holding Liquidity: The Final Upper Bound and Final Lower Bound in respect of Rebalance Selection Date (t) for each Eligible Stock (i) are calculated in accordance with the following formulas:

i. If $DNTE_i^t$ is considered missing:

$$LB_i^t = SPLB_i^t$$
$$UB_i^t = SPUB_i^t$$

ii. If $DNTE_i^t$ is not considered missing:

If $SPLB_i^t > MHW_i^t$:

$$LB_i^t = SPLB_i^t$$
$$UB_i^t = MIN\left(SPUB_i^t, SPLB_i^t + \frac{MTW_i^t}{2}\right)$$

If $SPUB_i^t < -MHW_i^t$:

$$LB_i^t = MAX\left(SPLB_i^t, SPUB_i^t - \frac{MTW_i^t}{2}\right)$$
$$UB_i^t = SPUB_i^t$$

If $SPLB_i^t \leq MHW_i^t$ and $SPUB_i^t \geq -MHW_i^t$:

$$LB_i^t = MAX(SPLB_i^t, -MHW_i^t)$$
$$UB_i^t = MIN(SPUB_i^t, MHW_i^t)$$

Where:

$DNTE_i^t$ means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.

LB_i^t means the Final Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$SPLB_i^t$ means the Second Preliminary Lower Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

UB_i^t means the Final Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$SPUB_i^t$ means the Second Preliminary Upper Bound in respect of Eligible Stock (i) and Rebalance Selection Date (t).

MHW_i^t means the maximum absolute holding weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), which is an amount calculated in accordance with the following formula:

$$MHW_i^t = \frac{MHLR \times DNTE_i^t}{LN}$$

Where:

$MHLR$ means the Maximum Holding Liquidity Ratio specified in Section 3.1.

$DNTE_i^t$ means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.

LN means the Liquidity Notional specified in Section 3.1.

MTW_i^t means the maximum absolute trading weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), which is an amount calculated in accordance with the following formula:

$$MTW_i^t = \frac{MTLR \times DNTE_i^t}{LN}$$

Where:

$MTLR$ means the Maximum Trading Liquidity Ratio specified in Section 3.1.

$DNTE_i^t$ means the Dollar Notional Trading Estimate in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 3.7.

LN means the Liquidity Notional specified in Section 3.1.

12. Turnover Constraint:
    a. In respect of a Rebalance Selection Date that falls on or before the Index Base Date, no turnover constraint is applied.
    b. In respect of a Rebalance Selection Date that falls after the Index Base Date, the following constraint is applied: The turnover of the Output Portfolio is constrained to be less than or equal to the maximum turnover, in accordance with the following formula:

$$\frac{1}{2}\sum_{i=1}^{N(t)}\left|w_i^t - w_{C,i}^t\right| \leq \frac{MMT}{RPM}$$

Where:

$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
i	means an integer representing each stock that is an Eligible Stock in respect of Rebalance Selection Date (t).
w_i^t	means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$w_{C,i}^t$	means the Current Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined by the Index Calculation Agent pursuant to Section 5.2(d), if Eligible Stock (i) is a Constituent Stock in respect of the Effective Rebalancing Date immediately preceding Rebalance Selection Date (t), or otherwise means zero.
MMT	means the Maximum Monthly Turnover specified in Section 3.1.
RPM	means the average number of rebalances per month, which is an amount calculated as the ratio of (i) the number of Scheduled Rebalancing Dates that occur in the 365 calendar days immediately succeeding and including Rebalance Selection Date (t), as determined by the Constituent Stock Determination Agent at approximately the Data Reference Time, to (ii) 12 (twelve).

13. Short Leg Borrow Rate Constraint:
    a. If BR_i^t is missing for every Eligible Stock (i), no short leg borrow rate constraint is applied.
    b. If BR_i^t is not missing for at least one Eligible Stock (i), the following constraint is applied: The borrow rate of the "**Short Output Portfolio**", which is defined as the Portfolio of all Eligible Stocks whose Output Weights are negative, associated with their Output Weights, is constrained to be less than or equal to the Maximum Borrow Rate, in accordance with the following formula:

$$\sum_{i=1}^{N(t)} FBR_i^t \times \mathrm{MAX}(-w_i^t, 0) \leq MLBR$$

Where:

BR_i^t	means the Defined Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).
$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
FBR_i^t	means the Filled Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(b).
w_i^t	means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$MLBR$	means the Maximum Short Leg Borrow Rate specified in Section 3.1.

(c) Optimizer Software result

The Optimizer Software which is used as part of the Optimization Methodology will return a primal status. If: (i) the primal status equals "Optimal" and (ii) the Long Delta of the Output Portfolio is greater than or equal to the Minimum Long Delta Accepted, subject to any adjustment of the Minimum Long Delta Accepted in accordance with Section 4.9(a) (the "**Acceptance Conditions**"), then the Constituent Stock Determination Agent shall use such Output Portfolio which satisfies the Acceptance Conditions (the "**Selected Output Portfolio**") for the purposes of Section 4.10. If the Acceptance Conditions are not satisfied, then the

Constituent Stock Determination Agent shall apply the optimization relaxation procedure (the "**Optimization Relaxation Procedure**") specified in Section 4.9.

4.9 Relaxation Procedure

(a) Optimization Relaxation Procedure

The Optimization Relaxation Procedure is determined by the Constituent Stock Determination Agent, in accordance with the provisions set out herein, and it is a process which consists in iterating the Relaxed Optimization Methodology set out in Section 4.9(d) over the Relaxation Steps set out in Section 4.9(b) until an Output Portfolio satisfying the Acceptance Conditions is obtained. The Minimum Long Delta Accepted, which is used as a parameter to one of the Acceptance Conditions, shall be adjusted in accordance with the Relaxed Value for Minimum Long Delta Accepted in respect of Relaxation Step (k), when Minimum Long Delta Accepted is listed as a Relaxed Parameter for Relaxation Step (k), as set out in the table contained in Section 4.9(b). When an Output Portfolio satisfying the Acceptance Conditions is obtained, the Constituent Stock Determination Agent shall use such Output Portfolio (the "**Selected Output Portfolio**") for the purposes of Section 4.10.

(b) Optimization Relaxation Steps

Relaxation Step	Relaxed Parameter	Default Value	Relaxed Value
1	Maximum Long Country Exposure Deviation	0.10%	0.20%
2	Maximum Short Leg Borrow Rate	0.35%	0.45%
3	Maximum Monthly Turnover	50%	60%
4	Maximum Long Sector Exposure Deviation	0.10%	0.20%
5	Maximum Long Country Exposure Deviation	0.10%	0.30%
6	Maximum Short Leg Borrow Rate	0.35%	0.55%
7	Maximum Monthly Turnover	50%	70%
8	Maximum Long Sector Exposure Deviation	0.10%	0.30%
9	Maximum Net Country Exposure Deviation	0.50%	0.80%
10	Maximum Net Sector Exposure Deviation	0.50%	0.80%
11	Maximum Holding Liquidity Ratio	70%	90%
12	Maximum Volatility	5%	7%
13	Maximum Monthly Turnover	50%	80%
14	Maximum Trading Liquidity Ratio	20%	25%
15	Maximum Short Leg Borrow Rate	0.35%	0.65%
16	Minimum Long Delta Accepted	85%	80%
17	Minimum Long Delta Accepted	85%	80%
	Maximum Long Country Exposure Deviation	0.10%	1.10%
	Maximum Net Country Exposure Deviation	0.50%	0.70%
18	Minimum Long Delta Accepted	85%	80%
	Maximum Long Sector Exposure Deviation	0.10%	1.60%
	Maximum Net Sector Exposure Deviation	0.50%	0.70%
19	Minimum Long Delta Accepted	85%	80%
	Maximum Long Country Exposure Deviation	0.10%	1.10%
	Maximum Net Country Exposure Deviation	0.50%	0.70%
	Maximum Short Leg Borrow Rate	0.35%	0.95%
	Maximum Monthly Turnover	50%	80%
20	Minimum Long Delta Accepted	85%	80%
	Maximum Long Sector Exposure Deviation	0.10%	1.60%
	Maximum Net Sector Exposure Deviation	0.50%	0.70%

	Maximum Short Leg Borrow Rate	0.35%	0.95%
	Maximum Monthly Turnover	50%	80%
21	Minimum Long Delta Accepted	85%	80%
	Maximum Monthly Turnover	50%	100%
	Maximum Short Leg Borrow Rate	0.35%	0.65%
22	Minimum Long Delta Accepted	85%	80%
	Maximum Monthly Turnover	50%	100%
	Maximum Short Leg Borrow Rate	0.35%	0.65%
	Maximum Volatility	5%	9%
23	Minimum Long Delta Accepted	85%	80%
	Maximum Long Country Exposure Deviation	0.10%	1.10%
	Maximum Net Country Exposure Deviation	0.50%	0.70%
	Maximum Short Leg Borrow Rate	0.35%	0.95%
	Maximum Monthly Turnover	50%	80%
	Maximum Volatility	5%	7%
24	Minimum Long Delta Accepted	85%	80%
	Maximum Long Sector Exposure Deviation	0.10%	1.60%
	Maximum Net Sector Exposure Deviation	0.50%	0.70%
	Maximum Short Leg Borrow Rate	0.35%	0.95%
	Maximum Monthly Turnover	50%	80%
	Maximum Volatility	5%	7%
25	Minimum Long Delta Accepted	85%	80%
	Maximum Monthly Turnover	50%	200%
	Maximum Short Leg Borrow Rate	0.35%	0.65%

(c) Relaxation Event

If an Output Portfolio satisfying the Acceptance Conditions has not been obtained, in accordance with the Optimization Relaxation Procedure described in Section 4.9(a), then a relaxation event (a "**Relaxation Event**") shall be deemed to have occurred and: (i) the Constituent Stocks comprised in the Index shall not be rebalanced and re-weighted on the Scheduled Rebalancing Date immediately following Rebalance Selection Date (t) and (ii) the Constituent Stocks of the Index shall remain the same as immediately prior to the Scheduled Rebalancing Date, subject to any adjustment to a Constituent Stock pursuant to these Index Rules (although the percentage contribution of each Constituent Stock to the Index Level may differ from the weight applicable on the previous Effective Rebalancing Date).

(d) Relaxed Optimization Methodology

In respect of a Relaxation Step (k), the Output Portfolio, determined by the Constituent Stock Determination Agent in accordance with the methodology described below, shall be the result of maximizing the relaxed objective function specified in Section 4.9(e) (the "**Relaxed Objective Function**") subject to the relaxed optimization constraints specified in Section 4.9(f) (the "**Relaxed Optimization Constraints**") in respect of Relaxation Step (k), using the Optimizer Software.

If, in respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent is unable to determine the Output Portfolio using the Optimizer Software before 11.00 am local time in London, United Kingdom, on the day that falls two London Scheduled Business Days after Rebalance Selection Date (t), owing to a Temporary Optimizer Software Failure, then the consequences of that Temporary Optimizer Software Failure shall be as specified in Section 4.8.

(e) Relaxed Objective Function

In respect of Rebalance Selection Date (t), the Constituent Stock Determination Agent shall determine the Relaxed Objective Function in accordance with the following formula:

$$\sum_{i=1}^{N(t)} w_i^t \times \left(S_{Value,i}^t + S_{Size,i}^t + S_{Momentum,i}^t + S_{Low\,Vol,i}^t + S_{Quality,i}^t\right) - \lambda_C \times \sum_{j=1}^{NC(t)} z_{C,j}^t - \lambda_S \times \sum_{j=1}^{NS(t)} z_{S,j}^t - \lambda_B \times z_B^t$$

Where:

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

w_i^t means the Output Weight associated with Eligible Stock (i) in the Output Portfolio in respect of Rebalance Selection Date (t).

$S_{Value,i}^t$ means the Final Value Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Value Factor Score is not considered missing, or means 0 (zero) if such Final Value Factor Score is considered missing.

$S_{Size,i}^t$ means the Final Size Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Size Factor Score is not considered missing, or means 0 (zero) if such Final Size Factor Score is considered missing.

$S_{Momentum,i}^t$ means the Final Momentum Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Momentum Factor Score is not considered missing, or means 0 (zero) if such Final Momentum Factor Score is considered missing.

$S_{Low\,Vol,i}^t$ means the Final Low Volatility Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Low Volatility Factor Score is not considered missing, or means 0 (zero) if such Final Low Volatility Factor Score is considered missing.

$S_{Quality,i}^t$ means the Final Quality Factor Score for Eligible Stock (i) in respect of Rebalance Selection Date (t) if such Final Quality Factor Score is not considered missing, or means 0 (zero) if such Final Quality Factor Score is considered missing.

λ_C means the Country Exposure Penalty Multiplier specified in Section 3.1.

$NC(t)$ means the number of Eligible Countries in respect of Rebalance Selection Date (t).

$z_{C,j}^t$ means the country exposure penalty variable (the "**Country Exposure Penalty Variable**") in respect of Eligible Country (j) and Rebalance Selection Date (t).

λ_S means the Sector Exposure Penalty Multiplier specified in Section 3.1.

$NS(t)$ means the number of Eligible Sectors in respect of Rebalance Selection Date (t).

$z_{S,j}^t$ means the sector exposure penalty variable (the "**Sector Exposure Penalty Variable**") in respect of Eligible Sector (j) and Rebalance Selection Date (t).

λ_B means the Borrow Penalty Multiplier specified in Section 3.1.

z_B^t means the borrow penalty variable (the "**Borrow Penalty Variable**") in respect of Rebalance Selection Date (t).

(f) Relaxed Optimization Constraints

In respect of Rebalance Selection Date (t) and Relaxation Step (k), the Constituent Stock Determination Agent shall determine the Relaxed Optimization Constraints in accordance with the following formulas, with the exception that where a parameter that is listed as a Relaxed Parameter for Relaxation Step (k) in Section 4.9(b) is referred to, the Relaxed Value for such Relaxed Parameter shall be used instead of the Default Value.

Optimization Constraints 1 to 13 from Section 4.8 are incorporated herein.

14. Country Exposure Penalty Constraint: In respect of each Eligible Country, the sum of the Country Exposure Penalty Variables is constrained to be greater than or equal to the sum of the excess long country exposure deviations, in accordance with the following formula:

For each Eligible Country (j):

$$z_{C,j}^{t} \geq MAX\left(0, \sum_{i=1}^{N(t)} \left(C_{i,j}^{t} \times \mathrm{MAX}(w_i^t, 0)\right) - \left(\sum_{i=1}^{N(t)} \left(C_{i,j}^{t} \times w_{M,i}^{t}\right) + MD\right)\right)$$

Where:

$z_{C,j}^{t}$ means the Country Exposure Penalty Variable in respect of Eligible Country (j) and Rebalance Selection Date (t).

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$C_{i,j}^{t}$ means the country exposure of Eligible Stock (i) in respect of Eligible Country (j) and Rebalance Selection Date (t), which is a quantity defined as:

- 1 (one) if the Country of Incorporation of Eligible Stock (i) is Eligible Country (j)
- 0 (zero) if the Country of Incorporation of Eligible Stock (i) is not Eligible Country (j)

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{M,i}^{t}$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

MD means the Maximum Long Country Exposure Deviation specified in Section 3.1.

15. Sector Exposure Penalty Constraint: In respect of each Eligible Sector, the sum of the Sector Exposure Penalty Variables is constrained to be greater than or equal to the sum of the excess long sector exposure deviations, in accordance with the following formula:

For each Eligible Sector (j):

$$z_{S,j}^{t} \geq MAX\left(0, \sum_{i=1}^{N(t)} \left(S_{i,j}^{t} \times \mathrm{MAX}(w_i^t, 0)\right) - \left(\sum_{i=1}^{N(t)} \left(S_{i,j}^{t} \times w_{M,i}^{t}\right) + MD\right)\right)$$

Where:

$z_{S,j}^{t}$ means the Sector Exposure Penalty Variable in respect of Eligible Sector (j) and Rebalance Selection Date (t).

$N(t)$ means the number of Eligible Stocks in respect of Rebalance Selection Date (t).

$S_{i,j}^{t}$ means the sector exposure of Eligible Stock (i) in respect of Eligible Sector (j) and Rebalance Selection Date (t), which is a quantity defined as:

- 1 (one) if the Stock Sector of Eligible Stock (i) is Eligible Sector (j)
- 0 (zero) if the Stock Sector of Eligible Stock (i) is not Eligible Sector (j)

w_i^t means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).

$w_{M,i}^{t}$ means the Base Reference Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t), determined pursuant to Section 4.2.

MD means the Maximum Long Sector Exposure Deviation specified in Section 3.1.

16. Borrow Penalty Constraint:
    a. If BR_i^t is missing for every Eligible Stock (i), the Borrow Penalty Variable is constrained to be greater than or equal to 0.
    b. If BR_i^t is not missing for at least one Eligible Stock (i), the following constraint is applied: The Borrow Penalty Variable is constrained to be greater than or equal to the short leg borrow rate deviation, in accordance with the following formula:

$$z_B^t \geq MAX\left(0, \sum_{i=1}^{N(t)} (FBR_i^t \times \mathrm{MAX}(-w_i^t, 0)) - MLBR\right)$$

Where:

BR_i^t	means the Defined Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(a).
z_B^t	means the Borrow Penalty Variable in respect of Rebalance Selection Date (t).
$N(t)$	means the number of Eligible Stocks in respect of Rebalance Selection Date (t).
FBR_i^t	means the Filled Borrow Rate in respect of Eligible Stock (i) and Rebalance Selection Date (t), as determined pursuant to Section 3.10(b).
w_i^t	means the Output Weight in respect of Eligible Stock (i) and Rebalance Selection Date (t).
$MLBR$	means the Maximum Short Leg Borrow Rate specified in Section 3.1.

4.10 Filtering small weights and providing the Preliminary Long Basket Constituent Stocks and Weights, and the Preliminary Short Basket Constituent Stocks and Weights

In respect of each Rebalance Selection Date (t), the Constituent Stock Determination Agent shall remove from the Selected Output Portfolio all Eligible Stocks associated with a weight whose absolute value is less than the Small Weight Threshold, and the remaining Eligible Stocks within the Selected Output Portfolio shall compose the "**Filtered Output Portfolio**".

Subject to Section 4.9(c) and subject to the occurrence of a Temporary Optimizer Software Failure, the set of stocks within the Filtered Output Portfolio that are associated with a positive weight shall be deemed to be the "**Preliminary Long Basket Constituent Stocks**" and their associated weights shall be deemed to be the "**Preliminary Long Basket Constituent Weights**"; the set of stocks within the Filtered Output Portfolio that are associated with a negative weight shall be deemed to be the "**Preliminary Short Basket Constituent Stocks**" and their associated weights shall be deemed to be the "**Preliminary Short Basket Constituent Weights**".

The Constituent Stock Determination Agent, in respect of each Rebalance Selection Date (t) and subject to Section 4.9(c) and subject to the occurrence of a Temporary Optimizer Software Failure, shall provide the Index Calculation Agent with the list of the Preliminary Long Basket Constituent Stocks, the Preliminary Long Basket Constituent Weights, the list of the Preliminary Short Basket Constituent Stocks and the Preliminary Short Basket Constituent Weights. The Index Calculation Agent shall use the list of the Preliminary Long Basket Constituent Stocks, the Preliminary Long Basket Constituent Weights, the list of the Preliminary Short Basket Constituent Stocks and the Preliminary Short Basket Constituent Weights for the calculation set forth in Section 5.

5. Determining the Constituent Stocks and Constituent Weights, Rebalancing the Index and Determining the Index Level

5.1 Determination of the Constituent Stocks and Constituent Weights

The Index Calculation Agent, in respect of each Effective Rebalancing Date (k), using the information provided by the Constituent Stock Determination Agent pursuant to Section 4.10 in respect of the immediately preceding Rebalance Selection Date ("**Rebalance Selection Date (t)**"), will determine whether, from and including Rebalance Selection Date (t) to and including Effective Rebalancing Date (k) (the "**Determination Period**"), a Preliminary Long Basket Constituent Stock or a Preliminary Short Basket Constituent Stock has been delisted from the relevant Exchange (each a "**Delisted Stock**"). The Index Calculation Agent shall remove from the list of the Preliminary Long Basket Constituent Stocks and the list of the Preliminary Short Basket Constituent Stocks (as the case may be) each of the Delisted Stocks and shall adjust the list of the Preliminary Long Basket Constituent Stocks and the list of the Preliminary Short Basket Constituent Stocks (as the case may be) to account for such removal. The remaining stocks, within the adjusted Preliminary Long Basket and the adjusted Preliminary Short Basket (as applicable) that are not affected by the occurrence of a delisting event during the Determination Period shall be deemed to be the "**Long Basket Constituent Stocks**" and the "**Short Basket Constituent Stocks**", respectively, in respect of Effective Rebalancing Date (k) (the Long Basket Constituent Stocks and the Short Basket Constituent Stocks together, the "**Constituent Stocks**"). The Preliminary Long Basket Constituent Weights in respect of the Long Basket Constituent Stocks shall be deemed to be the "**Long Basket Constituent Weights**" in respect of Effective Rebalancing Date (k). The Preliminary Short Basket Constituent Weights in respect of the Short Basket Constituent Stocks shall be deemed to be the "**Short Basket Constituent Weights**" in respect of Effective Rebalancing Date (k) (the Long Basket Constituent Weights and the Short Basket Constituent Weights together, the "**Constituent Weights**"). The number of Long Basket Constituent Stocks shall be deemed to be the "**Number of Long Stocks**" in respect of Effective Rebalancing Date (k) and the number of Short Basket Constituent Stocks shall be deemed to be the "**Number of Short Stocks**" in respect of Effective Rebalancing Date (k).

5.2 Calculation of Index Level in respect of a Calculation Day (t)

(a) Calculation of the Long Basket Level

In respect of each Calculation Day (t), the Index Calculation Agent will calculate the level of the Long Basket (the "**Long Basket Level**" or "**Long Basket**$_t$") as follows:

In respect of the Basket Base Date:

$$\text{Long Basket}_\text{t} = \text{Index Base Level}$$

On each Calculation Day (t) after the Basket Base Date:

$$\text{Long Basket}_\text{t} = \frac{\sum_{i=1}^{NL(k)} \left(\text{NOSH}_{Long,i}^{k} \times \text{P}_i^t \times \text{FX}_i^t\right)}{\text{Divisor}_{Long}^{t}}$$

Where:

Index Base Level — means the Index Base Level specified in Section 3.1

Effective Rebalancing Date (k) — means, in respect of a Calculation Day (t) that falls after the Basket Base Date, the immediately preceding Effective Rebalancing Date.

$NL(k)$ — means the Number of Long Stocks in respect of Effective Rebalancing Date (k) as determined pursuant to Section 5.1.

$\text{NOSH}_{Long,i}^{k}$ — means the number of shares (the "**Number of Shares**") in respect of Long Basket Constituent Stock (i) and Effective Rebalancing Date (k), which is an amount calculated in accordance with the following formula:

$$\text{NOSH}_{Long,i}^{k} = \frac{\text{W}_{Long,i}^{k}}{\text{P}_i^{RSD} \times \text{FX}_i^{RSD}}$$

Where:

Rebalance Selection Date (RSD) — means, in respect of Effective Rebalancing Date (k), the immediately preceding Rebalance Selection Date.

$\text{W}_{Long,i}^{k}$ — means, in respect of Long Basket Constituent Stock (i) and Effective Rebalancing Date (k), the Long Basket Constituent Weight, as determined pursuant to Section 5.1.

P_i^{RSD}	means the Closing Price of Long Basket Constituent Stock (i) in respect of Rebalance Selection Date (RSD)
FX_i^{RSD}	means the FX Rate of Long Basket Constituent Stock (i) in respect of Rebalance Selection Date (RSD)

P_i^t means, in respect of Calculation Day (t), the Closing Price of the "i^{th}" Long Basket Constituent Stock, "**Long Basket Constituent Stock (i)**", in respect of Calculation Day (t)

FX_i^t means the FX Rate of Long Basket Constituent Stock (i) in respect of Calculation Day (t)

$Divisor_{Long}^t$ means the divisor of the Long Basket (the "**Long Basket Divisor**") in respect of Calculation Day (t), which is an amount calculated in accordance with the following formulas:

(a) If Calculation Day (t) is the Basket Base Date:

$$\mathrm{Divisor}_{Long}^t = \frac{\sum_{i=1}^{NL(k)}\left(\mathrm{NOSH}_{Long,i}^k \times P_i^t \times FX_i^t\right)}{Index\ Base\ Level}$$

(b) If Calculation Day (t) is not the Basket Base Date and is not immediately after Effective Rebalancing Date (k):

$$\mathrm{Divisor}_{Long}^t = \mathrm{Divisor}_{Long}^{t-1} \times \frac{\sum_{i=1}^{NL(k)}\left(\mathrm{NOSH}_{Long,i}^k \times (P_i^{t-1} \times FX_i^{t-1} - \mathrm{Gross}\ d_i^t \times \mathrm{FXDiv}_i^{t-1})\right)}{\sum_{i=1}^{NL(k)}\left(\mathrm{NOSH}_{Long,i}^k \times P_i^{t-1} \times FX_i^{t-1}\right)}$$

(c) If Calculation Day (t) is not the Basket Base Date and is immediately after Effective Rebalancing Date (k):

$$\mathrm{Divisor}_{Long}^t = \frac{1}{\mathrm{Long\ Basket_k}} \times \sum_{i=1}^{NL(k)}\left(\mathrm{NOSH}_{Long,i}^k \times (P_i^{t-1} \times FX_i^{t-1} - \mathrm{Gross}\ d_i^t \times \mathrm{FXDiv}_i^{t-1})\right)$$

Where:

Calculation Day (t-1)	means, in respect of Calculation Day (t), the Calculation Day immediately preceding such Calculation Day (t)
$Divisor_{Long}^{t-1}$	means the Long Basket Divisor in respect of Calculation Day (t-1).
P_i^{t-1}	means the Closing Price of Long Basket Constituent Stock (i) in respect of Calculation Day (t-1)
FX_i^{t-1}	means the FX Rate of Long Basket Constituent Stock (i) in respect of Calculation Day (t-1)
$Gross\ d_i^t$	means, in respect of Long Basket Constituent Stock (i), the Gross Dividend Amount of such Long Basket Constituent Stock (i) for the period from, but excluding, Calculation Day (t-1) to, and including, Calculation Day (t)
$FXDiv_i^{t-1}$	means the FX Rate of the Gross Dividend Amount of Long Basket Constituent Stock (i) in respect of Calculation Day (t-1)
$Long\ Basket_k$	means the Long Basket Level in respect of Effective Rebalancing Date (k)

(b) Calculation of the Short Basket Level

In respect of each Calculation Day (t), the Index Calculation Agent will calculate the level of the Short Basket (the "**Short Basket Level**" or "**Short Basket$_t$**") as follows:

In respect of the Basket Base Date:

$$\text{Short Basket}_{\text{t}} = \text{Index Base Level}$$

On each Calculation Day (t) after the Basket Base Date:

$$\text{Short Basket}_{\text{t}} = \frac{\sum_{i=1}^{NS(k)}\left(\text{NOSH}_{Short,i}^{k} \times \text{P}_{i}^{t} \times \text{FX}_{i}^{t}\right)}{\text{Divisor}_{Short}^{t}}$$

Where:

Index Base Level means the Index Base Level specified in Section 3.1

Effective Rebalancing Date (k) means, in respect of a Calculation Day (t) that falls after the Basket Base Date, the immediately preceding Effective Rebalancing Date.

$NS(k)$ means the Number of Short Stocks in respect of Effective Rebalancing Date (k) as determined pursuant to Section 5.1.

$\text{NOSH}_{Short,i}^{k}$ means the Number of Shares in respect of Short Basket Constituent Stock (i) and Effective Rebalancing Date (k), which is an amount calculated in accordance with the following formula:

$$\text{NOSH}_{Short,i}^{k} = \frac{-1 \times \text{W}_{Short,i}^{k}}{\text{P}_{i}^{RSD} \times \text{FX}_{i}^{RSD}}$$

Where:

Rebalance Selection Date (RSD) means, in respect of Effective Rebalancing Date (k), the immediately preceding Rebalance Selection Date.

$\text{W}_{Short,i}^{k}$ means, in respect of Short Basket Constituent Stock (i) and Effective Rebalancing Date (k), the Short Basket Constituent Weight, as determined pursuant to Section 5.1.

P_{i}^{RSD} means the Closing Price of Short Basket Constituent Stock (i) in respect of Rebalance Selection Date (RSD)

FX_{i}^{RSD} means the FX Rate of Short Basket Constituent Stock (i) in respect of Rebalance Selection Date (RSD)

P_{i}^{t} means, in respect of Calculation Day (t), the Closing Price of the "i^{th}" Short Basket Constituent Stock, "**Short Basket Constituent Stock (i)**".

FX_{i}^{t} means the FX Rate of Short Basket Constituent Stock (i) in respect of Calculation Day (t)

$\text{Divisor}_{Short}^{t}$ means the divisor of the Short Basket (the "**Short Basket Divisor**") in respect of Calculation Day (t), which is an amount calculated in accordance with the following formulas:

(a) If Calculation Day (t) is the Basket Base Date:

$$\text{Divisor}_{Short}^{t} = \frac{\sum_{\text{i}=1}^{\text{NS(k)}}\left(\text{NOSH}_{Short,i}^{k} \times \text{P}_{i}^{t} \times \text{FX}_{i}^{t}\right)}{Index\ Base\ Level}$$

(b) If Calculation Day (t) is not the Basket Base Date and is not immediately after an Effective Rebalancing Date (k):

$$\text{Divisor}_{Short}^{t} = \text{Divisor}_{Short}^{t-1} \times \frac{\sum_{\text{i}=1}^{\text{NS(k)}} \left(\text{NOSH}_{Short,i}^{k} \times (\text{P}_{i}^{t-1} \times \text{FX}_{i}^{t-1} - \text{Gross d}_{i}^{t} \times \text{FXDiv}_{i}^{t-1})\right)}{\sum_{\text{i}=1}^{\text{NS(k)}} \left(\text{NOSH}_{Short,i}^{k} \times \text{P}_{i}^{t-1} \times \text{FX}_{i}^{t-1}\right)}$$

(c) If Calculation Day (t) is not the Basket Base Date and is immediately after an Effective Rebalancing Date (k):

$$\text{Divisor}_{Short}^{t} = \frac{1}{\text{Short Basket}_{\text{k}}} \times \sum_{\text{i}=1}^{\text{NS(k)}} \left(\text{NOSH}_{Short,i}^{k} \times (\text{P}_{i}^{t-1} \times \text{FX}_{i}^{t-1} - \text{Gross d}_{i}^{t} \times \text{FXDiv}_{i}^{t-1})\right)$$

Where:

Calculation Day (t-1)	means, in respect of Calculation Day (t), the Calculation Day immediately preceding such Calculation Day (t)
$\text{Divisor}_{Short}^{t-1}$	means the Short Basket Divisor in respect of Calculation Day (t-1).
P_{i}^{t-1}	means the Closing Price of Short Basket Constituent Stock (i) in respect of Calculation Day (t-1)
FX_{i}^{t-1}	means the FX Rate of Short Basket Constituent Stock (i) in respect of Calculation Day (t-1)
Gross d_{i}^{t}	means, in respect of Short Basket Constituent Stock (i), the Gross Dividend Amount of such Short Basket Constituent Stock (i) for the period from, but excluding, Calculation Day (t-1) to, and including, Calculation Day (t).
FXDiv_{i}^{t-1}	means the FX Rate of the Gross Dividend Amount of Short Basket Constituent Stock (i) in respect of Calculation Day (t-1)
$\text{Short Basket}_{\text{k}}$	means the Short Basket Level in respect of Effective Rebalancing Date (k)

(c) Determination of the Long Number of Units, Short Number of Units and Cash Number of Units

In respect of each Effective Rebalancing Date (k), the Index Calculation Agent will calculate the Long Number of Units (the "**Long NOU**$_k$"), the Short Number of Units (the "**Short NOU**$_k$") and the Cash Number of Units (the "**Cash NOU**$_k$") as follows:

$$\text{Long NOU}_{\text{k}} = \frac{\text{Index}_{\text{ND}} \times \text{Long Weight}_{\text{k}}}{\text{Long Basket}_{\text{ND}}}$$

$$\text{Short NOU}_{\text{k}} = \frac{\text{Index}_{\text{ND}} \times \text{Short Weight}_{\text{k}}}{\text{Short Basket}_{\text{ND}}}$$

$$\text{Cash NOU}_{\text{k}} = \frac{-(\text{Long NOU}_{\text{k}} \times \text{Long Basket}_{\text{k}} + \text{Short NOU}_{\text{k}} \times \text{Short Basket}_{\text{k}})}{\text{Cash Index}_{\text{k}}}$$

Where:

Calculation Day (ND) means, in respect of Effective Rebalancing Date (k):

- if Effective Rebalancing Date (k) is the Index Base Date, the Index Base Date

- if Effective Rebalancing Date (k) is not the Index Base Date, the Rebalance Selection Date immediately preceding Effective Rebalancing Date (k)

Index_{ND} means the Index Level in respect of Calculation Day (ND)

$\text{Long Weight}_{\text{k}}$ means, in respect of Effective Rebalancing Date (k), an amount calculated in accordance with the following formula:

$$\text{Long Weight}_{\text{k}} = \sum_{i=1}^{NL(k)} \text{W}_{Long,i}^{k}$$

Where:

$NL(k)$ means the Number of Long Stocks in respect of Effective Rebalancing Date (k) as determined pursuant to Section 5.1.

$\text{W}_{Long,i}^{k}$ means, in respect of Long Basket Constituent Stock (i) and Effective Rebalancing Date (k), the Long Basket Constituent Weight, as determined pursuant to Section 5.1.

$\text{Long Basket}_{\text{ND}}$ means the Long Basket Level in respect of Calculation Day (ND)

$\text{Short Weight}_{\text{k}}$ means, in respect of Effective Rebalancing Date (k), an amount calculated in accordance with the following formula:

$$\text{Short Weight}_{\text{k}} = \sum_{i=1}^{NS(k)} \text{W}_{Short,i}^{k}$$

Where:

$NS(k)$ means the Number of Short Stocks in respect of Effective Rebalancing Date (k) as determined pursuant to Section 5.1.

$\text{W}_{Short,i}^{k}$ means, in respect of Short Basket Constituent Stock (i) and Effective Rebalancing Date (k), the Short Basket Constituent Weight, as determined pursuant to Section 5.1.

$\text{Short Basket}_{\text{ND}}$ means the Short Basket Level in respect of Calculation Day (ND)

$\text{Long Basket}_{\text{k}}$ means the Long Basket Level in respect of Effective Rebalancing Date (k)

$\text{Short Basket}_{\text{k}}$ means the Short Basket Level in respect of Effective Rebalancing Date (k)

$\text{Cash Index}_{\text{k}}$ means the Cash Index Level in respect of Effective Rebalancing Date (k)

(d) Determination of the Current Weights

In respect of each Rebalance Selection Date (t) that falls after the Index Base Date, the Index Calculation Agent shall determine the current weight (the "**Current Weight**") in respect of each stock that is a Constituent Stock in respect of the Effective Rebalancing Date immediately preceding Rebalance Selection Date (t) ("**Effective Rebalancing Date (k)**"), as follows:

In respect of a Constituent Stock (i) that is a Long Basket Constituent Stock in respect of Effective Rebalancing Date (k):

$$\text{Current Weight}_i^t = \frac{\text{Long NOU}_{\text{k}} \times \frac{\text{NOSH}_{Long,i}^{k}}{\text{Divisor}_{Long}^{t}} \times \text{P}_{\text{i}}^{\text{t}} \times \text{FX}_{\text{i}}^{\text{t}}}{\text{Index}_t}$$

In respect of a Constituent Stock (i) that is a Short Basket Constituent Stock in respect of Effective Rebalancing Date (k):

$$\text{Current Weight}_i^t = \frac{\text{Short NOU}_\text{k} \times \frac{\text{NOSH}_\text{Short,i}^\text{k}}{\text{Divisor}_\text{Short}^\text{t}} \times \text{P}_\text{i}^\text{t} \times \text{FX}_\text{i}^\text{t}}{\text{Index}_\text{t}}$$

Where:

Long NOU_k	means the Long Number of Units in respect of Effective Rebalancing Date (k), as determined pursuant to Section 5.2(c).
$\text{NOSH}_{Long,i}^k$	means the Number of Shares in respect of Long Basket Constituent Stock (i) and Effective Rebalancing Date (k), as determined pursuant to Section 5.2(a).
Divisor_{Long}^t	means the Long Basket Divisor in respect of Rebalance Selection Date (t) as determined pursuant to Section 5.2(a)
$\text{Short NOU}_\text{k}$	means the Short Number of Units in respect of Effective Rebalancing Date (k), as determined pursuant to Section 5.2(c).
$\text{NOSH}_{Short,i}^k$	means the Number of Shares in respect of Short Basket Constituent Stock (i) and Effective Rebalancing Date (k), as determined pursuant to Section 5.2(b).
Divisor_{Short}^t	means the Short Basket Divisor in respect of Rebalance Selection Date (t), as determined pursuant to Section 5.2(b)
P_i^t	means the Closing Price of Eligible Stock (i) in respect of Rebalance Selection Date (t)
FX_i^t	means the FX Rate of Eligible Stock (i) in respect of Rebalance Selection Date (t)
Index_t	means the Index Level in respect of Rebalance Selection Date (t)

(e) Calculation of the Rebalance Adjustment Factor

In respect of each Calculation Day (t), the Index Calculation Agent will calculate the Rebalance Adjustment Factor (the "**RAF_t**") as follows:

In respect of a Calculation Day (t) that is the Index Base Date or that is not an Effective Rebalancing Date:

$$\text{RAF}_\text{t} = 0$$

In respect of a Calculation Day (t) that is an Effective Rebalancing Date falling after the Index Base Date:

$$\text{RAF}_\text{t} = \sum_i \left|\text{W}_i^t - \text{W}_{C,i}^{RSD}\right| \times \text{Index}_{\text{t}-1} \times \text{RP}$$

Where:

Effective Rebalancing Date (k)	means, in respect of Effective Rebalancing Date (t), the Effective Rebalancing Date immediately preceding Effective Rebalancing Date (t)
i	means, in respect of Effective Rebalancing Date (t), an integer representing each stock that is a Constituent Stock in respect of Effective Rebalancing Date (t) and/or that is a Constituent Stock in respect of Effective Rebalancing Date (k)
W_i^t	means, in respect of Constituent Stock (i) and Effective Rebalancing Date (t), the Constituent Weight, as determined pursuant to Section 5.1, if Constituent Stock (i) is a Constituent Stock in respect of Effective Rebalancing Date (t), or otherwise means zero.
Rebalance Selection Date (RSD)	means, in respect of Effective Rebalancing Date (t), the immediately preceding Rebalance Selection Date.

$W_{C,i}^{RSD}$ means, in respect of Constituent Stock (i) and Rebalance Selection Date (RSD), the Current Weight, as determined pursuant to Section 5.2(d), if Constituent Stock (i) is a Constituent Stock in respect of Effective Rebalancing Date (k), or otherwise means zero.

Calculation Day (t-1) means, in respect of Calculation Day (t), the Calculation Day immediately preceding such Calculation Day (t)

Index_{t-1} means the Index Level in respect of Calculation Day (t-1)

RP means the Rebalancing Cost Percentage specified in Section 3.1

(f) Calculation of the Index Level

Subject to the Adjustment Provisions, the Index Calculation Agent will calculate the Index Level for each Calculation Day (t) as follows:

For the Index Base Date:

$$\mathrm{Index}_t = \text{Index Base Level}$$

For each Calculation Day (t) after the Index Base Date, whether or not such Calculation Day is an Effective Rebalancing Date:

$$\begin{aligned}\mathrm{Index}_t = \mathrm{MAX}(0, &\mathrm{Index}_{t-1} + \text{Long NOU}_k \times (\text{Long Basket}_t - \text{Long Basket}_{t-1}) + \text{Short NOU}_k \\ &\times (\text{Short Basket}_t - \text{Short Basket}_{t-1}) + \text{Cash NOU}_k \times (\text{Cash Index}_t - \text{Cash Index}_{t-1}) \\ &- \mathrm{RAF}_t - \text{Running Factor}_t)\end{aligned}$$

Where:

Index_t means the Index Level in respect of Calculation Day (t)

Calculation Day (t-1) means, in respect of Calculation Day (t), the Calculation Day immediately preceding such Calculation Day (t)

Index_{t-1} means the Index Level in respect of Calculation Day (t-1)

Effective Rebalancing Date (k) means in respect of a Calculation Day (t) that falls after the Index Base Date, the immediately preceding Effective Rebalancing Date.

Long NOU_k means the Long Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).

Long Basket_t means the Long Basket Level in respect of Calculation Day (t) determined pursuant to Section 5.2(a)

Long Basket_{t-1} means the Long Basket Level in respect of Calculation Day (t-1) determined pursuant to Section 5.2(a)

Short NOU_k means the Short Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).

Short Basket_t means the Short Basket Level in respect of Calculation Day (t) determined pursuant to Section 5.2(b)

$\text{Short Basket}_{t-1}$ means the Short Basket Level in respect of Calculation Day (t-1) determined pursuant to Section 5.2(b)

Cash NOU_k means the Cash Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).

Cash Index_t means the Cash Index Level in respect of Calculation Day (t)

Cash Index_{t-1}	means the Cash Index Level in respect of Calculation Day (t-1)
RAF_t	means the Rebalance Adjustment Factor in respect of Calculation Day (t) determined pursuant to Section 5.2(e).
Running Factor_t	means the Running Adjustment Factor in respect of Calculation Day (t), which is an amount calculated in accordance with the following formula:

$$\text{Running Factor}_t = (\text{Index}_{t-1} \times \text{IAF} + \text{Long NOU}_k \times \text{Long Basket}_{t-1} \times \text{FAF} - \text{Short NOU}_k \times \text{Short Basket}_{t-1} \times \text{BAF}) \times \frac{DC_{t-1,t}}{360}$$

Where:

Index_{t-1}	means the Index Level in respect of Calculation Day (t-1)
IAF	means the Index Adjustment Cost Factor specified in Section 3.1
Effective Rebalancing Date (k)	means in respect of a Calculation Day (t) that falls after the Index Base Date, the immediately preceding Effective Rebalancing Date.
Long NOU_k	means the Long Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).
Long Basket_{t-1}	means the Long Basket Level in respect of Calculation Day (t-1) determined pursuant to Section 5.2(a)
FAF	means the Assumed Financing Cost Adjustment Factor specified in Section 3.1
Short NOU_k	means the Short Number of Units in respect of Effective Rebalancing Date (k), determined pursuant to Section 5.2(c).
$\text{Short Basket}_{t-1}$	means the Short Basket Level in respect of Calculation Day (t-1) determined pursuant to Section 5.2(b)
BAF	means the Assumed Borrow Cost Adjustment Factor specified in Section 3.1
$DC_{t-1,t}$	means the number of calendar days from but excluding Calculation Day (t-1) to and including Calculation Day (t)

If on a Calculation Day (t) the Index Level is equal to zero (0) then for all subsequent Calculation Days the Index Level shall be equal to zero (0) and in such case the formula above shall not be used to calculate the Index Level for any subsequent Calculation Day.

6. Certain General Terms relating to the Index

6.1 Publication and availability of the Index Rules

The Index Rules are published by J.P. Morgan Securities plc of 25 Bank Street, Canary Wharf, London E14 5JP, in its capacity as the Index Sponsor.

Copies of the Index Rules may be obtained by holders or potential holders of investments linked to the Index free of charge on request from the Index Sponsor at its principal office in London against such proof of status as the Index Sponsor may in its reasonable discretion require.

6.2 Amendments

Economic, market, regulatory, legal, financial or other circumstances may arise that may necessitate or make desirable an amendment of the Index Rules.

Notwithstanding the foregoing, the Index Sponsor may amend the Index Rules as it deems appropriate. Such amendments may include (without limitation):

- correcting or curing any errors, omissions or contradictory provisions; or
- modifications to the methodology described in the Index Rules (including, without limitation, a change in the frequency of calculation of the Index Level) that are necessary or desirable in order for the calculation of the Index to continue notwithstanding any economic, market, regulatory, legal, financial or other circumstances as of the Index Base Date; or
- modifications of a formal, minor or technical nature; or

The Index Sponsor will notify the Index Calculation Agent and the Constituent Stock Determination Agent (if a different entity than the Index Sponsor) before making an amendment pursuant to this Section 6.2. The Index Sponsor may, but is not obliged to, take into account the views of the Index Calculation Agent or the Constituent Stock Determination Agent regarding any proposed amendment.

Following any amendment, the Index Sponsor will make available (as soon as practicable) the amended version of the Index Rules and will include the effective date of such amendment in the new version of the Index Rules. However, the Index Sponsor is under no obligation to inform any person about any amendments to the Index (except as required by law or regulation).

The Index Sponsor may, in its reasonable discretion, at any time and without notice, terminate the calculation and publication of the Index.

6.3 No advice or offer of securities

The Index Rules do not constitute investment, tax, legal, accounting, regulatory or other advice, including within the meaning of Article 53 of the Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 or investment advice within the meaning of Article 4(4) of the Markets in Financial Instruments Directive 2004/39/EC or otherwise.

The Index Rules neither constitute an offer to purchase or sell securities nor constitute specific advice in whatever form (investment, tax, legal, accounting or regulatory) in respect of any investment that may be linked to the Index.

6.4 The Index is synthetic

The Index references a "notional" or synthetic exposure to the Constituent Stocks and there is no actual portfolio of assets to which any person is entitled or in which any person has any ownership interest. The Index merely references certain synthetic exposures the performance of which are used as reference points for calculating Index Levels.

7. Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent

7.1 Identity of Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent

The sponsor of the Index specified in Section 3 (the "**Index Sponsor**", which term includes any successor in such capacity) may delegate or transfer any of its obligations or responsibilities in connection with the Index to one or more entities that it determines are appropriate.

The Index Sponsor is responsible for, among other things, the creation and design of the Index, the documentation of the Index Rules, and the appointment of (i) the calculation agent of the Index (the "**Index Calculation Agent**"), which may be the Index Sponsor, an unrelated third party or an affiliate or subsidiary of the Index Sponsor, (ii) the determination agent of the Constituent Stocks (the "**Constituent Stock Determination Agent**"), which may be the Index Sponsor, an unrelated third party or an affiliate or subsidiary of the Index Sponsor and (iii) the determination agent of disruption events (the "**Disruption Determination Agent**"), which may be the Index Sponsor, an unrelated third party or an affiliate or subsidiary of the Index Sponsor. The Index Sponsor is also responsible for determining whether an Extraordinary Event has occurred and the related adjustments set forth in Section 11 of these Index Rules.

Each of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent and the Disruption Determination Agent, each as of the Index Live Date, is specified in Section 3.1. In the case of an Index Calculation Agent, a Constituent Stock Determination Agent or a Disruption Determination Agent that is not at such time an affiliate of the Index Sponsor, such entity must obtain written permission from the Index Sponsor prior to any delegation or transfer of such entity's responsibilities or obligations in connection with the Index.

The Index Sponsor may at any time or for any reason terminate the appointment of any of the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent and appoint an alternative entity (or entities) as such entity's replacement.

The Index Calculation Agent is responsible for:

(i) determining the Constituent Stocks and the Constituent Weights in respect of each Effective Rebalancing Date, in accordance with Section 5.1 of the Index Rules; and

(ii) calculating the Index Level in respect of each Calculation Day, in accordance with Section 5.2 of the Index Rules; and

(iii) determining the Current Weights in respect of each Rebalance Selection Date (t) that falls after the Index Base Date, in accordance with Section 5.2(d) of the Index Rules; and

(iv) determining any adjustment upon the occurrence of certain events set forth in Section 11.8 of the Index Rules.

The Disruption Determination Agent is responsible for determining whether a Market Disruption Event has occurred and for making related determinations pursuant to the provisions set forth in Sections 10.1 and 10.2 of the Index Rules, and informing the Index Calculation Agent of any such determinations.

If the Index Sponsor determines that a relevant event has occurred, and if the Index Calculation Agent, Constituent Stock Determination Agent or the Disruption Determination Agent fails to make that determination, then the Index Sponsor may instruct one or more of the Index Calculation Agent, the Constituent Stock Determination Agent and the Disruption Determination Agent to consider such event and whether there should be related consequences and adjustments in accordance with the Index Rules to take account of such event.

The Constituent Stock Determination Agent is responsible for determining the Eligible Stocks, the Preliminary Long Basket Constituent Stocks, the Preliminary Long Basket Constituent Weights, the Preliminary Short Basket Constituent Stocks and the Preliminary Short Basket Constituent Weights in accordance with the Index Rules.

The Index Sponsor may delegate or transfer any of its obligations or responsibilities in connection with the Index to one or more entities as it determines appropriate.

The Index is a rules-based Index and none of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent and the Disruption Determination Agent will exercise any discretion or independent judgment in the implementation of the methodology of the selection, weighting and ongoing rebalancing of the Index apart from limited circumstances that are expressly contemplated in these Index Rules.

7.2 Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent standards

Each of the Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent shall act in good faith and in a commercially reasonable manner in respect of determinations, interpretations and calculations made by it pursuant to the Index Rules.

7.3 Index Sponsor, Index Calculation Agent, Constituent Stock Determination Agent and Disruption Determination Agent determinations

An action (or failure to act) on the part of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent in relation to the Index may have a detrimental effect on the Index Level or the volatility of the Index.

The Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent may make certain determinations or calculations based on information obtained from publicly available sources without independently verifying such information and accepts no responsibility or liability for any consequent loss or damage.

All determinations, interpretations and calculations of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent relating to the Index Rules shall be final, conclusive and binding, provided that if the Index Sponsor identifies an error or omission in any of the determinations, interpretations or calculations in respect of the Index made by the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent, the Index Sponsor may, if the Index Sponsor determines that such error, omission or correction (as the case may be) is material and that it is practicable, adjust or correct the relevant determination, interpretation or calculation to take into account such correction as soon as it is reasonably practicable to do so. No person shall be entitled to make any claim against the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent, the Disruption Determination Agent or any Relevant Person in respect of any such determinations, interpretations or calculations of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent. None of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent, the Disruption Determination Agent or any Relevant Person shall:

(a) be under any obligation to revise any determination, interpretation or calculation made or action taken for any reason in connection with the Index Rules or the Index; or

(b) have any responsibility to any person for any determination, interpretation or calculation made or anything done (or omitted to be done) (whether as a result of negligence or otherwise) in respect of the Index Rules or the Index or in respect of the publication of the Index Level (or failure to publish such level) or any use to which any person may put the Index or the Index Levels.

8. Index Levels

8.1 Index Base Level, Index Base Date and Basket Base Date

The Index Base Level, Index Base Date and Basket Base Date are specified in Section 3.1.

8.2 Publication of Index Levels

Subject to the Adjustment Provisions and the Disruption Provisions set out in Section 10, the Index Calculation Agent will publish the Index Level of the Index in respect of each Calculation Day as soon as reasonably practicable on or after such Calculation Day. The Index Level or any subsequent correction to the Index Level will be published on Bloomberg on the Index Bloomberg Ticker page (as specified in Section 3.1) or by means of such other information source as the Index Sponsor may determine in its reasonable discretion. Notwithstanding anything to the contrary, the Index Sponsor may cease calculation and publication of the Index Level at any time in its sole discretion and nothing in this document shall be construed as an agreement by the Index Sponsor to continue to calculate the Index Level if the Index Sponsor has elected to cease publication.

All Index Levels are rounded to 2 decimal places for purposes of publication only before being published. The Index Calculation Agent may vary its rounding convention in its sole discretion provided that it will not publish the Index Level with fewer than two decimal places. Notwithstanding anything to the contrary, the Index Calculation Agent may calculate and maintain the Index Level to greater accuracy for the determination of upcoming Index Levels or other calculations.

8.3 Index Live Date

Subject to the Adjustment Provisions, the Index Calculation Agent has been calculating the Index Level and publishing it in respect of each Calculation Day in accordance with the methodology set forth in these Index Rules from the Index Live Date specified in Section 3.1.

9. Corrections in respect of the Index

If any publicly available financial or other information (including, but not limited to, the Closing Price of a Constituent Stock or any other level, price or rate related to a Constituent Stock or any variable, input or other matter used for any calculation or determination relevant to the Index Level for any Calculation Day) published or otherwise made available by the relevant recognized financial or other information source selected by the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent and used in any calculation or determination is subsequently corrected, or the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent identifies an error or omission in any of its calculations or determinations in respect of the Index or the Index Sponsor identifies an error or omission in any of the Index Calculation Agent's, the Constituent Stock Determination Agent's or the Disruption Determination Agent's calculations or determinations in respect of the Index, the Index Sponsor may or the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent may only with the prior consent of the Index Sponsor, in any case if the Index Sponsor determines that such error, omission or correction (as the case may be) is material and that it is practicable, adjust or correct the relevant calculation or determination to take into account such correction as soon as it is reasonably practicable to do so.

10. Disruption Provisions

10.1 Consequences of Market Disruption Event on a Calculation Day that is not an Effective Rebalancing Date and is not a Disruption Resolution Calculation Day

If a Calculation Day (i) that is not an Effective Rebalancing Date and (ii) that is not a Disruption Resolution Calculation Day, is a Disrupted Day (a "**Disrupted Stock Calculation Day**") in respect of any Constituent Stock (for the purposes of this Section 10.1, a "**Disrupted Constituent**"), then:

A. if the Disruption Determination Agent determines that the Disrupted Constituents comprise less than 20 percent of the level of the Index, then the Disruption Determination Agent shall notify the Index Calculation Agent of such determination, and the Index Calculation Agent shall calculate the Index Level for such Disrupted Stock Calculation Day, using (i) in respect of the each of the Constituent Stocks that are not affected by a Market Disruption Event, the Closing Price of such Constituent Stock in respect of such Disrupted Stock Calculation Day, and (ii) in respect of each of the Disrupted Constituents, the official closing price of such Disrupted Constituent for the Constituent Scheduled Trading Day for such Disrupted Constituent immediately preceding such Disrupted Stock Calculation Day that was not a Disrupted Day for such Disrupted Constituent; or

B. if the Disruption Determination Agent determines that the Disrupted Constituents comprise 20 percent or more of the level of the Index, then the Disruption Determination Agent shall notify the Index Calculation Agent of such determination, and the Index Calculation Agent will suspend the publication of the Index Level until the earlier of (i) the first following Calculation Day that is either (x) not a Disrupted Day for any Constituent Stock or (y) is a Disrupted Day in respect of which the Disrupted Constituents comprise less than 20 percent of the level of the Index, in which case the provisions set forth in Section 10.1(A) shall apply, and (ii) the Effective Rebalancing Date immediately following such Disrupted Stock Calculation Day if such Effective Rebalancing Date is a Disrupted Day, in which case the provisions of Section 10.2(B) will apply.

10.2 Consequences of Market Disruption Event on an Effective Rebalancing Date or on a Disruption Resolution Calculation Day

If the Disruption Determination Agent has determined that an Effective Rebalancing Date is a Disrupted Day (the "**Disrupted Effective Rebalancing Date**") in respect of any Incoming Constituent or any Outgoing Constituent (for the purposes of this Section 10.2, each a "**Disrupted Constituent**") then the Disruption Determination Agent shall notify the Index Calculation Agent of such determination, and:

A. the relevant Effective Rebalancing Date shall remain the Effective Rebalancing Date, as originally scheduled for each Incoming Constituent and each Outgoing Constituent that is not a Disrupted Constituent (for the purposes of this Section 10.2, a "**Non-Disrupted Constituent**") and the Closing Price for each such Non-Disrupted Constituent for such Effective Rebalancing Date will be used in the calculation of the Index Level pursuant to Section 5.2 for such Effective Rebalancing Date; and
B. for each Disrupted Constituent that is an Outgoing Constituent, the Index Calculation Agent shall use the Closing Price for such Disrupted Constituent as of the first following Constituent Scheduled Trading Day for such Disrupted Constituent that is not a Disrupted Day for the Disrupted Constituent (the "**First Following Non-Disrupted Day**"), unless such Disrupted Constituent remains a Disrupted Constituent for each of the Calculation Days immediately following the Effective Rebalancing Date to and including the seventh Calculation Day following the Effective Rebalancing Date (the "**Disruption Determination Date**" for such Disrupted Constituent that is an Outgoing Constituent), in which case, the Disruption Determination Agent shall determine its good faith estimate of the Closing Price of such Disrupted Constituent for such Effective Rebalancing Date (notwithstanding that such Disrupted Constituent remains a Disrupted Constituent) acting in good faith using such information or methods as it determines, in its reasonable discretion, are appropriate, in which case the Disruption Determination Agent shall notify the Index Sponsor and the Index Calculation Agent of its determination of a good faith estimate, and the Disrupted Constituent shall be removed from the Index, and the Index Sponsor shall adjust the Index and the Index Rules as appropriate to account for such removal as soon as practicable; and

C. for each Disrupted Constituent that is an Incoming Constituent, the Index Calculation Agent shall use the Closing Price for such Disrupted Constituent as of the first following Constituent Scheduled Trading Day that is not a Disrupted Day for the Disrupted Constituent (the "**First Following Non-Disrupted Day**") as the Closing Price of the Disrupted Constituent for such Effective Rebalancing Date, unless such Disrupted Constituent remains a Disrupted Constituent for each of the Calculation Days immediately following the Effective Rebalancing Date to and including the seventh Calculation Day following the Effective Rebalancing Date (the "**Disruption Determination Date**" for such Disrupted Constituent that is an Incoming Constituent), in which case, the Disruption Determination Agent (i) shall not include such Disrupted Constituent as a Constituent Stock of the Index and (ii) shall adjust the Index and the Index Rules as appropriate to account for not including such Disrupted Constituent as soon as practicable following such determination not to include the Disrupted Constituent and notify the Index Calculation Agent of any such determination.

D. The Index Calculation Agent shall calculate the Index Level in respect of any Disruption Resolution Calculation Day on the last day on which a valuation is determined in accordance with the provisions set out in paragraphs (B) and (C) above, but the Index Calculation Agent shall not publish the Index Level in respect of such Disruption Resolution Calculation Day.

"**Disruption Resolution Calculation Day**" means, each Calculation Day, from but excluding the Disrupted Effective Rebalancing Date to and including the earlier date to occur of: (i) the last First Following Non-Disrupted Day for an Outgoing Constituent or an Incoming Constituent and (ii) the Disruption Determination Date, if any, for an Outgoing Constituent or an Incoming Constituent.

10.3 Consequences of Data Source Disruption Event in respect of a Rebalance Selection Date

Unless a Data Source Disruption Event occurs on a Rebalance Selection Date (t) (the "**Data Source Disrupted Date**"), the Constituent Stock Determination Agent shall carry out the methodology as set forth in Section 4.

In respect of a Data Source Disrupted Date: (i) the Constituent Stocks comprised in the Index shall not be rebalanced and re-weighted on the Scheduled Rebalancing Date immediately following such Data Source Disrupted Date and (ii) the Constituent Stocks of the Index shall remain the same as immediately prior to the Scheduled Rebalancing Date, subject to any adjustment to a Constituent Stock pursuant to these Index Rules (although the percentage contribution of each Constituent Stock to the Index Level may differ from the weight applicable on the previous Effective Rebalancing Date).

10.4 Consequences of a Disrupted Day for the Cash Index

With respect to a Calculation Day that is a Disrupted Day (a "**Disrupted Cash Calculation Day**") in respect of the Cash Index (whether or not such Calculation Date is also an Effective Rebalancing Date), the Index Calculation Agent shall calculate the Index Level for such Calculation Day using the official closing level of the Cash Index for the Calculation Day immediately preceding such Disrupted Cash Calculation Day that was not a Disrupted Day for the Cash Index.

11. Extraordinary Events

11.1 Cancellation of relevant license or other right

If, at any time, any relevant license or other right granted to the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent (or any of their Affiliates) (together the "**Relevant Parties**") to use or refer to the level of or other information for any Constituent Stock or any licenses or other rights used in any of the determinations or calculations set forth in these Index Rules (including but not limited to in respect of or from the Base Reference Index, the Identified Reference Index, the Optimizer Software, the Share Data Source, the Fundamentals Data Source, the Estimates Data Source, the FX Data Source, the Base Reference Data Source, the Risk Model Data Source, or the Borrow Data Provider) ("**Affected Information**") is terminated, or is otherwise disputed, impaired, replaced by the third party data provider or ceases (for any reason), then the Index Sponsor may: (i) (a) find a replacement data source or provider or select an alternative source of information having characteristics substantially similar to information available from the relevant source of the Affected Information used by the Relevant Parties in the context of any determination or calculation set forth in these Index Rules, (b) determine a date on which such replacement is effective, and (c) adjust the Index Rules as it determines to be appropriate to account for such replacement or (ii) cease publication of the Index on such date as is determined by the Index Sponsor.

11.2 Change in Law

Without prejudice to the ability of the Index Sponsor to amend the Index Rules, the Index Sponsor may, in respect of the Index, exclude any Constituent Stock (an "**Affected Constituent**") affected by the occurrence of a Change in Law, and if it excludes an Affected Constituent, then the Index Sponsor may adjust the Index Rules as it determines to be appropriate to account for such exclusion on such date(s) selected by the Index Sponsor.

11.3 Dividend

If an issuer of a Constituent Stock fails to pay the full amount of any Declared Dividend by the scheduled payment date for the Constituent Stock (an "**Affected Stock**") then the Index Sponsor may if practicable and if it considers such failure material make the corresponding adjustment(s), if any, to any one or more of (i) the Index Level, (ii) the Closing Price of the Affected Stock, (iii) the Gross Dividend Amount and (iv) any other variable or term of the Index Rules that the Index Sponsor determines appropriate to account for the failure of the issuer of the Constituent Stock to pay the full amount of the Declared Dividend and determine the effective date(s) of such adjustment(s).

11.4 Successor currency or change to an underlying currency

If, at any time, any Associated Currency or other currency used in connection with these Index Rules is lawfully eliminated, converted, redenominated or exchanged for any successor currency, then such currency shall be deemed replaced by such successor currency.

To the extent that any such elimination, conversion, redenomination or exchange results in two or more currencies that were formerly associated with the original currency, the Index Sponsor may modify these Index Rules to account for such elimination, conversion, redenomination or exchange. For example, the Index Sponsor may select one of the applicable currencies to be a successor currency or amend the formulas for calculating the Index to account for the new exchange rate, if any.

11.5 Cash Index

If the level of the Cash Index: is (a) not calculated and is not announced by the Cash Index Sponsor, but is calculated and announced by a successor sponsor acceptable to the Index Sponsor, or (b) replaced by a successor index using, in the determination of the Index Sponsor, the same or a substantially similar formula for and method of calculation as used in the calculation of the Cash Index, then the Cash Index will be deemed to be the successor index so calculated and announced by that successor sponsor described in clause (a) above or that successor index described in clause (b) above, as the case may be, with effect from the date of such relevant event, and the Index Sponsor may make such adjustments to the Index Rules as it determines are appropriate to account for such change.

If on or prior to any Calculation Day, (a) the Cash Index Sponsor makes a material change in the formula for or the method of calculating the Cash Index or in any other way materially modifies the Cash Index (other than a modification prescribed in that formula or method to maintain the Cash Index in the event of routine occurrences), (b) the Cash Index Sponsor cancels the Cash Index or (c) there are ten (10) consecutive Calculation Days that are Disrupted Days for the Cash Index, then the Index Sponsor shall select a replacement index for the Cash Index with the same or a substantially similar formula for and method of calculation as used in calculation of the Cash Index, provided that if the Index Sponsor determines that it cannot select such a replacement index, then the Index Sponsor (i) may make such adjustment(s) that it determines to be appropriate to any variable, calculation methodology, valuation terms or any other rule in relation to the Index to account for such event, which may include, without limitation, selecting a replacement index for the Cash Index that does not have the same or a substantially similar formula for and method of calculation as used in calculation of the Cash Index or (ii) may terminate the Index.

11.6 Base Reference Index

If the level of the Base Reference Index: is (a) not calculated and is not announced by the Base Reference Index Sponsor, but is calculated and announced by a successor sponsor acceptable to the Index Sponsor, or (b) replaced by a successor index using, in the determination of the Index Sponsor, the same or a substantially similar formula for and method of calculation as used in the calculation of the Base Reference Index, then the Base Reference Index will be deemed to be the successor index so calculated and announced by that successor sponsor described in clause (a) above or that successor index described in clause (b) above, as the case may be, with effect from the date of such relevant event, and the Index Sponsor may make such adjustments to the Index Rules as it determines are appropriate to account for such change.

If on or prior to any Calculation Day, (a) the Base Reference Index Sponsor makes a material change in the formula for or the method of calculating the Base Reference Index or in any other way materially modifies the Base Reference Index (other than a modification prescribed in that formula or method to maintain the Base Reference Index in the event of routine occurrences), (b) the Base Reference Index Sponsor cancels the Base Reference Index or (c) there are ten (10) consecutive Calculation Days that are Disrupted Days for the Base Reference Index, then the Index Sponsor shall select a replacement index for the Base Reference Index with the same or a substantially similar formula for and method of calculation as used in calculation of the Base Reference Index, provided that if the Index Sponsor determines that it cannot select such a replacement index, then the Index Sponsor (i) may make such adjustment(s) that it determines to be appropriate to any variable, calculation methodology, valuation terms or any other rule in relation to the Index to account for such event, which may include, without limitation, selecting a replacement index for the Base Reference Index that does not have the same or a substantially similar formula for and method of calculation as used in calculation of the Base Reference Index or (ii) may terminate the Index.

11.7 Identified Reference Index

If the level of the Identified Reference Index: is (a) not calculated and is not announced by the Identified Reference Index Sponsor, but is calculated and announced by a successor sponsor acceptable to the Index Sponsor, or (b) replaced by a successor index using, in the determination of the Index Sponsor, the same or a substantially similar formula for and method of calculation as used in the calculation of the Identified Reference Index, then the Identified Reference Index will be deemed to be the successor index so calculated and announced by that successor sponsor described in clause (a) above or that successor index described in clause (b) above, as the case may be, with effect from the date of such relevant event, and the Index Sponsor may make such adjustments to the Index Rules as it determines are appropriate to account for such change.

If on or prior to any Calculation Day, (a) the Identified Reference Index Sponsor makes a material change in the formula for or the method of calculating the Identified Reference Index or in any other way materially modifies the Identified Reference Index (other than a modification prescribed in that formula or method to maintain the Identified Reference Index in the event of routine occurrences), (b) the Identified Reference Index Sponsor cancels the Identified Reference Index or (c) there are ten (10) consecutive Calculation Days that are Disrupted Days for the Identified Reference Index, then the Index Sponsor shall select a replacement index for the Identified Reference Index with the same or a substantially similar formula for and method of calculation as used in calculation of the Identified Reference Index, provided that if the Index Sponsor determines that it cannot select such a replacement index, then the Index Sponsor (i) may make such adjustment(s) that it determines to be appropriate to any variable, calculation methodology, valuation terms or any other rule in relation to the Index to account for such event, which may include, without limitation, selecting a replacement index for the Identified Reference Index that does not have the same or a substantially similar formula for and method of calculation as used in calculation of the Identified Reference Index or (ii) may terminate the Index.

11.8 Index Calculation Agent Adjustments Due to Corporate Actions, Corporate Events and Changes to the Composition of the Identified Reference Index

With respect to any determination (each, an "**Actual Identified Reference Index Adjustment Determination**") in respect of an Identified Reference Index as to whether or not (1) any change to the composition of the Identified Reference Index will be made or (2) any adjustment will be made, in any case by the Identified Reference Index Sponsor or the Identified Reference Index Calculation Agent pursuant to the established methodology, procedures and guidelines for the Identified Reference Index, the Index Calculation Agent shall consider each such Actual Identified Reference Index Adjustment Determination. Each Identified Reference Index Adjustment Determination will be a determination to make or not make an adjustment and to make or not make a change (such adjustment, omission of an adjustment, change and omission of a change, each being considered an "**Actual Identified Reference Index Adjustment Outcome**"). An Actual Identified Reference Index Adjustment Outcome includes an adjustment or change that (x) is already effective or has already been implemented in the Identified Reference Index or (y) will be effective or implemented in the Identified Reference Index in the future. An Actual Identified Reference Index Adjustment Outcome includes the omission of an adjustment or change that results from an Actual Identified Reference Index Adjustment Determination.

If any Constituent Stock of the Index is not at any time also a current component of an Identified Reference Index, the Index Calculation Agent shall make a determination (each, a "**Simulated Identified Reference Index Adjustment Determination**") in respect of an Identified Reference Index as to whether or not if such Constituent Stock were also a current component of an Identified Reference Index (1) any change to the composition of the Identified Reference Index would be made or (2) any adjustment would be made, in any case by the Identified Reference Index Sponsor or the Identified Reference Index Calculation Agent pursuant to the established methodology, procedures and guidelines for the Identified Reference Index, and the Index Calculation Agent shall consider each such Simulated Identified Reference Index Adjustment Determination. Each Simulated Identified Reference Index Adjustment Determination will be a determination to make or not make an adjustment and to make or not make a change (such adjustment, omission of an adjustment, change and omission of a change, each being considered a "**Simulated Identified Reference Index Adjustment Outcome**"). A Simulated Identified Reference Index Adjustment Outcome includes an adjustment or change that (x) would already be effective or would have already been implemented in the Identified Reference Index or (y) would be effective or implemented in the Identified Reference Index in the future. A Simulated Identified Reference Index Adjustment Outcome includes the omission of an adjustment or change that results from a Simulated Identified Reference Index Adjustment Determination.

In respect of each such Actual Identified Reference Index Adjustment Outcome and each Simulated Identified Reference Index Adjustment Outcome, the Index Calculation Agent shall make a consistent adjustment to the Index hereunder (each, a "**Consistent Adjustment Outcome**"), taking into account the similarities and differences between the methodology and composition of the Identified Reference Index and the methodology and composition of the relevant Index. In respect of an Actual Identified Reference Index Adjustment Outcome that did involve an adjustment or a change or a Simulated Reference Index Adjustment Outcome that would involve an adjustment or a change, the Index Calculation Agent may determine that the appropriate Consistent Adjustment Outcome is to make no adjustment or change, due to the differences between the methodology and composition of the Identified Reference Index and the methodology and composition of the relevant Index. In respect of an Actual Identified Reference Index Adjustment Outcome that did not involve an adjustment or a change or a Simulated Identified Reference Index Adjustment Outcome that would not involve an adjustment or a change, the Index Calculation Agent may determine that the appropriate Consistent Adjustment Outcome is to make an adjustment or change, due to the differences between the methodology and composition of the Identified Reference Index and the methodology and composition of the relevant Index.

The Index Calculation Agent shall determine the timing and manner of making effective any such Consistent Adjustment Outcome, taking into account the methodology and composition of the relevant Index. In addition, the Index Calculation Agent may, with the prior consent of the Index Sponsor, make adjustments to the rules of the relevant Index to the extent necessary to account for such Consistent Adjustment Outcome.

The Index Calculation Agent will be solely responsible for the determination and calculation of any such Consistent Adjustment or the determination that no adjustment should be made, and any related determinations and calculations.

It is expected that the Identified Reference Index Calculation Agent will make Actual Identified Reference Index Adjustment Determinations and will determine Actual Identified Reference Index Adjustment Outcomes for the Identified Reference Index and will make Simulated Identified Reference Index Adjustment Determinations and will determine Simulated Identified Reference Index Adjustment Outcomes for the Identified Reference Index from time to time (1) in respect of Corporate Actions that impact a Constituent Stock, (2) in respect of Corporate Events that impact a Constituent Company and (3) in respect of other circumstances or events (collectively, "**Constituent Stock Events**"). In respect of a particular Constituent Stock Event, it is expected that the Consistent Adjustment Outcome in respect of an Actual Identified Reference Index Adjustment Outcome or Simulated Identified Reference Index Adjustment Outcome will be similar to the adjustment or change (or lack of an adjustment or change) that the relevant index calculation agent or the Base Reference Index Sponsor would choose to make to the Base Reference Index.

A "**Corporate Action**" is an event that impacts shares or shareholders with a prescribed ex-date and includes, without limitation, distributions, capital increases, capital repayments, rights issues, entitlement offers, stock conversions, share splits (sub-division), reverse share splits (consolidation) and scrip issues (capitalization or bonus issue). A "**Corporate Event**" is an event that impacts a company or its shares or shareholders and that may impact an index (depending on its rules), including without limitation, a de-listing, liquidation, bankruptcy, insolvency, winding-up, nationalisation, consolidation, amalgamation, merger, binding share exchange, acquisition, takeover offer, exchange offer, tender offer or similar event.

11.9 Index Cancellation

If the Index Sponsor determines that no adjustment, exclusion or substitution that the Index Calculation Agent or it could make following an Extraordinary Event or any other event described in these Index Rules will produce a commercially reasonable result in respect of the Index, then the Index Sponsor may request (i) the Constituent Stock Determination Agent cease performing its role as Constituent Stock Determination Agent, (ii) the Disruption Determination Agent cease performing its role as Disruption Determination Agent and (iii) Index Calculation Agent cease calculating and publishing the Index from a date determined by the Index Sponsor. Notwithstanding this section, none of the Index Sponsor, the Index Calculation Agent, the Constituent Stock Determination Agent or the Disruption Determination Agent is under any obligation to continue the calculation, publication and dissemination of the Index.

11.10 Prolonged Technical Issue related to the Optimizer Software

If the Constituent Stock Determination Agent determines that on any Rebalance Selection Date (the "**Affected Rebalance Selection Date**") a Temporary Optimizer Software Failure has occurred, subject to the provisions set out in Sections 4.8 and 4.9, and that a second Temporary Optimizer Software Failure occurs for the Rebalance Selection Date immediately following the Affected Rebalance Selection Date, then the Index Sponsor may, but is not obliged to, replace the Optimizer Software with a substitute optimizer that has the same or substantially similar characteristics as the current Optimizer Software that is available on commercially reasonable terms and the Index Sponsor may make such adjustments to these Index Rules as it determines to be appropriate to account for such event on such dates as selected by the Index Sponsor; provided that if the Index Sponsor determines that there is no such substitute optimizer available on commercially reasonable terms, then the Index Sponsor (i) may replace the Optimizer Software with a substitute optimizer that has similar characteristics as the current Optimizer Software and may make such adjustments to these Index Rules as it determines to be appropriate to account for such event on such dates as selected by the Index Sponsor or (ii) may terminate the Index.

12. Hypothetical Back-Tested Levels

Any Index Level prior to the Index Live Date is a hypothetical, back-tested level. Such levels should not be taken as an indication of future performance, and no assurance can be given as to the levels or performance of the Index on a future date. Back-tested results are achieved by means of a retroactive application of a back-tested model designed with the benefit of hindsight. The Index Sponsor or the Index Calculation Agent, in calculating hypothetical back-tested index levels, may have applied the disruption provisions and any other provisions (including but not limited to the Extraordinary Events) specified in these Index Rules differently than it otherwise would have applied such provisions in a "live" calculation scenario. Additionally, the precision and rounding of the levels of the Index or a Constituent Stock (or other calculated values) may differ from the methodology applied on a going-forward basis. In calculating the hypothetical back-tested levels, the Index Sponsor or the Index Calculation Agent may have made certain assumptions in respect of the timing surrounding the publication of certain indicators, Closing Prices and Index Levels. These assumptions may have a material impact on the hypothetical back-tested levels occurring on or before the Index Live Date. No representation is made that any investment that references the Index will or is likely to achieve returns similar to any hypothetical back-tested returns. Alternative modelling techniques or assumptions might provide different results. Finally, hypothetical back-tested past performance is neither an indicator nor a guarantee of future performance or returns. Actual results and performance may vary compared to such hypothetical back-tested levels.

13. Definitions of Terms

In respect of the Index, the terms defined below have the following meaning in the Index Rules:

"**Acceptance Conditions**" has the meaning given to it in Section 4.8.

"**Actual Identified Reference Index Adjustment Determination**" has the meaning given to it in Section 11.8.

"**Actual Identified Reference Index Adjustment Outcome**" has the meaning given to it in Section 11.8.

"**Adjustment Multiplier**" means, in respect of an Eligible Stock and a Calculation Day, the Corporate Action Multiplier for such Eligible Stock associated with the most recent Corporate Action Effective Date that falls on or before such Calculation Day.

"**Adjustment Provisions**" means in relation to these Index Rules or any Eligible Stock or Constituent Stock (as applicable), all relevant provisions of these Index Rules that provide for any adjustment, delay, modification, cancellation or determination in relation to the Index, any Eligible Stock or Constituent Stock (as applicable), the valuation procedure for a Constituent Stock or the Index Rules (including, without limitation, as set forth in Sections 9, 10 and 11).

"**Affected Constituent**" has the meaning given to it in Section 11.2.

"**Affected Information**" has the meaning given to it in Section 11.1.

"**Affected Stock**" has the meaning given to it in Section 11.3.

"**Affiliate**" means in relation to any entity (the "**First Entity**"), any entity controlled, directly or indirectly, by the First Entity, any entity that controls, directly or indirectly, the First Entity or any entity directly or indirectly under common control with the First Entity. For these purposes "**control**" means ownership of a majority of the voting power of an entity.

"**Associated Currency**" means, in respect of an Eligible Stock or a Constituent Stock (as applicable), the currency in respect of which the Eligible Stock or the Constituent Stock (as applicable) is denominated, as determined by the Constituent Stock Determination Agent or the Index Calculation Agent (as applicable).

"**Assumed Borrow Cost Adjustment Factor**" has the meaning given to it in Section 3.1

"**Assumed Financing Cost Adjustment Factor**" has the meaning given to it in Section 3.1

"**Base Factor Definitions**" has the meaning given to it in Section 3.5.

"**Base Factor Eligibility Requirement**" means the additional criteria (if any) specified in Section 3.2.

"**Base Factor Weight In Composite Factor**" has the meaning given to it in Section 3.3.

"**Base Factor**" has the meaning given to it in Section 3.2.

"**Base Reference Data Source**" means MSCI data, which is accessed via QA Direct

"**Base Reference Index Level**" means the official closing level of the Base Reference Index, as calculated and published by the Base Reference Index Sponsor.

"**Base Reference Index Sponsor**" has the meaning given to it in Section 3.

"**Base Reference Index**" has the meaning given to it in Section 3.

"**Base Reference Portfolio**" has the meaning given to it in Section 4.8.

"**Base Reference Weight**"	has the meaning given to it in Section 4.2.
"**Basket Base Date**"	has the meaning given to it in Section 3.
"**Borrow Data Provider**"	has the meaning given to it in Section 3
"**Borrow Penalty Multiplier**"	has the meaning given to it in Section 3.1
"**Borrow Penalty Variable**"	has the meaning given to it in Section 4.9.
"**Calculation Day (t)**"	means the Calculation Day in respect of which a calculation or determination is being made.
"**Calculation Day**"	has the meaning given to it in the Section 3
"**Cash Index Level**"	means, in respect of a Calculation Day, the official closing level of the Cash Index, as calculated and published by the Cash Index Sponsor, or if such Calculation Day is a day on which the Cash Index Sponsor is not scheduled to publish the Cash Index Level, then the official closing level for such Cash Index in respect of the Constituent Scheduled Trading Day immediately preceding such Calculation Day that is not a Disrupted Day.
"**Cash Index Sponsor**"	has the meaning given to it in Section 3
"**Cash Index**"	has the meaning given to it in Section 3
"**Cash NOU_k**"	has the meaning given to it in Section 5.2(c).
"**Change in Law**"	means, in respect of the Index, on or after the Index Live Date for the Index, the adoption of, or any change in, any applicable law, regulation, order or rule (including, without limitation, any tax law) or the promulgation of, or any change in, the interpretation, application, exercise or operation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including, without limitation, as implemented by any exchange or trading facility), the Index Sponsor determines that it is or will be contrary to such law, regulation, order or rule for any market participants that are brokers or financial intermediaries (individually or collectively) to hold, acquire or dispose of (in whole or in part) any transaction or interest in or relating to a Universe Stock, Eligible Stock or Constituent Stock (as applicable).
"**Closing Price**"	means, subject to the provisions set out in Section 10 (Disruption Provisions) in respect of a Constituent Stock and a Calculation Day, the official closing price expressed in the relevant currency unit for such Constituent Stock for such Calculation Day, or if such Calculation Day is a Disrupted Day in respect of such Constituent Stock or is a day on which the Exchange in respect of such Constituent Stock is not scheduled to be open for trading during its regular trading session, the official closing price expressed in the relevant currency unit for such Constituent Stock in respect of the Constituent Scheduled Trading Day for such Constituent Stock immediately preceding such Calculation Day that is not a Disrupted Day.
"**Composite Factor**"	has the meaning given to it in Section 3.3.
"**Consistent Adjustment Outcome**"	has the meaning given to it in Section 11.8.
"**Consolidated Traded Notional Quantity**"	has the meaning given to it in Section 3.7.
"**Constituent Company**"	means, in respect of an Eligible Stock or a Constituent Stock (as applicable) and the Index, the issuer of such Eligible Stock or Constituent Stock (as applicable).

"**Constituent Scheduled Trading Day**" means, (i) in respect of a Constituent Stock, any day on which the relevant Exchange and the relevant Related Exchange in respect of such Constituent Stock are scheduled to be open for trading during their respective regular trading session(s) and (ii) in respect of the Cash Index, any day on which the Cash Index Sponsor is scheduled to calculate and publish the official closing level of the Cash Index.

"**Constituent Stock (i)**" means, in respect of a Calculation Day, each Constituent Stock as determined pursuant to Sections 4 and 5.

"**Constituent Stock Determination Agent**" has the meaning given to it in Section 7.

"**Constituent Stock Events**" has the meaning given to it in Section 11.8.

"**Constituent Stock**" means, in respect of a Calculation Day each of a Long Basket Constituent Stock or a Short Basket Constituent Stock as determined pursuant to Sections 4 and 5.

"**Constituent Stocks**" has the meaning given to it in Section 5.1.

"**Constituent Weights**" has the meaning given to it in Section 5.1.

"**Corporate Action Effective Date**" means, in respect of a Corporate Action Multiplier for an Eligible Stock and a calendar day, the corporate action effective date associated with such Corporate Action Multiplier, as identified by the "AdjDate" identifier in the Share Data Source.

"**Corporate Action Multiplier**" means, in respect of an Eligible Stock and a calendar day, the corporate action multiplier for such Eligible Stock in respect of such calendar day, as identified by the "CumAdjFactor" identifier in the Share Data Source.

"**Corporate Action**" has the meaning given to it in Section 11.8.

"**Corporate Event**" has the meaning given to it in Section 11.8.

"**Country Exposure Penalty Multiplier**" has the meaning given to it in Section 3.1

"**Country Exposure Penalty Variable**" has the meaning given to it in Section 4.9.

"**Country of Incorporation**" means, in respect of an Eligible Stock or a Constituent Stock (as applicable), the jurisdiction where a company is incorporated (as reported by a relevant or recognized information provider chosen by the Constituent Stock Determination Agent, such as the Base Reference Data Source, Bloomberg or Thomson Reuters Datastream)

"**Country**" means, in respect of an Eligible Stock or a Constituent Stock (as applicable), its Country of Incorporation

"**Current Weight**" has the meaning given to it in Section 5.2(d).

"**Data Reference Time**" has the meaning given to it in Section 3.1

"**Data Source Disrupted Date**" has the meaning given to it in Section 10.4.

"**Data Source Disruption Event**" means, in respect of a Rebalance Selection Date, the occurrence of an event where the number of Eligible Stocks that are not Excluded Stocks is less than the Source Data Threshold Number for any reason (including, without limitation, due to missing data or data considered missing for some Eligible Stocks or due to technology issues affecting the Constituent Stock Determination Agent, the applicable Data Source or Data Sources, or the means by which such data is accessed or other factors that result in such unavailability)

"**Data Source**" has the meaning given to it in Section 3.6, and shall also include as applicable the Share Data Source, the Fundamentals Data Source, the

Estimates Data Source, the FX Data Source, the Base Reference Data Source, the Risk Model Data Source, the Borrow Data Provider, and any data source selected by the Constituent Stock Determination Agent that provides the composition of the Base Reference Index or the Base Reference Index Level.

"**Declared Dividend**" means, in respect of a Calculation Day (t) and a Constituent Stock (i), 100 percent of the cash dividend per share of the Constituent Stock for the related Ex-Dividend Date as declared by the issuer of the Constituent Stock to a non-domestic institutional investor (i.e., an institutional investor located outside of the jurisdiction of organisation of the issuer of the Constituent Stock) in shares of that Constituent Stock as determined by the Index Calculation Agent or the Index Sponsor (as applicable) by reference to published dividends rates (as published by the relevant or recognized information providers such as Bloomberg, Datastream or Markit).

"**Defined Borrow Rate**" has the meaning given to it in Section 3.10(a).

"**Delisted Stock**" has the meaning given to it in Section 5.1.

"**Determination Period**" has the meaning given to it in Section 5.1.

"**Disrupted Cash Calculation Day**" has the meaning given to it in Section 10.1.

"**Disrupted Constituent**" has the meaning given to it in Section 10.1 or Section 10.2 (as the case may be).

"**Disrupted Day**" means (i) in respect of a Constituent Stock, any Constituent Scheduled Trading Day or Calculation Day (as the case may be) on which a relevant Exchange or any relevant Related Exchange fails to open for trading during its regular trading session or on which a Market Disruption Event for that Constituent Stock has occurred and (ii) in respect of the Cash Index, any Constituent Scheduled Trading Day on which the Cash Index Sponsor fails to publish the Cash Index Level.

"**Disrupted Effective Rebalancing Date**" has the meaning given to it in Section 10.2.

"**Disrupted Rebalance Constituent**" has the meaning given to it in Section 10.1.

"**Disrupted Stock Calculation Day**" has the meaning given to it in Section 10.1.

"**Disruption Determination Agent**" has the meaning given to it in Section 3.1

"**Disruption Determination Date**" has the meaning given to it in Section 10.2.

"**Disruption Resolution Calculation Day**" has the meaning given to it in Section 10.2.

"**Dollar Base Reference Consolidated Market Capitalization**" has the meaning given to it in Section 3.8(a).

"**Dollar Base Reference Free-Float Market Capitalization**" has the meaning given to it in Section 3.8(c).

"**Dollar Consolidated Market Capitalization**" has the meaning given to it in Section 3.8(b).

"**Dollar Notional Trading Estimate**" has the meaning given to it in Section 3.7.

"**Early Closure**" means the closure on any Exchange Business Day of any relevant Exchange(s) or any relevant Related Exchange(s) prior to its Scheduled Closing Time unless such earlier closing time is announced by such Exchange(s) or such Related Exchange(s), as the case may be, at least one hour prior to the earlier of (a) the actual closing time for the regular trading session on such Exchange(s) or such Related Exchange(s) on such Exchange Business Day and (b) the submission deadline for orders to be entered into the Exchange or Related

	Exchange system for execution at the Scheduled Closing Time on such Exchange Business Day.
"**Effective Rebalancing Date**"	has the meaning given to it in Section 3.
"**Eligible Countries**"	means, in respect of a Rebalance Selection Date (t), the set of all Countries of Incorporation associated with an Eligible Stock
"**Eligible Sectors**"	means, in respect of a Rebalance Selection Date (t), the set of all Stock Sectors associated with an Eligible Stock
"**Eligible Stock (i)**"	means the Eligible Stock corresponding to integer (i)
"**Eligible Stocks**"	means, in respect of a Rebalance Selection Date, each of the stocks selected in accordance with the selection methodology set forth in Section 4.1.
"**Enhanced Ratio**"	has the meaning given to it in Section 3.12(b).
"Estimates Data Source"	means monthly I/B/E/S history data, which is accessed via QA Direct
"**Exchange Business Day**"	means, in respect of a Constituent Stock, any Constituent Scheduled Trading Day on which the relevant Exchange and the relevant Related Exchange, if any, in respect of such Constituent Stock are open for trading during their respective regular trading session(s), notwithstanding any such relevant Exchange or relevant Related Exchange closing prior to their Scheduled Closing Time.
"**Exchange Disruption**"	means any event (other than an Early Closure) that disrupts or impairs (as determined by the Disruption Determination Agent) the ability of market participants in general (i) to effect transactions in, or obtain market values for the Constituent Stock on an Exchange or (ii) to effect transactions in, or obtain market values for, futures or options contracts relating to the Constituent Stock on any relevant Related Exchange.
"**Exchange**"	means in respect of an Eligible Stock or a Constituent Stock (as applicable), the principal exchange or quotation system on which the Eligible Stock or the Constituent Stock (as applicable) is listed (or any successor to such exchange or quotation system or any substitute exchange or quotation system to which trading in such Eligible Stock or Constituent Stock (as applicable) has temporarily relocated, provided that the Disruption Determination Agent or the Index Calculation Agent (as applicable) has determined that there is comparable liquidity for such Eligible Stock or Constituent Stock (as applicable) on such temporary substitute exchange or quotation system as on the original Exchange), as determined by the Disruption Determination Agent or the Index Calculation Agent (as applicable).
"**Excluded Stock**"	has the meaning given to it in Section 4.8(b).
"**Ex-Dividend Date**"	means, in respect of a Declared Dividend for a Constituent Stock, the first day on which the relevant Constituent Stock commences trading ex-dividend on the Exchange in respect of the dividend as determined by the Index Calculation Agent or the Index Sponsor (as applicable).
"**Extraordinary Event**"	means any event described in Section 11 (*Extraordinary Events*).
"**Factor Definitions**"	has the meaning given to it in Section 3.5.
"**Filled Borrow Rate**"	has the meaning given to it in Section 3.10(b).
"**Filtered Output Portfolio**"	has the meaning given to it in Section 4.10.

"**Final Factor Score**"	has the meaning given to it in Section 3.4.means, in respect of an Eligible Stock, a Final Factor and a Rebalance Selection Date, the Factor Score in respect of such Eligible Stock, such Final Factor and such Rebalance Selection Date
"**Final Factor**"	has the meaning given to it in Section 3.4.
"**Final Low Volatility Factor Score**"	has the meaning given to it in Section 4.3.
"**Final Lower Bound**"	has the meaning given to it in Section 4.8(b).
"**Final Momentum Factor Score**"	has the meaning given to it in Section 4.3.
"**Final Quality Factor Score**"	has the meaning given to it in Section 4.7.
"**Final Size Factor Score**"	has the meaning given to it in Section 4.3.
"**Final Upper Bound**"	has the meaning given to it in Section 4.8(b).
"**Final Value Factor Score**"	has the meaning given to it in Section 4.5.
"**First Following Non-Disrupted Day**"	has the meaning given to it in Section 10.2.
"**First Preliminary Lower Bound**"	has the meaning given to it in Section 4.8.
"**First Preliminary Upper Bound**"	has the meaning given to it in Section 4.8.
"**Fundamentals Data Source**"	means Reuters Fundamentals, which is accessed via QA Direct
"FX Data Source"	means (a) Thomson Reuters Datastream, which is accessed via QA Direct, for Selection Currency Rate determinations made by the Constituent Stock Determination Agent, or (b) the WM Company, which is accessed via Bloomberg by reference to page WMCO (or any successor to such page or service) in respect of FX Rate determinations made by the Index Calculation Agent
"**FX Rate**"	means, in respect of a Constituent Stock and a calendar day (t), (a) the most recent closing spot rate corresponding to the number of units of the Index Currency for which one unit of the relevant Associated Currency may be exchanged in respect of a calendar day that falls on or before calendar day (t) (the "**First Rate**") as determined by the Constituent Stock Determination Agent by reference to the FX Data Source, or (b) one (1) divided by the most recent closing spot rate corresponding to the number of units of the relevant Associated Currency for which one unit of the Index Currency may be exchanged in respect of a calendar day that falls on or before calendar day (t) (the "**Second Rate**") as determined by the Constituent Stock Determination Agent by reference to the FX Data Source, if the Second Rate is more recent than the First Rate.
"**Gross Dividend Amount**"	means, in respect of a Constituent Stock (i), the Declared Dividend
"**Group**"	has the meaning given to it in Section 4.1
"**Grouping Criteria**"	has the meaning given to it in Section 3.1.
"**Identified Reference Index Sponsor**"	has the meaning given to it in Section 3.1
"**Identified Reference Index**"	has the meaning given to it in Section 3.1
"**Incoming Constituent**"	means, in respect of an Effective Rebalancing Date, a stock that has been selected pursuant to Sections 4 and 5 to be included in the Index with effect from but excluding such Effective Rebalancing Date.
"**Index Adjustment Cost Factor**"	has the meaning given to it in the Section 3.1.
"**Index Base Date**"	has the meaning given to it in the Section 3.1.

"**Index Base Level**"	has the meaning given to it in the Section 3.1.
"**Index Bloomberg Ticker**"	has the meaning given to it in Section 3.1.
"**Index Calculation Agent**"	has the meaning given in Section 7.1.
"**Index Currency**"	has the meaning given to it in the Section 3.1.
"**Index Level**"	means the level of the Index as determined and calculated in accordance with Section 5.2(f).
"**Index Live Date**"	has the meaning given to it in the Section 3.1.
"**Index Rationale**"	has the meaning given to it in the Section 3.1.
"**Index Rules**"	has the meaning set forth in Section 1.
"**Index Scheduled Trading Day**"	has the meaning given to it in Section 3.1
"**Index Sponsor**"	has the meaning given in Section 7.1.
"**Index**"	has the meaning set forth in Section 1.
"**k^{th} Group Normalized Base Factor Score**"	has the meaning given to it in Section 4.3.
"**k^{th} Group Normalized Quality Factor Score**"	has the meaning given to it in Section 4.7.
"**k^{th} Group Normalized Value Factor Score**"	has the meaning given to it in Section 4.5.
"**Liquidity Notional**"	has the meaning given to it in Section 3.1
"**London Scheduled Business Day**"	means each day that is both (i) a Calculation Day and (ii) a day on which the London Stock Exchange is scheduled to be open for its regular trading session.
"**Long Basket Constituent Stock**"	means any stock included in the Long Basket.
"**Long Basket Constituent Weights**"	has the meaning given to it in Section 5.1.
"**Long Basket Divisor**"	has the meaning given to it in Section 5.2(a).
"**Long Basket Level**"	has the meaning given to it in Section 5.2(a).
"**Long Basket**"	has the meaning given to it in Section 2.
"**Long Delta**"	has the meaning given to it in Section 4.8(b).
"**Long NOU_k**"	has the meaning given to it in Section 5.2(c).
"**Long Output Portfolio**"	has the meaning given to it in Section 4.8(b).
"**Low Volatility Factor**"	has the meaning given to it in Section 3.2.
"**Market Disruption Event**"	means, in relation to a Constituent Stock, the occurrence or existence of (i) a Trading Disruption, (ii) an Exchange Disruption, in the case of clause (i) or clause (ii) at any time during the one hour period that ends at the Scheduled Closing Time for such Constituent Stock, or (iii) an Early Closure, which in the case of clause (i), clause (ii) or clause (iii) the Disruption Determination Agent determines is material.
"**Maximum Absolute Beta**"	has the meaning given to it in Section 3.1
"**Maximum Absolute Factor Score Difference**"	has the meaning given to it in Section 3.1
"**Maximum Absolute Weight**"	has the meaning given to it in Section 3.1
"**Maximum Holding Liquidity Ratio**"	has the meaning given to it in Section 3.1
"**Maximum Long Country Exposure Deviation**"	has the meaning given to it in Section 3.1
"**Maximum Long Sector Exposure Deviation**"	has the meaning given to it in Section 3.1

"**Maximum Missing Final Factor Scores Number**" has the meaning given to it in Section 3.1

"**Maximum Monthly Turnover**" has the meaning given to it in Section 3.1

"**Maximum Net Country Exposure Deviation**" has the meaning given to it in Section 3.1

"**Maximum Net Sector Exposure Deviation**" has the meaning given to it in Section 3.1

"**Maximum Short Leg Borrow Rate**" has the meaning given to it in Section 3.1

"**Maximum Short Stock Borrow Rate**" has the meaning given to it in Section 3.1

"**Maximum Trading Liquidity Ratio**" has the meaning given to it in Section 3.1

"**Maximum Volatility**" has the meaning given to it in Section 3.1

"**Mean Analyst Consensus Estimate**" has the meaning given to it in Section 3.1

"**Minimum Long Delta Accepted**" has the meaning given to it in Section 3.1

"**Missing Factor Input Event**" has the meaning given to it in Section 4.1.

"**Missing Value Event**" has the meaning given to it in Section 4.1.

"**Non-Disrupted Constituent**" has the meaning given to it in Section 10.2.

"**Normalized Base Factor Score**" has the meaning given to it in Section 4.3.

"**Number of Long Stocks**" has the meaning given to it in Section 5.1.

"**Number of Shares**" has the meaning given to it in Section 5.2(a).

"**Number of Short Stocks**" has the meaning given to it in Section 5.1.

"**Objective Function**" has the meaning given to it in Section 4.8.

"**Optimization Constraints**" has the meaning given to it in Section 4.8.

"**Optimization Methodology**" has the meaning given to it in Section 2.

"**Optimization Relaxation Procedure**" has the meaning given to it in Section 4.8(c).

"**Optimizer Software**" has the meaning given to it in Sections 2 and 3.1.

"**Original Sectors**" has the meaning given to it in Section 3.12.

"**Outgoing Constituent**" means, in respect of an Effective Rebalancing Date, a stock that was a Constituent Stock immediately before such Effective Rebalancing Date.

"**Output Portfolio**" has the meaning given to it in Sections 2.

"**Output Weight**" has the meaning given to it in Section 4.8(a).

"**Preliminary Base Factor Score**" has the meaning given to it in Section 4.1.

"**Preliminary Composite Factor Score**" has the meaning given to it in Section 4.4.

"**Preliminary Constituent Stock**" means, in respect of a Rebalance Selection Date, each of a Preliminary Long Basket Constituent Stock or a Preliminary Short Basket Constituent Stock as determined pursuant to Section 4.

"**Preliminary Constituent Weight**" means, in respect of a Rebalance Selection Date, each of a Preliminary Long Basket Constituent Weight or a Preliminary Short Basket Constituent Weight as determined pursuant to Section 4.

"**Preliminary Long Basket Constituent Stocks**" has the meaning given to it in Section 4.10.

"**Preliminary Long Basket Constituent Weights**" has the meaning given to it in Section 4.10.

"**Preliminary Quality Factor Score**" has the meaning given to it in Section 4.6.

"**Preliminary Short Basket Constituent Stocks**" has the meaning given to it in Section 4.10.

“**Preliminary Short Basket Constituent Weights**”	has the meaning given to it in Section 4.10.
“**Price Momentum Factor**”	has the meaning given to it in Section 3.4.
“**Price Reference Date**”	has the meaning given to it in Section 3.5.1 or in Section 3.5.2.
“**Primary Traded Notional Quantity**”	has the meaning given to it in Section 3.7.
“**Product**”	has the meaning given to it in the Section entitled “Notices, Disclaimers and Conflicts”
“**QG GScore Factor**”	has the meaning given to it in Section 3.3.
“**QV FScore Factor**”	has the meaning given to it in Section 3.3.
“**RAF_t**”	has the meaning given to it in Section 5.2(e).
“**Rebalance Adjustment Factor**”	has the meaning given to it in 5.2(c).
“**Rebalance Selection Date (t)**”	means the Rebalance Selection Date in respect of which the rebalancing selection is made.
“**Rebalance Selection Date**”	has the meaning given to it in Section 3.1.
“**Rebalancing Cost Percentage**”	has the meaning given to it in Section 3.1.
“**Related Exchange**”	means, in relation to an Eligible Stock or a Constituent Stock (as applicable), each exchange or quotation system where trading has a material effect (as determined by the Constituent Stock Determination Agent or the Index Calculation Agent, as applicable) on the overall market for futures or options contracts relating to the relevant Eligible Stock or Constituent Stock (as applicable).
“**Relaxation Event**”	has the meaning given to it in Section 4.9(c).
“**Relaxation Steps**”	has the meaning given to it in Section 4.9(b).
“**Relaxed Objective Function**”	has the meaning given to it in Section 4.9(d).
“**Relaxed Optimization Constraints**”	has the meaning given to it in Section 4.9(f).
“**Relevant Parties**”	has the meaning given to it in Section 11.1.
“**Relevant Person**”	has the meaning given to it in the Section entitled “Notices, Disclaimers and Conflicts”
“**Risk Model Covariance**”	has the meaning given to it in Section 3.9.
“**Risk Model Data Source**”	means MSCI Barra
“**Risk Model Factor**”	has the meaning given to it in Section 3.9.
“**Risk Model Variance**”	has the meaning given to it in Section 3.9.
“**Risk Model**”	has the meaning given to it in Section 3.1.
“**Scheduled Closing Time**”	means, in respect of an Exchange or Related Exchange and a Constituent Scheduled Trading Day, the scheduled weekday closing time of such Exchange or Related Exchange on such Constituent Scheduled Trading Day, without regard to after hours or any other trading outside of the regular trading session hours.
“**Scheduled Rebalancing Date**”	has the meaning given to it in Section 3.1.
“**Second Preliminary Lower Bound**”	has the meaning given to it in Section 4.8(b).
“**Second Preliminary Upper Bound**”	has the meaning given to it in Section 4.8(b).
“**Sector Exposure Penalty Multiplier**”	has the meaning given to it in Section 3.1
“**Sector Exposure Penalty Variable**”	has the meaning given to it in Section 4.9(e).

"**Selected Output Portfolio**" has the meaning given to it in Sections 4.8(c) or 4.9(a).

"**Selected Traded Notional Quantity**" has the meaning given to it in Section 3.7.

"**Selection Currency Rate**" means, in respect of a calendar day (t) and a currency in which a relevant financial metric is denominated (a "**Metric Currency**"), as specified in the relevant table, (a) the most recent closing spot rate corresponding to the number of units of the Index Currency for which one unit of the Metric Currency may be exchanged in respect of a calendar day that falls on or before calendar day (t) (the "**First Rate**") as determined by the Constituent Stock Determination Agent by reference to the FX Data Source, or (b) one (1) divided by the most recent closing spot rate corresponding to the number of units of the Metric Currency for which one unit of the Index Currency may be exchanged in respect of a calendar day that falls on or before calendar day (t) (the "**Second Rate**") as determined by the Constituent Stock Determination Agent by reference to the FX Data Source, if the Second Rate is more recent than the First Rate.

"**Share Data Source**" means Thomson Reuters Datastream, which is accessed via QA Direct

"**Short Basket Constituent Stock**" means any stock that is included in the Short Basket.

"**Short Basket Constituent Stocks**" has the meaning given to it in Section 5.1.

"**Short Basket Constituent Weights**" has the meaning given to it in Section 5.1.

"**Short Basket Divisor**" has the meaning given to it in Section 5.2(b).

"**Short Basket Level**" has the meaning given to it in Section 5.2(b).

"**Short Basket**" has the meaning given to it in Section 2.

"**Short NOU_k**" has the meaning given to it in Section 5.2(c).

"**Short Output Portfolio**" has the meaning given to it in Section 4.8(b).

"**Simulated Identified Reference Index Adjustment Determination**" has the meaning given to it in Section 11.8.

"**Simulated Identified Reference Index Adjustment Outcome**" has the meaning given to it in Section 11.8.

"**Size Factor**" has the meaning given to it in Section 3.2.

"**Small Weight Threshold**" has the meaning given to it in Section 3.1

"**Source Data Threshold Number**" has the meaning given to it in Section 3.1.

"**Stock Region**" has the meaning given to it in Section 3.12.

"**Stock Sector Region Pair Group**" has the meaning given to it in Section 3.12.

"**Stock Sector**" has the meaning given to it in Section 3.12.

"**Temporary Optimizer Software Failure**" has the meaning given to it in Section 4.8 or 4.9.

"**Trading Disruption**" means any suspension of or limitation imposed on trading by the relevant Exchange or Related Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the relevant Exchange or Related Exchange or otherwise: (a) relating to the Constituent Stock on the Exchange; or (b) in futures or options contracts relating to the relevant Constituent Stock on any relevant Related Exchange.

"**Universe Stock**" has the meaning given to it in Section 4.1.

"**Value Factor**" has the meaning given to it in Section 3.3.

14. Versions of the Index Rules and Index Adjustments

Any amendment or adjustment to the Index Rules for the Index and the effective date of any such amendment or adjustment may but does not have to be reflected in a revised version of the Index Rules. Copies of the latest issue of the Index Rules or details of relevant adjustments (where not reflected in a revised version of the Index Rules) are available as specified in Section 6.1.

Version	Date	Amendment
1.0	7 September 2017	Not applicable (First release)

15. Disclaimers

MSCI

The MSCI Daily Total Return Gross World USD Index (the "**MSCI World Index**") was used by the Index Sponsor as the reference universe for selection of the companies included in the Index. MSCI does not in any way sponsor, support, promote or endorse the Index. MSCI was not and is not involved in any way in the creation, calculation, maintenance or review of the Index. The MSCI World Index was provided to the Index Sponsor on an "as is" basis. MSCI, each of its affiliates and each other person involved in or related to compiling, computing or creating the MSCI World Index (collectively, the "**MSCI Parties**") expressly disclaim all warranties (including, without limitation, any warranties of originality, accuracy, completeness, timeliness, non-infringement, merchantability and fitness for a particular purpose). Without limiting any of the foregoing, in no event shall any MSCI Party have any liability for any direct, indirect, special, incidental, punitive, consequential (including, without limitation, lost profits) or any other damages in connection with the MSCI World Index or the Index.

Barra

Barra, LLC ("Barra") data was used by J.P. Morgan in the selection and weighting process of companies included in the Index. Barra does not in any way sponsor, support, promote or endorse the Index.Barra was not and is not involved in any way in the creation, calculation, maintenance or review of the Index. The Barra data was provided on an "as is" basis. Barra each of its affiliates and each other person involved in or related to compiling, computing or creating the data (collectively, the "Barra Parties") expressly disclaim all warranties (including, without limitation, any warranties of originality, accuracy, completeness, timeliness, non infringement, merchantability and fitness for a particular purpose). Without limiting any of the foregoing, in no event shall any of the Barra Parties have any liability for any direct, indirect, special, incidental, punitive, consequential (including, without limitation, lost profits) or any other damages in connection with the Barra data or the Index.

Solactive AG

The Index (and any financial instrument referencing the Index) is not sponsored, promoted, sold or supported in any other manner by Solactive AG nor does Solactive AG offer any express or implicit guarantee or assurance either with regard to the results of using the Index and/or Index trade mark or the Index Level at any time or in any other respect. The Index is calculated and published by Solactive AG. Solactive AG uses its best efforts to ensure that the Index is calculated correctly. Irrespective of its obligations towards the issuer of any financial instrument, Solactive AG has no obligation to point out errors in the Index to third parties including but not limited to investors and/or financial intermediaries of any financial instrument. Neither publication of the Index by Solactive AG nor the licensing of the Index or Index trade mark for the purpose of use in connection with the financial instrument constitutes a recommendation by Solactive AG to invest capital in said financial instrument nor does it in any way represent an assurance or opinion of Solactive AG with regard to any investment in this financial instrument.

Description of Component Underlyings that are UCITS Funds

Janus Henderson United Kingdom Absolute Return Fund

According to its public statements, the Janus Henderson United Kingdom Absolute Return Fund (the "**Fund**"), is an open-end fund organized in Luxembourg, managed by Henderson Management S.A.

According to its public statements, the Fund aims to achieve a positive absolute return over the long term regardless of market conditions, though a positive absolute return is not guaranteed over any time period. The Fund will typically invest at least 60% of its total assets, by taking long and short positions, in equities or equity related derivative contracts of: -companies having their registered office in the United Kingdom; and companies that do not have their registered office in the United Kingdom but either (i) carry out a predominant proportion of their business activity in these markets, or (ii) are holding companies which predominantly own companies with registered offices in the United Kingdom, or (iii) are listed on the London Stock Exchange. In addition, in seeking to implement the Fund's investment strategy, manage market exposure and ensure that the Fund remains sufficiently liquid to cover obligations arising from its derivative positions, a substantial proportion of the Fund's assets may at any time consist of cash, near cash, deposits and/or money market instruments. The Fund will invest in companies of any market capitalisation. Long positions may be held through a combination of direct investment and/or derivative instruments, and short positions will be held through derivative positions, including but not limited to swaps and futures. The use of derivatives forms an important part of the investment strategy. The Fund may also invest at the investment manager's discretion in other transferable securities, derivative instruments and collective investment schemes.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund accessible though www.janushenderson.com, and the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

BlackRock Global Multi-Asset Income Fund

According to its public statements, the BlackRock Global Multi-Asset Income Fund (the "**Fund**"), is an open-end fund organized in Luxembourg.

According to its public statements, the Fund follows a flexible asset allocation policy that seeks an above average income without sacrificing long term capital growth. The Fund invests globally in the full spectrum of permitted investments including equities, equity-related securities, fixed income transferable securities (which may include some high yield fixed income transferable securities), units of undertakings for collective investment, cash, deposits and money market instruments.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund accessible though www.blackrock.com, and the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

DWS Concept Kaldemorgen

According to its public statements, DWS Concept Kaldemorgen (the "**Fund**"), is an open-end fund organized in Luxembourg, managed by DWS Investment S.A.

The Fund states that its objective is to achieve a total return in Euro by investing in different markets and instruments depending on the overall economic cycle and assessment of the fund management. It also intends to build up long and synthetic short positions profiting from respective over- and undervaluation of various asset classes/instruments and to take advantage of the ability to invest in derivatives for hedging market risks. The Fund is intended for the growth-oriented investor seeking returns higher than those from capital-market interest rates, with capital growth generated primarily through opportunities in the equity and currency markets. Security and liquidity are subordinate to potential high returns. This entails higher equity, interest-rate and currency risks, as well as default risks, all of which can result in loss of capital.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund accessible though www.funds.dws.com, and the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

Merian Global Equity Absolute Return Fund

According to its public statements, the Merian Global Equity Absolute Return Fund (the "**Fund**"), is an open-end fund incorporated In Ireland, managed by Merian Global Investors (UK) Limited.

The Fund states that its objective is capital growth, while closely controlling risk. The Fund also aims to deliver an absolute return (above zero performance, irrespective of market conditions) over rolling 12 month periods. The Fund aims to achieve its objective within a volatility limit of up to 6 per cent. The Fund may invest in company shares and similar investments listed or located anywhere in the world. The Fund will adopt a structured neutral position (balancing long and short positions aiming to build a portfolio with zero market exposure) at all times. The Fund will hold a long position (benefit from buying an asset with the aim of selling it later at a higher price relative to the market) in an investment expected to outperform the market, and short (benefit from the sale of an asset with the aim of buying it later at a lower price relative to the market) an investment expected to underperform the market. The Fund uses derivatives (i.e. financial contracts whose value is linked to the expected price movements of an underlying investment), with the aim of generating returns and reducing the overall costs and/or risks of the Fund. The Fund can take long and short positions through the use of derivatives, which may result in the Fund being leveraged. Leverage magnifies the exposure of the Fund to greater than the underlying investments. In such situations, returns may rise or fall more than they would have done otherwise, reflecting such additional exposure. Portfolio construction is driven by systematic analysis of companies against several distinct characteristics including stock price valuation, balance sheet quality, growth characteristics, efficient use of capital, analyst sentiment and supportive market trends to identify attractively priced investment opportunities.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website of Morningstar accessible though www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

AB American Income Portfolio

According to its public statements, the AB American Income Portfolio (the "**Fund**"), is an open-end fund organized in Luxembourg, managed by AllianceBernstein (Luxembourg).

The Fund states that its objective is to provide a high level of current income consistent with preservation of capital by employing a US dollar-denominated multi-sector bond approach in search of the best opportunities; dynamically balancing credit and duration through investments in high yield and emerging market sectors to enhance income and dampen interest-rate risk, and in high-quality government bonds to alleviate credit risk when markets are stressed; limiting exposure to below investment-grade rated bonds to 50% and avoiding CCC-rated issuers.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund is available through the website for the Fund accessible though www.alliancebernstein.com and through the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

AXA World Funds – Global Inflation Bonds

According to its public statements, AXA World Funds – Global Inflation Bonds (the "**Fund**"), is an open-end fund organized in Luxembourg, managed by AXA Funds Management S.A.

The Fund states that its objective is to seek performance by investing mainly in inflation-linked bonds issued in OECD countries, over a medium term period.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund accessible though www.axa.com, and the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

GAM Star Credit Opportunities Fund

According to its public statements, the GAM Star Credit Opportunities Fund (the "**Fund**"), is an open-end fund organized in Ireland, managed by GAM Fund Management Limited.

The Fund states that its objective is to achieve capital gain in US Dollars. The Fund seeks to achieve this objective through investment principally on a worldwide basis (up to 25% of net assets may be in Emerging Markets) in income bearing or accruing securities with fixed principal amount s including government bonds, corporate bonds, junior debt securities, preferred shares, convertible securities and contingent capital notes.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund accessible though www.gam.com, and the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

Jupiter JGF Dynamic Bond Fund

According to its public statements, the Jupiter JGF Dynamic Bond Fund (the "**Fund**"), is an open-end fund organized in Luxembourg, managed by Jupiter Asset Management.

The Fund states that its objective is to achieve a high income with the prospect of capital growth from a portfolio of investments in global fixed interest securities.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund accessible though www.jupiteram.com, and the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

PIMCO GIS Capital Securities Fund

According to its public statements, the PIMCO GIS Capital Securities Fund (the "**Fund**"), is an open-end fund organized in Ireland, managed by PIMCO Global Advisers (Ireland) Limited.

The Fund states that it is an actively managed global portfolio that invests primarily in subordinated debt instruments issued by banks, insurance companies, and other specialty finance companies. Most investments will be concentrated in Tier1, Tier 2, and contingent convertible ("CoCo") Bonds though the fund maintains flexibility to invest across the capital structure.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund accessible though www.pimco.com, and the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

PIMCO GIS Income Fund

According to its public statements, the PIMCO Income Fund (the "**Fund**"), is an open-end fund organized in Ireland, managed by PIMCO Global Advisers (Ireland) Limited.

The Fund states that it is an actively managed global portfolio that invests primarily in subordinated debt instruments issued by banks, insurance companies, and other specialty finance companies. Most investments will be concentrated in Tier1, Tier 2, and contingent convertible ("CoCo") Bonds though the fund maintains flexibility to invest across the capital structure.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund accessible though www.pimco.com, and the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

Global Evolution Funds – Frontier Markets Fund

According to its public statements, the Global Evolution Funds – Frontier Markets Fund (the "**Fund**"), is an open-end fund organized in Luxembourg, managed by Global Evolution Manco S.A.

The Fund states that its investment objective is to create returns. To achieve the investment objective the Fund invests mainly in traditional transferable securities like hard currency debt securities (typically denominated in USD) and local currency fixed income securities issued by sovereigns, supra-nationals and/or multilaterals in Frontier Markets and a range of foreign exchange instruments.

Further information regarding the Fund, including the prospectus and other documents related thereto is available through the website for the Fund accessible though www.globalevolution.com, and the website of Morningstar accessible through www.morningstar.co.uk. The information available from such websites is not incorporated by reference into this document. Information regarding the Fund may also be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. The Index Sponsor makes no representation or warranty as to the accuracy or completeness of such information. As a prospective purchaser of an instrument linked to the Fund, you should undertake an independent investigation of the Fund as in their judgment is appropriate to make an informed decision with respect to an investment in an instrument linked to the performance of the Fund.

JPMORGAN CASH INDEX USD 3 MONTH

All information contained in this underlying supplement regarding the JPMorgan Cash Index USD 3 Month (the "Cash Index"), including, without limitation, its make-up, method of calculation and changes in its components, has been derived from publicly available information and information supplied by the Global Index Research Group ("**GIRG**") of JPMorgan Chase & Co., an affiliate and ultimate parent of the sponsor of the Index, without independent verification. This information reflects the policies of, and is subject to change by, GIRG. The Cash Index was developed by GIRG and is calculated, maintained and published by GIRG. GIRG has no obligation to continue to publish, and may discontinue the publication of, the Cash Index.

The level of the Cash Index is reported by Bloomberg L.P. under the ticker symbol "JPCAUS3M."

The Cash Index measures the total return performance of constant maturity euro-currency deposits in the U.S. dollar from rolling over a euro-currency deposit every business day. The Cash Index is calculated daily for three-month deposits in the U.S. dollar. The Cash Index has been constructed from December 31, 1985 using daily data. From September 1, 1990 forward, the Cash Index has used quotes for the LIBOR rates for the U.S. dollar from the ICE Benchmark Administration Limited ("**IBA**"), as the successor LIBOR administrator to the British Bankers' Association (see Reuters page LIBOR01). To calculate 3-month LIBOR, IBA collects U.S. dollar offered rates for deposits in the London interbank market with maturities of 3 months at 11:00 a.m., London time on each London business day from 18 designated banks. The top quartile and bottom quartile market quotes are disregarded and the middle two quartiles are averaged: the resulting "spot fixing" is the IBA 3-month LIBOR rate for the U.S. dollar for that business day.

The returns to euro-currency deposits are highly correlated with the returns to domestic money market instruments because the two markets are well arbitraged. Therefore, the euro-currency indices are representative of the domestic money markets returns.

GIRG only includes deposits with standard maturities because other quotes are typically a linear interpolation between two standard maturity deposits. Therefore, adding deposits with non-standard maturities offers no additional information.

The Cash Index has a relatively constant maturity. The Cash Index assumes GIRG rolls over the corresponding deposit every business day. The maturity or duration of the Cash Index is always equal to the term of the deposit; the actual number of days to maturity can vary due to settlement rules (*e.g.*, a one-month index can vary from 28 to 33 days). The more common approach is to buy, for example, a three-month deposit, hold it for one month, and then roll it over into the new three-month deposit. The maturity of this index would be three months at the beginning of the month and two months at the end. It is more useful to attribute daily cash returns to particular maturities rather than confuse the measurement of returns by varying the maturity.