Underlying supplement no. 23-II
To prospectus dated November 14, 2011 and
prospectus supplement dated November 14, 2011

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Dated March 26, 2014
Rule 424(b)(2)

JPMORGAN CHASE & CO.

Notes Linked to the J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1)

JPMorgan Chase & Co. may, from time to time, offer and sell notes linked in whole or in part to the J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1) (the "**Index**"). This underlying supplement no. 23-II describes the Index, the relationship between JPMorgan Chase & Co. and the sponsor of the Index and other relevant information. This underlying supplement no. 23-II supplements the terms described in the accompanying product supplement, prospectus supplement and prospectus. A separate term sheet or pricing supplement, as the case may be, will describe terms that apply to specific issuances of the notes. We refer to such term sheets and pricing supplements generally as terms supplements. The accompanying product supplement, the relevant terms supplement or another relevant underlying supplement will describe any other index or reference asset to which the notes are linked. If the terms described in the relevant terms supplement are inconsistent with those described herein or in any other relevant underlying supplement or in the accompanying product supplement, prospectus supplement or prospectus, the terms described in the relevant terms supplement will control. In addition, if this underlying supplement no. 23-II and the accompanying product supplement or another relevant underlying supplement contain information relating to the same index to which the notes are linked, the information contained in the document with the most recent date will control.

The Index is subject to a total of three types of fees and deductions:

- Daily index fee: on each day, the calculation of the Index reflects the deduction of an adjustment factor of 0.75% per annum (the "**Daily Index Fee**");

- Call deduction and put deduction: on a monthly or quarterly basis, as applicable, when the Index's synthetic short call or long put exposure, as applicable, is rolled into a new option contract on the S&P 500® Index (the "**Price Return Equity Index**"), a call deduction or put deduction, as applicable, is subtracted in the calculation of the Index. The call deduction or put deduction is calculated by multiplying the applicable volatility spread (which is between 0.30% and 3.00%) by the vega of the applicable option contract, subject to certain minimum and maximum amounts. The applicable volatility spread depends on the level of the CBOE Volatility Index (the "**Volatility Index**") on the relevant date of determination. Unlike the Daily Index Fee, the call deduction and the put deduction are not per annum percentage deductions; and

- Delta deduction: on each day the delta hedge (as described below) is implemented, 0.03% of any increase or decrease in the Index's exposure to the futures contracts on the Price Return Equity Index is deducted in the calculation of the Index. Unlike the Daily Index Fee, the delta deduction is not a per annum percentage deduction.

For additional information about the Index's fees and deductions, please see "The J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1) — Fees and Deductions" in this underlying supplement.

The level of the Index and the value of the notes will be adversely affected, perhaps significantly, if the performance of the underlying equity index, and option contracts and futures contracts on the underlying equity index is not sufficient to offset these adjustments and deductions. See "The reported level of the Index will be calculated net of fees and deductions" in this underlying supplement. For more information about these fees and deductions, see "The J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1) — Calculation and Publication of Index Levels" in this underlying supplement.

Notes linked to the Index are not suitable for all investors. Investors in the notes should understand that their investment is exposed to the performance of synthetic positions (including synthetic short positions) in option contracts whose value is determined based on equity volatility levels and synthetic positions in futures contracts, which can be volatile and move dramatically over short periods of time.

Investing in the notes involves a number of risks. See "Risk Factors" in the accompanying product supplement and "Risk Factors" beginning on page US-7.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the notes or passed upon the accuracy or the adequacy of this underlying supplement no. 23-II, the accompanying product supplement, prospectus supplement and prospectus, any other relevant underlying supplement or the relevant terms supplement. Any representation to the contrary is a criminal offense.

The notes are not bank deposits and are not insured by the Federal Deposit Insurance Corporation or any other governmental agency, nor are they obligations of, or guaranteed by, a bank.

J.P.Morgan

March 26, 2014

TABLE OF CONTENTS

Page

Supplemental Terms of Notes US-1
Risk Factors US-7
The J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1) US-17
Background on the S&P 500® Index US-37
Background on the S&P 500® Total Return Index US-42
Background on the S&P 500® Index Opening Settlement Value US-43
Background on Option Contracts on the S&P 500® Index US-44
Background on Futures Contracts on the S&P 500® Index US-45
Background on the CBOE Volatility Index® US-46
Annex A A-1

We have not authorized anyone to provide any information other than that contained or incorporated by reference in the relevant terms supplement, any other relevant underlying supplement, this underlying supplement no. 23-II and the accompanying product supplement, prospectus supplement and prospectus with respect to the notes offered by the relevant terms supplement and with respect to JPMorgan Chase & Co. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This underlying supplement no. 23-II, together with the relevant terms supplement, any other relevant underlying supplement and the accompanying product supplement, prospectus supplement and prospectus, contains the terms of the notes and supersedes all other prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures, fact sheets, brochures or other educational materials of ours. The information in the relevant terms supplement, any other relevant underlying supplement, this underlying supplement no. 23-II and the accompanying product supplement, prospectus supplement and prospectus may only be accurate as of the dates of each of these documents, respectively.

The notes described in the relevant terms supplement, the accompanying product supplement, any other relevant underlying supplement and this underlying supplement no. 23-II are not appropriate for all investors, and involve important legal and tax consequences and investment risks, which should be discussed with your professional advisers. You should be aware that the regulations of Financial Industry Regulatory Authority, Inc., or FINRA, and the laws of certain jurisdictions (including regulations and laws that require brokers to ensure that investments are suitable for their customers) may limit the availability of the notes. The relevant terms supplement, this underlying supplement no. 23-II, any other relevant underlying supplement and the accompanying product supplement, prospectus supplement and prospectus do not constitute an offer to sell or a solicitation of an offer to buy the notes in any circumstances in which such offer or solicitation is unlawful.

The notes are not futures contracts and are not regulated under the Commodity Exchange Act of 1936, as amended (the "Commodity Exchange Act"). The notes are offered pursuant to an exemption from regulation under the Commodity Exchange Act, commonly known as the hybrid instrument exemption, that is available to securities that have one or more payments indexed to the value, level or rate of one or more commodities, as set out in section 2(f) of that statute. Accordingly, you are not afforded any protection provided by the Commodity Exchange Act or any regulation promulgated by the Commodity Futures Trading Commission.

In this underlying supplement no. 23-II, any other relevant underlying supplement, the relevant terms supplement and the accompanying product supplement, prospectus supplement and prospectus, "we," "us" and "our" refer to JPMorgan Chase & Co., unless the context requires otherwise. To the extent applicable, the index described in this underlying supplement no. 23-II is deemed to be one of the "Indices" referred to in the accompanying product supplement.

SUPPLEMENTAL TERMS OF NOTES

The following supplemental terms of the notes supplement, and to the extent they are inconsistent, supersede, the description of the general terms of the debt securities set forth in the accompanying product supplement and under the headings "Description of Notes" in the accompanying prospectus supplement and "Description of Debt Securities" in the accompanying prospectus. A separate terms supplement will describe the terms that apply to specific issuances of the notes, including any changes to the terms specified below. Capitalized terms used but not defined in this underlying supplement no. 23-II have the meanings assigned in the accompanying product supplement, prospectus supplement, prospectus, the relevant terms supplement and any other relevant underlying supplement.

General

The notes are unsecured and unsubordinated obligations of JPMorgan Chase & Co. linked in whole or in part to the J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1) (the "**Index**").

The Index is designed to provide a synthetic long position in an underlying equity index, the S&P 500® Total Return Index, and limited downside protection against adverse movements of the S&P 500® Total Return Index through a synthetic collar strategy as an overlay to the synthetic long position in the S&P 500® Total Return Index. As explained under "The J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1)" below, the ongoing calculation of the Index reflects determinations relating to several Index constituents:

- the S&P 500® Total Return Index (the "**Total Return Equity Index**");
- certain put and call option contracts on the S&P 500® Index (the "**Price Return Equity Index**"; the Price Return Equity Index and the Total Return Equity Index, collectively, the "**Equity Index**"; and each put or call option contract on the Price Return Equity Index, an "**Option Constituent**" and collectively, the "**Option Constituents**");
- certain E-mini futures contracts on the Price Return Equity Index (each, a "**Futures Constituent**" and collectively, the "**Futures Constituents**");
- the CBOE Volatility Index® (the "**Volatility Index**"); and
- the S&P 500® Index Opening Settlement Value (the "**Settlement Index**").

In this underlying supplement, we refer to each of the Total Return Equity Index, the Price Return Equity Index, the Volatility Index and the Settlement Index as an "**Index Constituent**" and collectively, as the "**Index Constituents**"; and we refer to each of the Index Constituents, the Option Constituents and the Futures Constituents as a "**Constituent**" and collectively, as the "**Constituents**."

The specific terms of the notes will be described in the relevant terms supplement accompanying this underlying supplement no. 23-II and any additional underlying supplement. The terms described in those documents supplement those described herein and in any other relevant underlying supplement, the accompanying product supplement, prospectus supplement and prospectus. If the terms described in the relevant terms supplement are inconsistent with those described herein or in any other relevant underlying supplement, the accompanying product supplement, prospectus supplement or prospectus, the terms described in the relevant terms supplement will control.

The "**Index Calculation Agent**" means the entity appointed by the sponsor of the Index (the "**Index Sponsor**"), J.P. Morgan Securities plc ("**JPMS plc**"), to calculate and publish the official closing level of the Index, which is currently JPMS plc. See "The J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1)" below. JPMS plc is our affiliate and may have interests adverse to you. Please see "Risk Factors — Risks Relating to the Index Generally — Under certain limited circumstances, the Index Sponsor and the Index Calculation Agent have discretion in relation to the Index and are under no obligation to consider your interests as holder of the notes."

Postponement of a Determination Date

Notes linked solely to the Index

Notwithstanding any contrary definition in the accompanying product supplement, for notes linked solely to the Index, the following provisions will apply. If a Determination Date is not a trading day or if there is a market disruption event on that Determination Date (any such day, a "**Disrupted Day**"), the applicable Determination Date will be postponed to the immediately succeeding business day that is not a Disrupted Day.

In no event, however, will any Determination Date be postponed to a date that is after the applicable Final Disrupted Determination Date (as defined in the accompanying product supplement). If a Determination Date is or has been postponed to the applicable Final Disrupted Determination Date and the Final Disrupted Determination Date is a Disrupted Day, the calculation agent will determine the Index closing level for that Determination Date on the Final Disrupted Determination Date in accordance with the formula for and method of calculating the Index closing level last in effect prior to the commencement of the market disruption event (or prior to the non-trading day), using:

(a) the closing level of each Index Constituent (or, if a market disruption event or a non-trading day that affected any Index Constituent has occurred, its good faith estimate of the closing level of that Index Constituent that would have prevailed but for that market disruption event or non-trading day) on the applicable Final Disrupted Determination Date;

(b) any relevant bid and offer prices (or, if a market disruption event or a non-trading day that affected any relevant Option Constituent has occurred, its good faith estimate of the relevant bid and offer prices that would have prevailed but for that market disruption event or non-trading day) on the applicable Final Disrupted Determination Date of each Option Constituent most recently constituting the Index and any option contract required to roll any expiring Option Constituent in accordance with the method of calculating the Index; and

(c) the official settlement price or final settlement value, as applicable (or, if a market disruption event or a non-trading day that affected any relevant Futures Constituent has occurred, its good faith estimate of the relevant official settlement price or final settlement value, as applicable, that would have prevailed but for that market disruption event or non-trading day) on the applicable Final Disrupted Determination Date of each Futures Constituent most recently constituting the Index and any futures contract required to roll any expiring Futures Constituent in accordance with the method of calculating the Index.

Unless otherwise specified in the relevant terms supplement, a "**trading day**," as determined by the calculation agent, is a day on which trading is generally conducted on (a) the primary exchange or market of trading for any option contract or futures contract then included in the Index or any relevant successor index, as applicable, (b) the primary exchange or market of trading for the securities underlying the Equity Index and (c) the exchanges on which option contracts or futures or contracts on the Equity Index are traded.

Notes linked to the Index and other reference assets

If the notes are linked to the Index and other reference assets, the provisions relating to postponement of a Determination Date as set forth in the accompanying product supplement will apply, except that if a Determination Date is or has been postponed to the applicable Final Disrupted Determination Date and, on that day, the Index closing level for the Index has not been established in accordance with the postponement provisions of the accompanying product supplement that apply prior to the applicable Final Disrupted Determination Date, the Index closing level of the Index for that Determination Date will be determined by the calculation agent on the applicable Final Disrupted Determination Date in accordance with the formula for and method of calculating the Index closing level of the Index last in effect prior to the commencement of the market disruption event (or prior to the non-trading day), using:

(a) the closing level of each Index Constituent (or, if a market disruption event or a non-trading day that affected any Index Constituent has occurred, its good faith estimate of the closing level of that Index Constituent that would have prevailed but for that market disruption event or non-trading day) on the applicable Final Disrupted Determination Date;

(b) any relevant bid and offer prices (or, if a market disruption event or a non-trading day that affected any relevant Option Constituent has occurred, its good faith estimate of the relevant bid and offer prices that would have prevailed but for that market disruption event or non-trading day) on the applicable Final Disrupted Determination Date of each Option Constituent most recently constituting the Index and any option contract required to roll any expiring Option Constituent in accordance with the method of calculating the Index; and

(c) the official settlement price or final settlement value, as applicable (or, if a market disruption event or a non-trading day that affected any relevant Futures Constituent has occurred, its good faith estimate of the relevant official settlement price or final settlement value, as applicable, that would have prevailed but for that market disruption event or non-trading day) on the applicable Final Disrupted Determination Date of each Futures Constituent most recently constituting the Index and any futures contract required to roll any expiring Futures Constituent in accordance with the method of calculating the Index.

Market Disruption Events

Notwithstanding any contrary definition in the accompanying product supplement, the following provisions will apply to notes linked in whole or in part to the Index. With respect to the Index or any relevant successor index, a "**market disruption event**," unless otherwise specified in the relevant terms supplement, means:

- the occurrence of an Equity Index Disruption Event;
- the occurrence of an Option Constituent Disruption Event;
- the occurrence of a Futures Constituent Disruption Event;
- the occurrence of a Volatility Index Disruption Event;
- the occurrence of a Settlement Index Disruption Event; or
- the failure of the sponsor or calculation agent of the Index (or that successor index) to calculate and publish the official closing level of the Index,

in each case as determined by the calculation agent in its sole discretion; and

- a determination by the calculation agent in its sole discretion that the applicable event described above materially interfered with our ability or the ability of any of our affiliates to adjust or unwind all or a material portion of any hedge with respect to the notes.

An "**Equity Index Disruption Event**," unless otherwise specified in the relevant terms supplement, means:

- a failure by the sponsor of the Equity Index to calculate and publish the closing level for the Equity Index on that day within the scheduled or usual timeframe for publication;
- any suspension of or limitation imposed on trading by the relevant exchange or on the primary exchange or market on which futures or option contracts on the Equity Index are traded or otherwise and whether by reason of movements in price exceeding limits permitted by the relevant exchange or the primary exchange or market or otherwise: (i) relating to securities that contribute 20% or more of the closing level for the Equity Index, or (ii) in futures or options contracts relating to the Equity Index on the Related Exchange at any time during the one-hour period that ends at the scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours;

- any event (other than an early closure as described in the next bullet point) that disrupts or impairs the ability of market participants in general (i) to effect transactions in, or obtain market values relating to, securities that contribute 20% or more of the level of the Equity Index, or (ii) to effect transactions in, or obtain market values for, futures or options contracts relating to the Equity Index on the Related Exchange at any time during the one hour period that ends at the scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours; or

- the closure on any trading day of (i) the Exchange relating to securities that contribute 20% or more of the level of the Equity Index or (ii) any Related Exchange prior to its scheduled closing time unless such earlier closing is announced by such Exchange or Related Exchange (as the case may be) at least one hour prior to the earlier of: (x) the actual closing time for the regular trading session on such Exchange or Related Exchange (as the case may be) on that trading day and (y) the submission deadline for orders to be entered into the Exchange or Related Exchange system for execution at the scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours, on that trading day,

in each case as determined by the calculation agent in its sole discretion.

For purposes of determining whether an Equity Index Disruption Event exists at any time, if trading in an equity security included in the Equity Index is materially suspended or materially limited at that time, then the relevant percentage contribution of that equity security to the level of that Equity Index will be based on a comparison of:

- the portion of the level of the Equity Index attributable to that equity security relative to

- the overall level of the Equity Index,

in each case immediately before that suspension or limitation.

For purposes of determining whether an Equity Index Disruption Event has occurred, unless otherwise specified in the relevant terms supplement:

- a limitation on the hours or number of days of trading will not constitute a market disruption event if it results from an announced change in the regular business hours of the relevant exchange, or the primary exchange or market for trading in futures or options contracts on the Equity Index;

- limitations pursuant to the rules of any relevant exchange similar to New York Stock Exchange ("**NYSE**") 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 NYSE Rule 80B as determined by the calculation agent) on trading during significant market fluctuations will constitute a suspension of or limitation imposed on trading;

  - a suspension of trading in futures or options contracts on the Equity Index by the primary exchange or market for trading in those contracts by reason of:

  - a price change exceeding limits set by that exchange or market,

  - an imbalance of orders relating to those contracts, or

  - a disparity in bid and ask quotes relating to those contracts

  will, in each case, constitute a suspension of or limitation imposed on trading in futures or options contracts related to the Equity Index; and

- a "suspension of or limitation imposed on trading" on any relevant exchange or on the primary exchange or market on which futures or option contracts on the Equity Index are traded will not include any time when that exchange or market is itself closed for trading under ordinary circumstances.

Unless otherwise specified in the relevant terms supplement, "**relevant exchange**" means, with respect to the Equity Index, the primary exchange or market of trading for any equity security (or any combination thereof) then included in the Equity Index.

An "**Option Constituent Disruption Event**," unless otherwise specified in the relevant terms supplement, means:

- any suspension of or limitation imposed on trading of any Option Constituent on the relevant exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the relevant exchange or otherwise relating to such Option Constituent at any time during the one-hour period that ends at the scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours;

- any event (other than an early closure as described in the next bullet point) that disrupts or impairs the ability of market participants in general to effect transactions in, or to obtain market values for, such Option Constituent on the relevant exchange at any time during the one-hour period that ends at the scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours; or

- the closure on any trading day of the relevant exchange prior to its scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours, unless such earlier closing is announced by the relevant exchange at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on the relevant exchange on that trading day and (ii) if applicable, the submission deadline for orders to be entered into the relevant exchange system for execution at the scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours, on that trading day,

in each case as determined by the calculation agent in its sole discretion.

For purposes of determining whether an Option Constituent Disruption Event has occurred, unless otherwise specified in the relevant terms supplement, a limitation on the hours or number of days of trading will not constitute a "suspension of or limitation imposed on trading" if it results from an announced change in the regular business hours of the relevant exchange.

Unless otherwise specified in the relevant terms supplement, "**relevant exchange**" means, with respect to the relevant Option Constituent, the primary exchange or market of trading for that Option Constituent.

A "**Futures Constituent Disruption Event**," unless otherwise specified in the relevant terms supplement, means:

- any suspension of or limitation imposed on trading of any Futures Constituent on the relevant exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the relevant exchange or otherwise relating to such Futures Constituent at any time during the one-hour period that ends at the scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours;

- any event (other than an early closure as described in the next bullet point) that disrupts or impairs the ability of market participants in general to effect transactions in, or to obtain market values for, such Futures Constituent on the relevant exchange at any time during the one-hour period that ends at the scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours; or

- the closure on any trading day of the relevant exchange prior to its scheduled closing time unless such earlier closing is announced by the relevant exchange at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on the relevant exchange on that trading day and (ii) if applicable, the submission deadline for orders to be entered into the relevant exchange system for execution at the scheduled closing time, without regard to after hours or any other trading outside of the regular trading session hours, on that trading day,

in each case as determined by the calculation agent in its sole discretion.

For purposes of determining whether a Futures Constituent Disruption Event has occurred, unless otherwise specified in the relevant terms supplement, a limitation on the hours or number of days of trading will not constitute a "suspension of or limitation imposed on trading" if it results from an announced change in the regular business hours of the relevant exchange.

Unless otherwise specified in the relevant terms supplement, "**relevant exchange**" means, with respect to the relevant Futures Constituent, the primary exchange or market of trading for that Futures Constituent.

A "**Volatility Index Disruption Event**," unless otherwise specified in the relevant terms supplement, means the failure by the sponsor of the Volatility Index to calculate and publish the level of the Volatility Index within the scheduled or usual timeframe for publication.

A "**Settlement Index Disruption Event**," unless otherwise specified in the relevant terms supplement, means the failure by the sponsor of the Settlement Index to calculate and publish the level of the Settlement Index within the scheduled or usual timeframe for publication.

Discontinuation of the Index; Alteration of Method of Calculation

The provisions relating to the discontinuation of an index as set forth in the accompanying product supplement will apply, except that if the calculation agent is to determine the Index closing level for the Index or any successor index for any Determination Date because no successor index for the Index is available at that time, or the calculation agent has previously selected a successor index for that Index and publication of that successor index is discontinued prior to, and that discontinuation is continuing on, that Determination Date or other relevant date, then the Index closing level of the Index will be computed by the calculation agent in accordance with the formula for and method of calculating the Index or successor index, as applicable, last in effect prior to that discontinuation, using the official closing level of each Index Constituent on that date, the relevant bid and offer prices on that date of each Option Constituent most recently constituting the Index and any option contract required to roll any expiring Option Constituent in accordance with the method of calculating the Index, and the official settlement price or final settlement value, as applicable, at the close of the principal trading session on that date of each Futures Constituent most recently constituting the Index and any futures contract required to roll any expiring Futures Constituent in accordance with the method of calculating the Index.

RISK FACTORS

Your investment in the notes will involve certain risks. Investing in the notes is not equivalent to taking a long position in the Index or any position in any of its components. In addition, your investment in the notes entails other risks not associated with an investment in conventional debt securities. **You should consider carefully the risks discussed under "Risk Factors" in the accompanying product supplement and in any other relevant underlying supplement, together with the following discussion of additional risks, before you decide that an investment in the notes is suitable for you.**

Risks Relating to the Index Generally

We or our affiliates may have economic interests that are adverse to those of the holders of the notes because we are the issuer of the notes, our affiliate, JPMS plc, is the Index Sponsor and the Index Calculation Agent and our affiliate, J.P. Morgan Securities LLC ("JPMS"), is the calculation agent for the notes (the "calculation agent") and an agent of the offering of the notes.

We, JPMorgan Chase & Co., are the issuer of the notes, JPMS plc, one of our affiliates, is the Index Sponsor and the Index Calculation Agent and JPMS, another affiliate of ours, is the calculation agent and an agent of the offering of the notes. JPMS plc, as Index Calculation Agent, will determine, among other things, whether there has been a market disruption event with respect to the Index. JPMS, as calculation agent, will determine, among other things, whether there has been a market disruption event with respect to the notes and any payments on the notes. In the event of any such market disruption event, JPMS plc may suspend the calculation of the Index, and JPMS may postpone any valuation date or use an alternate method to calculate the Index closing level on that valuation date. JPMS, as an agent of the offering of the notes, will receive the aggregate profits generated from the deduction of the Daily Index Fee of 0.75% per annum from the level of the Index to cover ongoing payments related to the distribution of the notes and as a structuring fee for developing the notes. While we and our affiliates will act in good faith in making all determinations with respect to the notes and the Index, there can be no assurance that any determinations made by JPMorgan Chase & Co., JPMS plc or JPMS in these various capacities will not affect the value of the notes or the level of the Index. Because determinations made by JPMS plc as the Index Sponsor and the Index Calculation Agent and JPMS as the calculation agent may affect any amount payable on the notes, potential conflicts of interest may exist between JPMorgan Chase & Co., JPMS plc and JPMS, on the one hand, and you, as a holder of the notes, on the other.

Under certain limited circumstances, the Index Sponsor and the Index Calculation Agent have discretion in relation to the Index and are under no obligation to consider your interests as holder of the notes.

JPMS plc, one of our affiliates, acts as the Index Sponsor and the Index Calculation Agent and is responsible for calculating and publishing the official closing levels of the Index, maintaining the Index and developing the guidelines and policies governing its composition and calculation. The rules governing the Index may be amended at any time by JPMS plc, in its sole discretion, and the rules also permit the use of discretion by JPMS plc in relation to the Index in specific instances, including but not limited to the selection of a successor or substitute to, or the exclusion of, a constituent of the Index and other adjustments to the Index upon the occurrence of certain extraordinary events and the interpretation of the rules governing the Index. Unlike other indices, the maintenance of the Index 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 Index in good faith, it should be noted that such discretion could have an impact, positive or negative, on the Index closing levels. JPMS plc is under no obligation to consider your interests as a holder of the notes in taking any actions that might affect the value of your notes. Furthermore, the inclusion of any option contract or futures contract on the Price Return Equity Index in the Index is not an investment recommendation by us or JPMS plc of those option contracts or futures contracts.

The reported level of the Index will be calculated net of fees and deductions.

One way in which the Index may differ from other indices is that its reported levels include fees and deductions. As a result of these deductions, the value of the Index will trail the value of a hypothetical identically constituted synthetic portfolio that is not subject to these fees and deductions. The Index is subject to a total of three types of fees and deductions:

- Daily index fee: on each day, the calculation of the Index reflects the deduction of an adjustment factor of 0.75% per annum;

- Call deduction and put deduction: on a monthly or quarterly basis, as applicable, when the Index's synthetic short call or long put exposure, as applicable, is rolled into a new option contract on the S&P 500® Index (the "**Price Return Equity Index**"), a call deduction or put deduction, as applicable, is subtracted in the calculation of the Index, once with respect to the establishment of a new short call position and twice (once in connection with the synthetic sale of the soon-to-expire put option contract and once in connection with the synthetic purchase of a replacement put option contract) with respect to the establishment of a new long put position. The call deduction or put deduction is calculated by multiplying the applicable volatility spread (which is between 0.30% and 3.00%) by the vega of the applicable option contract, subject to certain minimum and maximum amounts. The applicable volatility spread depends on the level of the CBOE Volatility Index (the "**Volatility Index**") on the relevant date of determination. The call deduction or put deduction is designed to approximate the transaction costs of rolling the Index's synthetic short call or long put positions on the Price Return Equity Index, including bid-ask spreads and slippage costs that would be experienced by a professional investor seeking to replicate the hypothetical portfolio contemplated by the Index's synthetic short call and long put positions at prices that approximate the official settlement prices (which are not generally tradable) of the relevant option contracts. The slippage costs that are approximated in the call deduction or put deduction are costs that arise from deviations between the actual official settlement price of an applicable option contract and the prices at which a hypothetical investor would expect to be able to execute trades in the market when seeking to match the expected official settlement price of that option contract. Unlike the Daily Index Fee, the call deduction and the put deduction are not per annum percentage deductions; and

- Delta deduction: on each day the delta hedge is implemented, 0.03% of any increase or decrease in the Index's exposure to the futures contracts on the Price Return Equity Index is deducted in the calculation of the Index. The delta deduction reflects costs relating to adjustments to the Index's delta hedge (as described below) of its synthetic short call position. Unlike the Daily Index Fee, the delta deduction is not a per annum percentage deduction.

The Index may not be successful, and may not outperform any alternative strategy that might be employed with respect to the Equity Index and the option contracts and futures contracts underlying the Index.

The Index follows a synthetic rules-based proprietary strategy that operates on the basis of pre-determined rules. Accordingly, you should determine whether those rules as described below under "The J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1)" are appropriate in light of your individual circumstances and investment objectives. No assurance can be given that the investment strategy on which the Index is based will be successful or that the Index will outperform any alternative strategy that might be employed with respect to the Equity Index and the option contracts and futures contracts underlying the Index.

Notes that provide exposure to equity option contracts, equity futures contracts and short equity positions, with each rebalanced based on the equity volatility level, are not suitable for all investors. You should actively manage your investment in the notes.

Notes that provide exposure to equity option contracts, equity futures contracts and short equity positions, with each rebalanced based on the equity volatility level, are not suitable for all investors. The notes reflect the performance of the Index, which employs a synthetic collar strategy through the synthetic sale of call options and synthetic purchase of put options on the Price Return Equity Index. Furthermore, when the Index maintains a synthetic short call position, it may be delta-hedged through synthetic offsetting long positions in futures contracts on the Price Return Equity Index. The delta hedge mechanism is activated and deactivated based on the market expectation of the volatility levels of the Price Return Equity Index. As a consequence, investors in the notes should understand that their investment is exposed to the performance of synthetic positions (including synthetic short positions) in option contracts whose value is determined based on equity volatility levels and synthetic positions in futures contracts, which can be volatile and move dramatically over short periods of time. Because of the large and sudden value movements associated with option and futures contracts, the notes should be purchased only by sophisticated investors who understand risks associated with investments linked to option contracts, futures contracts, short positions and equity volatility and who intend to monitor and manage their investments actively. You should consider your investment horizon and objectives, financial resources and risk tolerance, as well as any potential trading costs, when evaluating an investment in the notes. Investors should regularly monitor their investment in the notes to ensure that it remains consistent with their investment objectives.

There may be significant fluctuations in the level of the Index, which could affect the value of the notes.

The performance of the Index is dependent on the performance of the S&P 500® Total Return Index (the "**Total Return Equity Index**"), its synthetic positions in call option contracts and put option contracts on the Price Return Equity Index and its synthetic long position in futures contracts on the Price Return Equity Index, if any. As a consequence, investors in investment products linked to the Index should understand that their investment is exposed to the performance of synthetic positions (including a synthetic short position) in option contracts and synthetic positions in futures contracts on the Price Return Equity Index. The values of the synthetic positions in option contracts and futures contracts underlying 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 result in substantial negative returns. Positive returns on the Index may therefore be reduced or eliminated entirely due to movements in market parameters.

The hypothetical back-tested performance of the Index has been highly volatile during periods of large movements in the level of the Price Return Equity Index. Although past performance is not indicative of future performance, it is likely that the Index will continue to be highly volatile during such periods in the future, with the potential for sudden, significant fluctuations in the daily performance of the Index. Accordingly, the notes are not designed for investors who are unwilling to be exposed to potential significant fluctuations in the level of the Index and, therefore, in the value of the notes.

The Index comprises synthetic assets.

The exposure to the Total Return Equity Index, and option contracts and futures contracts on the Price Return Equity Index provided by the Index is purely synthetic 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 option contracts or futures contracts that the Index references.

The Index has a limited operating history and may perform in unanticipated ways.

The Index has been calculated on a "live" basis since September 17, 2013 (the "**Live Date**") and therefore has a limited operating history. Any back-testing or similar analysis performed by any person with respect to 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 level of the Index. Past performance should not be considered indicative of future performance.

The Price Return Equity Index, the Total Return Equity Index, any option contract on the Price Return Equity Index, any futures contract on the Price Return Equity Index, the Settlement Index and the Volatility Index may be removed or replaced in certain extraordinary events.

Following the occurrence of certain extraordinary events with respect to the Price Return Equity Index, the Total Return Equity Index, any option contract on the Price Return Equity Index, any futures contract on the Price Return Equity Index, the Settlement Index (as defined below) and the Volatility Index, as described under "The J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1) — Extraordinary Events," each affected constituent may be removed or replaced by a successor or substitute constituent. You should realize that the removal, replacement or substitution of a constituent of the Index may affect the performance of the Index, and therefore, the return on the notes, as the applicable successor constituent may perform significantly better or worse than the affected constituent.

Risks Relating to the Collar Overlay Strategy and the Option Constituents

The synthetic collar strategy employed by the Index may not protect investors from all losses.

The Index employs a synthetic collar strategy as an overlay to its synthetic long position in the Total Return Equity Index that is designed to provide limited downside protection against adverse movements of the Total Return Equity Index. The synthetic collar strategy is implemented through the combination of the synthetic quarterly purchase of a put option on the Price Return Equity Index that is designed to be funded partially or fully, as the case may be, by the synthetic monthly sale of a call option on the Price Return Equity Index, although there may be circumstances where no put option will be purchased or where no call option will be sold on the relevant rebalancing day.

With the overlay of the synthetic collar strategy, the Index effectively gives up exposure to any upside appreciation of the Price Return Equity Index above the strike price of the applicable call option in return for downside protection against a decrease of the Total Return Equity Index to below a level corresponding to the strike price of the applicable put options. The Index's synthetic short call position in the Price Return Equity Index, unless not activated under certain circumstances, is potentially hedged through an offsetting synthetic long investment in futures contracts on the Price Return Equity Index, which is referred to as the "delta hedge" of the synthetic short call position. The delta hedge is implemented gradually based on the applicable level of the Volatility Index compared with its 5-year or 6-month moving averages. The delta hedge will be switched on when the applicable level of the Volatility Index is less than 100% of its historical moving averages, and will be fully implemented when the applicable level of the Volatility Index is less than 80% of its historical moving averages. Therefore, there will be periods of time when the delta hedge is not implemented or fully implemented, and as a result, investors in notes linked to the Index will be deprived of potential gains, because, when the delta hedge is not implemented at all, the Index's upside exposure to the Total Return Equity Index is effectively capped at a level corresponding to the strike price of the applicable call option, and when the delta hedge is only partially implemented, the Index's upside exposure to the Total Return Equity Index is partially offset by the strike price of the applicable call option. Furthermore, the Index's synthetic long put position, which is intended as a hedge for the Index's long position in the Total Return Equity Index, is itself not hedged. If the level of the Price Return Equity Index decreases, but not below a level corresponding to the strike price of the applicable put option, the Index will not be protected from the resulting losses.

Sudden market movements may leave the Index with the wrong combination of position exposures, thus leading to investor losses.

During the time when the Index's synthetic short call position is delta-hedged, the Index will be exposed to a total of four synthetic positions in the Equity Index: a synthetic long position in the Total Return Equity Index, a synthetic short call position in the call option contracts on the Price Return Equity Index, a synthetic long put position in the put option contracts on the Price Return Equity Index and a synthetic long position in the futures contracts on the Price Return Equity Index. The four positions are interrelated—the synthetic long put position is designed to provide downside protection to the Index's synthetic long position in the Total Return Equity Index; the synthetic short call position has the effect of limiting the Index's upside exposure to the Total Return Equity Index; and the synthetic long position in the futures contracts on the Price Return Equity Index is designed to mitigate that limiting effect of the synthetic short call position.

However, if the market experiences a sudden movement, the Index may be left with an unfavorable combination of positions. For example, the sudden market movement may cause the level of the Price Return Equity Index to cross from above to below the strike price of the call option contract, which could essentially change the delta hedge from a hedge of the synthetic short call position to an undesirable long position in the Price Return Equity Index that could lead to investor losses as the Price Return Equity Index declines. As another example, the sudden market movement may cause the level of the Price Return Equity Index to cross from below to above the strike price, which could render the synthetic short call position unhedged, thus preventing investors from participating in the appreciation of the Price Return Equity Index.

There is a mismatch between the underlying equity index that the Index tracks and the underlying equity index for the option contracts referenced by the Index's synthetic short call and long put positions.

The Index tracks the performance of the Total Return Equity Index while the option contracts referenced by the Index's synthetic collar strategy are options on the Price Return Equity Index. The Total Return Equity Index is the "total return" version, and the Price Return Equity Index is the "price return" version, of the same equity index. A price return version of an equity index is an equity index that measures in aggregate the performance of its component securities by tracking their price movements only. A total return version of an equity index is an equity index that reflects the price return of its component securities with dividends reinvested in the index as a whole. Since the Index's synthetic collar strategy is designed to provide downside protection for the Index's long position in the Total Return Equity Index, this mismatch of the underlying equity indices for the two parts of the Index's investment strategy would mean that the downside protection provided by the Index's synthetic collar strategy, specifically, its synthetic long put position, will not be exactly at the level represented by the strike price of the synthetic put position. Accordingly, investors in notes linked to the Index may still be exposed to losses, which may be significant, when the Total Return Equity Index depreciates.

The synthetic short call position maintained by the Index presents special risks.

Compared with a long position, a short position presents special risks. The holder of a short position expects that the underlying asset will depreciate in value; therefore, if the underlying asset appreciates in value, the holder of the short position will be exposed to losses. Specifically, if the underlying asset of the short position appreciates above the strike price of the short position, the holder of the short position is obligated to pay the difference between the value of the underlying asset and the strike price of the short position, regardless how much it is. Therefore, combined with its synthetic long position in the Total Return Equity Index, the Index's synthetic short position effectively caps the Index's upside exposure to the Total Return Equity Index to a level corresponding to the strike price of the synthetic short position. While the Index incorporates a delta hedge mechanism that is designed to mitigate losses from its synthetic short call position, the delta hedge will be switched on and off, and gradually implemented, all depending on the applicable level of the Volatility Index compared with its historical moving averages. During the time the delta hedge is switched off or is not fully implemented, the Index's synthetic short call position will prevent the Index from benefiting, or benefitting fully, from any upside movement of the Total Return Equity Index above the level corresponding to the strike price of the call position.

The timing mismatch between the expiry of the put options referenced by the Index's synthetic long put position and the time when downside protection on the Total Return Equity Index is needed may not be entirely resolved by calculating the daily marked-to-market value of the put option contracts.

The synthetic long put position in the Index's synthetic collar strategy references quarterly rolled European-style put options with an 11-month expiry (at the time each applicable put option contract is synthetically purchased), which can only be exercised at the time of the option contracts' expiry. Thus, these put position contracts only offer point-to-point protection to the Index at the time of the expiry of each put option contract. As a result, if the Total Return Equity Index suffers a sudden drop at a time when no put option can be exercised, the Index would suffer a loss that may not be fully remediated by exercising the applicable put option at a later time. To mitigate this risk, the Index (i) references up to three put option contracts with staggered time-to-expiry, thus reducing the potential gap from 11 months to 3 months (i.e., through the quarterly rebalancings, which reset the strike price of the synthetic long put position every three months), and (ii) marking to market the value of the put option contracts referenced by the Index to take into account the daily fluctuations of the Equity Index. However, there is no guarantee that calculating the daily marked-to-market value of the put options will have an identical effect as making the put options exercisable on any day the Index needs downside protection. To the extent that they would produce different results, the Index's synthetic long put position may not offer as effective a downside protection as an alternative arrangement that allows the Index to exercise its synthetic put option on each day.

The Index's long put position in the Price Return Equity Index is a synthetic position, and as a result, the downside protection provided by that long put position will not be in the form of exercising an actual put option.

Because the Index's long put position is a synthetic position, which means that the Index did not actually purchase, and as a result, does not actually hold, a put option contract, it cannot benefit from the downside protection offered by its long put position by exercising an actual put option. Therefore, the downside protection provided by the Index's synthetic long put position may not be as effective as downside protection provided by the holding of an actual put option contract. Furthermore, even though put option contracts on the Price Return Equity Index are generally expected to appreciate in value, if the Price Return Equity Index depreciates, the increase in the marked-to-market value of the put option contracts might not be sufficient to offset any depreciation of the Total Return Equity Index.

Under certain extreme circumstances, the Index may not be able to maintain its synthetic long put position.

The Index maintains its synthetic long put position by referencing three put option contracts of an 11-month expiry (at the time each applicable put option contract is synthetically purchased) on the Price Return Equity Index. Two months prior to each put option contract's expiry, at the applicable quarterly rebalancing, the soon-to-expire put option contract will be removed from the Index and a replacement contract of the same maturity will be added to the Index, subject to certain conditions described below. (The rolling of the three put option contracts is staggered so that the put option contracts are rolled at 3-month intervals.) Each replacement put option contract selected at a quarterly rebalancing has to meet certain condition regarding its strike price. If, at any quarterly rebalancing, there is no put option contract available that has the right strike price, then no replacement contract will be selected at that rebalancing and the Index will reference less than three put option contracts. Furthermore, if the Index will not be able to maintain fully, partially, or at all its synthetic put position, the Index will not be able to implement its synthetic collar strategy as a result. Under these circumstances, the Index's strategy may be effectively turned into an uncovered synthetic long investment in the Total Return Equity Index, with full downside exposure and potentially capped upside exposure, and the value of the Index may be adversely affected.

The call deduction and put deduction charged at each call rebalancing or put rebalancing will have a substantial adverse effect on the level of the Index over time.

At each rebalancing of the Index's synthetic short call position or synthetic long put position, a call deduction or a put deduction, as applicable, will be deducted in the calculation of the Index, as described above under "The reported level of the Index will be calculated net of fees and deductions," and these deductions are likely to have a substantial adverse effect on the level of the Index over time.

The settlement price of the option contracts may not be readily available.

The official settlement price of the option contracts on the Price Return Equity Index are calculated and published by the Chicago Board Options Exchange ("**CBOE**"). The official settlement price of the relevant option contracts are used to calculate the level of the Index. Any disruption in trading of the relevant option contracts could delay the release or availability of the official settlement price. This may delay or prevent the calculation of the Index.

Risks Relating to the delta hedge and the Futures Constituents

The delta deduction is likely to have a substantial adverse effect on the level of the Index over time.

On each day, the delta deduction in connection with rebalancing the futures contracts referenced by the Index's delta hedge, when the delta hedge is switched on, is deducted in the calculation of the Index, as described above under "The reported level of the Index will be calculated net of fees and deductions," and this deduction is likely to have a substantial adverse effect on the level of the Index over time.

The delta hedge may not be successful in serving its intended purposes.

The delta hedge is designed to mitigate the impact of the Index's synthetic short call position in the Price Return Equity Index. When it is activated, the delta hedge maintains an offsetting synthetic long investment in futures contracts on the Price Return Equity Index. The delta hedge is implemented gradually based on the applicable level of the Volatility Index compared with its 5-year or 6-month moving averages. The delta hedge will be switched on when the applicable level of the Volatility Index is less than 100% of its historical moving averages, and will be fully implemented when the applicable level of the Volatility Index is less than 80% of its historical moving averages. More specifically, the delta hedge, once implemented, is designed to mitigate the impact of the cap on the Index's upside exposure to the Total Return Equity Index that is effectively imposed by the Index's synthetic short call position. During the time the delta hedge is switched off or is not fully implemented, the Index's synthetic short call position will prevent the Index from benefiting, or benefitting fully, from any upside movement of the Total Return Equity Index above the level corresponding to the strike price of the call position.

The delta hedge may not eliminate the impact of the synthetic short call position.

The change in the marked-to-market value of the Index's synthetic short call position may not be completely offset by the change in the marked-to-market value of the synthetic delta hedge position, if any. Delta hedging aims to mitigate the effects of the sensitivity of the synthetic short call position to movements of the Price Return Equity Index and generally works best for small changes in the value of the Price Return Equity Index. Consequently, discrepancies may arise between the return of the Price Return Equity Index and the exposure generated by the delta hedge's synthetic long position in the futures contracts on the Price Return Equity Index.

The Index may in the future include contracts that are not traded on regulated futures exchanges.

The Index currently has a synthetic long position in futures contracts traded on regulated futures exchanges (referred to in the United States as "designated contract markets"). If these exchange-traded futures cease to exist, the Index 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 provisions of, and the protections afforded by, the Commodity Exchange Act, or other applicable statutes and related regulations that govern trading on regulated U.S. 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 the Index, may be subject to certain risks not presented by U.S. exchange-traded futures contracts, including risks related to the liquidity and price histories of the relevant contracts.

Daily rebalancing of the delta hedge may affect trading in the relevant futures contracts.

The daily rebalancing of the futures contracts on the Price Return Equity Index used for the delta hedge, when the delta hedge is activated, may cause us, our affiliates or third parties with whom we transact to adjust our or their hedges accordingly, and to do so frequently during periods of high volatility in the U.S. equity market. The trading activity associated with these hedging transactions will contribute to the trading volume of the futures contracts included in the Index and may affect the market price of these futures contracts and, in turn, adversely affect the level of the Index.

Futures contracts involve significant risks.

When the delta hedge for the Index's synthetic short call position is activated, the Index will have a synthetic long investment in futures contracts on the Price Return Equity Index. The price of a futures contract depends not only on the price of the underlying asset referenced by the futures contract, but also on a range of other factors, including but not limited to changing supply and demand relationships, interest rates, governmental and regulatory policies and the policies of the exchanges on which the futures contracts trade. In addition, the futures 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. These factors and others can cause the prices of futures contracts to be volatile.

Unlike equities, which typically entitle the holder to a continuing stake in a corporation, futures contracts normally specify a date for the delivery of the underlying asset or financial instrument or, in the case of futures contracts relating to indices such as the Price Return Equity Index, a date for payment in cash of an amount determined by the level of the relevant index. As the futures contracts included in the Index approach expiration, they are replaced by similar contracts that have a later expiration. Thus, for example, a futures contract purchased and held in August may specify an October expiration. As time passes, the contract expiring in October may be replaced by a contract for delivery in November, through synthetic sale of a portion of the position in the October contract, accompanied by synthetic purchase of the November contract. This process is referred to as "rolling."

Rolling the Index's synthetic long position in the futures contracts on the Price Return Equity Index is expected to generate positive returns only when the market for the futures contracts is in "backwardation," meaning that the price of a futures contract with a later expiration is lower than the price of a futures contract with an earlier expiration. Excluding other considerations, if the market for the relevant futures contracts is in backwardation, the purchase of the third-month futures contract in connection with the roll of the synthetic long position will take place at a price that is lower than the price of the sale of the second-month futures contract, thereby creating a positive "roll yield." Backwardation in futures contracts on the Price Return Equity Index is typical in a high-volatility market environment.

Under normal market conditions, futures contracts on the Price Return Equity Index are expected to be in "contango," meaning that the price of a futures contract with a later expiration is higher than the price of a futures contract with an earlier expiration. Excluding other considerations, if the market for the relevant futures contracts is in contango, the synthetic purchase of the third-month futures contract in connection with the roll of the synthetic long position will take place at a price that is higher than the price at which the synthetic sale of the second-month futures contract will take place, thereby creating a negative "roll yield." Contango in futures contracts on the Price Return Equity Index is typical in a low-volatility market environment.

Because the net change in the marked-to-market value of the futures contracts in which the Index synthetically invests is added to the calculation of the closing level of the Index, the price changes in those futures contracts in the form of positive or negative roll yields will have an impact on the level of the Index.

Suspension or disruptions of market trading in futures contracts may adversely affect the value of your notes.

Futures markets like the Chicago Mercantile Exchange ("**CME**"), the market for the futures contracts in which the Index synthetically invests, 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, futures exchanges have regulations that limit the amount of fluctuation in some 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 in a particular contract, no trades may be made at a price beyond the limit, or trading may be limited for a set period of time. Limit prices have the effect of precluding trading in a particular contract or forcing the liquidation of contracts at potentially disadvantageous times or prices. These circumstances could affect the level of the Index and therefore could affect adversely the value of your notes.

The settlement price of the futures contracts may not be readily available.

The official settlement price of the futures contracts on the Price Return Equity Index are calculated and published by CME. The official settlement price of the relevant futures contracts are used to calculate the level of the Index. Any disruption in trading of the relevant futures contracts could delay the release or availability of the official settlement price. This may delay or prevent the calculation of the Index.

The notes are not regulated by the Commodity Futures Trading Commission.

The net proceeds to be received by us from the sale of the notes will not be used to purchase or sell any futures contracts or options on futures contracts for your benefit. An investment in the notes 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., the notes will not constitute a direct or indirect investment by you in the futures contracts), and you will not benefit from the regulatory protections of the Commodity Futures Trading Commission, commonly referred to as the "CFTC." Among other things, this means that we are not registered with the CFTC as a futures commission merchant and you 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 you pay to purchase notes will be used by us for our own purposes and will not be subject to customer funds segregation requirements provided to customers that trade futures on an exchange regulated by the CFTC.

Unlike an investment in the notes, an investment in a collective investment vehicle that invests in futures contracts on behalf of its participants may be subject to regulation as a commodity pool and its operator may be required to be registered with and regulated by the CFTC as a commodity pool operator, or qualify for an exemption from the registration requirement. Because the notes will not be interests in a commodity pool, the notes will not be regulated by the CFTC as a commodity pool, we will not be registered with the CFTC as a commodity pool operator, and you will not benefit from the CFTC's or any non-U.S. regulatory authority's regulatory protections afforded to persons who invest in regulated commodity pools.

THE J.P. MORGAN U.S. LONG EQUITY DYNAMIC OVERLAY 80 INDEX (SERIES 1)

General

The J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1) (the "**Index**") was developed and is maintained and calculated by J.P. Morgan Securities plc ("**JPMS plc**"). The description of the strategy and methodology underlying the Index included in this underlying supplement is based on rules formulated by JPMS plc (the "**Rules**") and is qualified by the full text of the Rules. The Rules, and not this description, will govern the calculation and constitution of the Index and other decisions and actions related to its maintenance. The Rules in effect as of the date of this underlying supplement are attached as Annex A to this underlying supplement. The Index is the intellectual property of JPMS plc, and JPMS plc reserves all rights with respect to its ownership of the Index. The closing level of the Index was set at 100 (the "**Base Level**") for January 2, 2002 (the "**Base Date**") and the Index has been calculated on a "live" basis (i.e., using real-time data) since September 17, 2013 (the "**Live Date**"). The Index is published by Bloomberg L.P. under the ticker symbol "JPUSLEDO <Index>."

The Index is designed to provide a synthetic long position in an underlying equity index, the S&P 500® Index (the S&P 500® Index, irrespective of its version, the "**Equity Index**") and limited downside protection against adverse movements of the Equity Index through a synthetic collar strategy as an overlay to the synthetic long position in the Equity Index.

The return of the Index is determined based on (i) the performance of the "**total return**" version of the Equity Index (the "**Total Return Equity Index**"), (ii) the return of a synthetic rolling collar strategy applied to the "**price return**" version of the Equity Index (the "**Price Return Equity Index**"), consisting of (a) a monthly rolled synthetic short call position of 1-month maturity with target strike prices varying from 103% to 108% of the closing levels of the Price Return Equity Index and (b) quarterly rolled synthetic long put positions of an 11-month maturity with a target strike price of 80% of the closing levels of the Price Return Equity Index, with each synthetic option position referencing European-style option contracts that can only be exercised upon the option contracts' expiry and (iii) a synthetic delta hedge position with respect to the synthetic short call position consisting of a variable synthetic exposure (i.e., adjusted up or down, as described below) to futures contracts referencing the Price Return Equity Index. A "**price return**" version of an equity index is an equity index that measures in aggregate the performance of its component securities by tracking their price movements only. A "**total return**" version of an equity index is an equity index that reflects the price return of its component securities with dividends reinvested in the index as a whole. Although the Index tracks the performance of the total return version of the Equity Index, its synthetic short call and long put positions reference the price return version of the Equity Index because listed option contracts on the Equity Index only exist in the form of contracts referencing the price return version of the Equity Index. By tracking the total return version of the Equity Index, the Index provides investors with the benefit of the dividend reinvestment available in the total return version of the Equity Index. The Index's synthetic short call position of 1-month maturity is much shorter-dated than its synthetic long put position of an 11-month maturity because (i) selling shorter-dated call options is expected to generate more premium than selling longer-dated ones and (ii) except in exceptional circumstances, short-dated call options allow for a better tracking of the Equity Index by resetting more frequently (monthly) the strike price of the Index's synthetic short call position (which effectively functions as a cap on the Index's synthetic long position in the total return version of the Equity Index). Because its synthetic short call position references one call option contract of 1-month expiry (at the time each applicable call option contract is synthetically purchased), the Index would need to roll its synthetic short call position into new call option contracts on a monthly basis. On the other hand, because, in order to provide more effective downside protection through diversification, its synthetic long put position references up to three put option contracts (the notional amount of the Index's synthetic long put position is equal to that of its synthetic short call position, but is split equally among three referenced put option contracts) of an 11-month expiry (at the time each applicable put option contract is synthetically purchased), the Index rolls its synthetic long put position on a quarterly basis.

The Index's synthetic short call position included in the synthetic collar strategy is designed to be delta-hedged so as to mitigate the risk that the Price Return Equity Index may appreciate to levels above the strike price of the call option, but may be unhedged sometimes. When the underlying asset of a call option appreciates to levels above the strike price of the call option, the buyer of the call option will likely exercise its call option (in the case of an American option, this can happen on each trading day; but in the case of a European option, it can only happen upon the option's expiry), and, as a result, the seller of the call option will incur losses covering its short call position by paying to the buyer of the call option an amount greater than the call premium the seller had received from the buyer of the call option. As a result, the seller of a call option is deemed to have a "directional view" on the underlying asset. However, if an investor combines a short call position with a long position in the underlying asset that is equal to the delta of the applicable call option contract, the long position in the underlying asset will partially offset the losses from the short call position when the underlying asset increases above the strike price of the call option. An investor can thus mitigate the risk of directional exposure through offsetting positions in the same underlying asset, regardless of whether the level or price of the underlying asset increases above the strike price of the call option. Combining a short call position in an underlying asset with a long position in the underlying asset that is equal to the delta of the applicable call option contract is generally referred to as delta-hedging the call position. "**Delta hedge**" is a hedge of a position in a derivative financial instrument through an offsetting position in that derivative instrument's underlying asset (or vice versa). In the case of the Index, the Index's synthetic short call position (the position in the derivative) is hedged through synthetic long positions in futures contracts referencing the Price Return Equity Index (the offsetting position in the underlying asset of the derivative position).

Fees and Deductions

The Index is subject to a total of three types of fees and deductions:

1. Daily index fee (or adjustment factor): on each day, the calculation of the Index reflects the deduction of an adjustment factor of 0.75% per annum (the "**Daily Index Fee**");

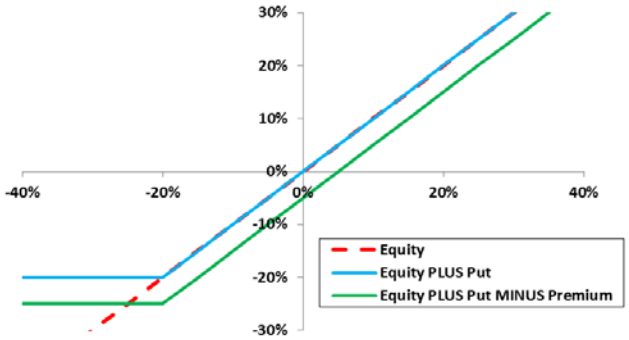
2. Call deduction and put deduction: on a monthly or quarterly basis, as applicable, when the Index's synthetic short call or long put exposure, as applicable, is rolled into a new option contract on the S&P 500® Index (the "**Price Return Equity Index**"), a call deduction or put deduction, as applicable, is subtracted in the calculation of the Index, once with respect to the establishment of a new short call position and twice (once in connection with the synthetic sale of the soon-to-expire put option contract and once in connection with the synthetic purchase of a replacement put option contract) with respect to the establishment of a new long put position. The call deduction or put deduction is calculated by multiplying the applicable volatility spread (which is between 0.30% and 3.00%) by the Vega (as defined below under "—The Calculation of the Index") of the applicable option contract, subject to certain minimum and maximum amounts. The applicable volatility spread depends on the level of the CBOE Volatility Index (the "**Volatility Index**" or "**VIX**") on the relevant date of determination. The call deduction or put deduction is designed to approximate the transaction costs of rolling the Index's synthetic short call or long put positions on the Price Return Equity Index, including bid-ask spreads and slippage costs that would be experienced by a professional investor seeking to replicate the hypothetical portfolio contemplated by the Index's synthetic short call and long put positions at prices that approximate the official settlement prices (which are not generally tradable) of the relevant option contracts. The slippage costs that are approximated in the call deduction or put deduction are costs that arise from deviations between the actual official settlement price of an applicable option contract and the prices at which a hypothetical investor would expect to be able to execute trades in the market when seeking to match the expected official settlement price of that option contract. Unlike the Daily Index Fee, the call deduction and the put deduction are not per annum percentage deductions; and

3. Delta deduction: on each day the delta hedge is implemented, 0.03% of any increase or decrease in the Index's exposure to the futures contracts on the Price Return Equity Index is deducted in the calculation of the Index. The delta deduction reflects costs relating to adjustments to the Index's delta hedge (as described below under "—The Collar Strategy—The Delta Hedge") of its synthetic short call position. Unlike the Daily Index Fee, the delta deduction is not a per annum percentage deduction.

The Collar Strategy

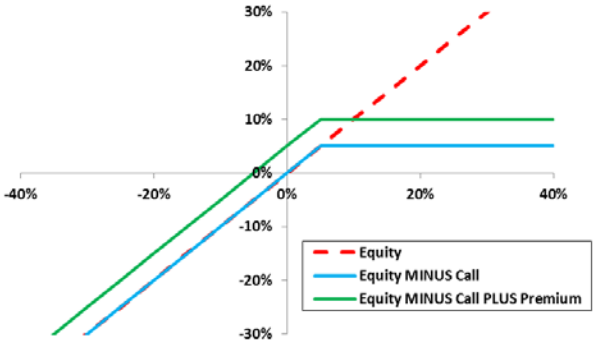
A collar strategy is the combination of the purchase of a European-style put option and the sale of a European-style call option on the same underlying asset. A European put option is an option contract that gives the option buyer the right, but not the obligation, to sell a specified amount of an underlying asset at a specified price (the "**strike price**") at a specified point in time (i.e., upon the expiry of the put option). The purchase of a put option would protect the option buyer from downside risk as a result of the depreciation of the value of the underlying asset to below the strike price; however, if the strike price is set below the initial value of the underlying asset at the time the put option is bought (i.e., the put option is "out of the money"), a put option would not protect the put option buyer against any potential loss that corresponds to the difference between the strike price and the initial value of the underlying asset. The graph below is an illustrative example of how a **long** position in a put option (i.e., the purchase of a put option) combined with an equity investment and adjusted for the premium paid may perform:

- an equity investment (red dashed line);
- an equity investment combined with the purchase of a put option with a strike price of 80% of the value of the underlying asset (blue line). The combined investment performance is effectively floored at -20%; and
- an equity investment combined with the purchase a put option with a strike price of 80% of the value of the underlying asset minus the premium paid by the put option buyer (green line).



A European call option is an option contract that gives the option buyer the right, but not the obligation, to buy a specified amount of an underlying asset at a specified strike price at a specified point in time (i.e., upon the expiry of the call option). Conversely, the option seller of a call option is required to sell the specified amount of the underlying asset at the specified strike price when the option buyer chooses to exercise its option to purchase the specified amount of the underlying asset. A call option seller often takes a bearish to neutral view of the underlying asset, i.e., the option seller would believe that the underlying asset is likely to depreciate or be stagnant, and unlikely to appreciate above the strike price during the option period. Selling a call option will provide the call option seller with an amount of option premium payment. The graph below is an illustrative example of how a **short** position in a call option (i.e., the sale of a call option) combined with an equity investment and adjusted for the premium earned may perform:

- an equity investment (red dashed line);
- an equity investment combined with the sale of a call option with a strike price of 105% of the value of the underlying asset (blue line). The combined investment performance is effectively capped at +5%; and
- an equity investment combined with the sale of a call option with a strike price of 105% of the value of the underlying asset plus the premium received by the call option seller (green line).



In a collar strategy, the sale of a call option on an underlying asset would generate a premium that investors could use to buy a put option on the same underlying asset. Assuming the put option and the call option have the same maturity, when combining them with a long exposure to the underlying asset, investors will effectively forfeit any upside exposure to the underlying asset above the strike price of the call option and in return are protected from downside exposure to the underlying asset below the strike price of the put option.

The illustrative graphs above relating to the purchase of a put option and the sale of a call option do not describe the actual put option synthetically invested by the Index or the actual call option synthetically sold by the Index, and no guarantee can be given that the Index's synthetic put position or call position can achieve its intended purposes.

The Index seeks to mitigate the risk of sharp decreases in the Equity Index by implementing a synthetic collar overlay on its synthetic long exposure to the Equity Index with synthetic purchases of put options on the Equity Index funded partially or fully, as the case may be, by the synthetic sales of call options on the Equity Index. However, because the Index's long put position is a synthetic position, which means that the Index did not actually purchase, and as a result, does not actually hold, a put option contract, it cannot benefit from the downside protection offered by its long put position by exercising an actual put option. Instead, the Index rolls the put option contracts it references as each contract approaches expiry, and, if the Price Return Equity Index depreciates and consequently the put option contracts it references appreciate in value, the level of the Index will increase due to the resetting of the strike price as a result of rolling the put option contracts. Each call option contract and put option contract that can be potentially selected and referenced by the Index's call or put positions is specified in Table 1: Option Constituents below, and is each referred to as a "**Call Option Contract**" or a "**Put Option Contract**," as applicable.

With respect to the Index and each Index Calculation Day (as defined below), the "**Call Option Constituent**" means the Call Option Contract selected by the Index Calculation Agent (as defined below) on the applicable Call Rebalancing Date (as defined below) from all the Eligible Call Option Contracts (as defined below) and referenced by the Index's synthetic short call position. Similarly, a "**Put Option Constituent**" means each Put Option Contract selected by the Index Calculation Agent on the applicable Put Rebalancing Date (as defined below) from all the Eligible Put Option Contracts (as defined below) and referenced by the Index's synthetic long put position. The Call Option Constituent and each Put Option Constituent are each referred to as an "**Option Constituent**."

Table 1: Option Constituents

Type of Option Contracts	Underlying Index	Expiry Date	Related Exchange
Call Option Contracts	The S&P 500® Index	The Saturday following the third Friday of each calendar month	The Chicago Board Options Exchange, Incorporated ("**CBOE**")
Put Option Contracts	The S&P 500® Index	The Saturday following the third Friday of each calendar month	CBOE

The Call Option Leg

Because the Index references Call Option Contracts that expire monthly in order to maintain its synthetic short call position in the Price Return Equity Index, each referenced Call Option Contract needs to be rolled into a new contract as that referenced Call Option Contract approaches expiry. This process is referred to as the rebalancing of the call position and occurs monthly on each Call Rebalancing Date. On each monthly Call Rebalancing Date, the Index Calculation Agent will select the applicable Eligible Call Option Contract (as defined below) that will replace the currently referenced Call Option Contract as the Call Option Constituent, and the Index will reference the new Call Option Constituent selected in the calculation of the closing level of the Index for each Index Calculation Day other than an Index Disrupted Day (as defined below) in the period from, but excluding, the current Call Rebalancing Date to, and including, the next Call Rebalancing Date.

As an initial step, the Index Calculation Agent will identify among all the Call Option Contracts those that are due to expire on the immediately following Call Rebalancing Date (each, an "**Eligible Call Option Contract**"). The Index Calculation Agent will then determine the Target Call Strike Price (as defined below) for that Call Rebalancing Date based on the comparison of the closing levels of the Price Return Equity Index and the Volatility Index on the immediately preceding Index Calculation Day that was not a Disrupted Equity Index Business Day or a Disrupted Volatility Index Business Day (each as defined below), as follows:

"**Target Call Strike Price**" means, with respect to any Call Rebalancing Date and the applicable closing level of the Volatility Index, the product of the corresponding "**Target Call Strike Percentage**" set forth in the table below and the applicable closing level of the Price Return Equity Index:

VIX Closing Level	Target Call Strike Percentage
VIX ≤ 20	103%
20< VIX ≤ 25	104%
25< VIX ≤ 30	105%
30< VIX ≤ 35	106%
35< VIX ≤ 60	107%
60< VIX	108%

Thus, for example, if on a given Call Rebalancing Date, the applicable closing level of the Volatility Index is 27 and the applicable closing level of the Price Return Equity Index is 1,850, because the applicable closing level of the Volatility Index is greater than 25 but equal to or less than 30, the Target Call Strike Percentage for that Call Rebalancing Date will be 105%, and the Target Call Strike Price for that Call Rebalancing Date will be 105% × 1,850, or 1,942.50. Because the Volatility Index measures the 30-day expected volatility of the Price Return Equity Index, and the strike price of option contracts on the Price Return Equity Index is set by the market based on the expected volatility level of the Price Return Equity Index, setting the Target Call Strike Price based on the applicable level of the Volatility Index would reflect market conditions for those option contracts. For more information about the Volatility Index, please see the section "Background on the CBOE Volatility Index" below.

Once the Target Call Strike Price is determined, the Index Calculation Agent is required to select as the Call Option Constituent the Eligible Call Option Contract whose strike price is equal to or closest in value to the Target Call Strike Price (irrespective of whether the strike price is greater than or less than the Target Call Strike Price); provided that if two or more Eligible Call Option Contracts have strike prices that are equally close to the Target Call Strike Price, then the Eligible Call Option Contract with the highest strike price will be selected as the Call Option Constituent. The strike price of the Call Option Constituent so selected will be referred to as the "**Call Strike**." However, if there is no Eligible Call Option Contract that has a strike price that is within 3% of the Target Call Strike Price, then no Call Option Constituent will be selected on that Call Rebalancing Date, and the Index will not maintain a synthetic short call position for the period from, but excluding, the current Call Rebalancing Date to, and including, the next Call Rebalancing Date (the consequence being that the Index's synthetic long position in the Total Return Equity Index will not be subject to a cap on its upside for the same period; however, the Index will not benefit from any premium that could have been earned from the synthetic sale of a call option for that period). If that Call Rebalancing Date is an Index Disrupted Day, then the Index will start referencing the Call Option Constituent selected on that Call Rebalancing Date in the calculation of the closing level of the Index from, but excluding, the first Index Calculation Day immediately following the Call Rebalancing Date that is not an Index Disrupted Day to, and including, the next Call Rebalancing Date.

Once the Call Option Constituent is selected, the Index Calculation Agent will determine the number of units of the Call Option Constituent (which may be less than one) the Index will sell synthetically, which is equal to the quotient of the closing level of the Index on the Index Calculation Day immediately preceding the Call Rebalancing Date that was not an Index Disrupted Day, divided by the closing level of the Price Return Equity Index on the Index Calculation Day immediately preceding the Call Rebalancing Date that was not a Disrupted Equity Index Business Day. The purpose of this calculation is to make the notional amount (i.e., per unit value times number of units) of the Call Option Constituent equal to the applicable closing level of the Index.

The Put Option Leg

Similarly, on the put option leg of the Index's synthetic collar strategy, as each Put Option Contract referenced by the Index's synthetic long put position on the Price Return Equity Index approaches expiry, the Index needs to roll its position into a new contract. This process is referred to as the rebalancing of the put position and occurs quarterly on each Put Rebalancing Date. On each quarterly Put Rebalancing Date, the Index Calculation Agent will select the applicable Incoming Put Option Constituent (as defined below), if any, that will replace the Outgoing Put Option Constituent (as defined below), and the Index will reference the Incoming Put Option Constituent selected on that Put Rebalancing Date, if any, together with up to two Remaining Put Option Constituents (as defined below) in the calculation of the closing level of the Index for each Index Calculation Day other than an Index Disrupted Day in the period from, but excluding, the current Put Rebalancing Date to, and including, the next Put Rebalancing Date.

As an initial step, the Index Calculation Agent will identify the Put Option Constituent that was selected for inclusion in the Index on the Put Rebalancing Date falling on or about nine months prior to the current Put Rebalancing Date, if any (the "**Outgoing Put Option Constituent**"). The Index Calculation Agent will then identify among all the Put Option Contracts those that are due to expire on the third Friday in the month falling eleven calendar months after the current Put Rebalancing Date (each, an "**Eligible Put Option Contract**"). The Index Calculation Agent will then determine the "**Target Put Strike Price**" for that Put Rebalancing Date, which is calculated by multiplying the closing level of the Price Return Equity Index on the immediately preceding Index Calculation Day that was not a Disrupted Equity Index Business Day by the "**Target Put Strike Percentage**," which is 80%. Once the Target Put Strike Price is determined, the Index Calculation Agent will select as the "**Incoming Put Option Constituent**" to replace the Outgoing Put Option Constituent the Eligible Put Option Contract whose strike price is equal to or closest in value to, but not greater than, the Target Put Strike Price for that Put Rebalancing Date. Each Put Option Constituent currently included in the Index that is not the Outgoing Put Option Constituent is a "**Remaining Put Option Contract**" with respect to that Put Rebalancing Date.

If, on that Put Rebalancing Date, there is no Eligible Put Option Contract that has a strike price that is equal to or less than the Target Put Strike Price, then the Target Put Strike Price will be recalculated based on a revised Target Put Strike Percentage, which will be the original Target Put Strike Percentage plus 10% (the recalculated Target Put Strike Price, the "**Revised Target Put Strike Price**"), and the Index Calculation Agent will select the Eligible Put Option Contract whose strike price is closest to the Target Put Strike Price and equal to or less than the Revised Target Put Strike Price. If, on that Put Rebalancing Date, there is no Eligible Put Option Contract that has a strike price that is equal to or less than the Revised Target Put Strike Price, then no Incoming Put Option Constituent will be selected to take the place of the Outgoing Put Option Constituent on that Put Rebalancing Date and, as a result, the Index will reference no more than two Put Option Constituents in the calculation of the closing level of the Index for the next nine months. After the nine-month period passes and rebalancing is again due for the currently vacant slot for that Put Option Constituent, the Index Calculation Agent will fill that vacant slot with an Incoming Put Option Constituent if there is an Eligible Put Option Contract that meets the Target Put Strike Price or Revised Target Put Strike Price requirement set forth above.

If the Put Rebalancing Date is an Index Disrupted Day, then the rolling of the Index out of the Outgoing Put Option Constituent, if any, and into the Incoming Put Option Constituent selected on that Put Rebalancing Date will become effective from, but excluding, the first Index Calculation Day immediately following that Put Rebalancing Date that is not an Index Disrupted Day.

Once the Incoming Put Option Constituent is selected, the Index Calculation Agent will determine the number of units of the Incoming Put Option Constituent (which may be less than one) the Index will purchase synthetically by dividing (a) the closing level of the Index on the Index Calculation Day immediately preceding the Put Rebalancing Date that was not an Index Disrupted Day by (b) 3 times the closing level of the Price Return Equity Index on the Index Calculation Day immediately preceding the Put Rebalancing Date that was not a Disrupted Equity Index Business Day. That number remains the same for as long as that Incoming Put Option Constituent is referenced by the Index. Similar to the calculation on the call option leg, the purpose of calculating the number of units of the Incoming Put Option Constituent this way is to make the total notional amount (i.e., per unit value times number of units) of the Put Option Constituents equal to the applicable closing level of the Index, with each Put Option Constituent counting for one third of the total notional investment.

The Delta Hedge

Except in circumstances in which no Eligible Call Option Contract that has a strike price within 3% of the Target Call Strike Price can be found, the Index always maintains a synthetic short call position. During any period in which the Index maintains a synthetic short call position, the synthetic short call position is designed to be delta-hedged through offsetting synthetic long investments in futures contracts referencing the Price Return Equity Index. However, the synthetic short call position may be unhedged sometimes. "**Delta**" is the ratio of the change in the price of an underlying asset to the corresponding change in the price of a derivative of the underlying asset. When the derivative is an option, it measures the rate of changes in the option value against changes in the price of the option's underlying asset. Depending on the derivative's maturity, the price of the underlying asset compared to the strike price of the derivative, i.e., the delta, can range from -1 to 1. The closer the value of delta is to 1 or -1, the more the derivative is like a direct long investment or short position, as applicable, in the underlying asset. If delta is 0, then the movement of the value of the derivative is completely unaffected by the price movement of the underlying asset. This scenario is highly unlikely.

Only the Index's synthetic short call position is potentially delta-hedged, and the Index's synthetic long put option position is not delta-hedged. A short call position will generate losses when the level or price of the underlying asset increases above the strike price of the call option. As a result, the seller of a call option is deemed to have a "directional view" on the underlying asset. However, if an investor combines a short call position with a long position in the underlying asset equal to the delta of the applicable call option contract, the long position in the underlying asset will partially offset the losses from the short call position when the underlying asset increases above the strike price of the call option. An investor can thus mitigate the risk of directional exposure through offsetting long positions in the same underlying asset, regardless of whether the level or price of the underlying asset increases above the strike price of the call option. Combining a short call position in an underlying asset with a long position in the same underlying asset equal to the delta of the applicable call option contract is generally referred to as delta-hedging the call position. To be effective, the position in the underlying asset needs to be rebalanced as frequently as possible. The Index rebalances its delta hedge exposure, when activated, at the close of each Index Calculation Day. The Index's synthetic short call position is delta-hedged, when activated, through synthetic long investments in futures contracts on the Price Return Equity Index. Since no direct investment in an equity index is possible, futures contracts on that index, because they are exchanged-traded and typically highly liquid, and track the index as a whole, provide a convenient proxy for a direct long investment in the index. On each Index Calculation Day, the Index Calculation Agent determines the notional amount of those futures contracts that would partially mitigate the directional exposure created by the Index's short call position, using the Black-Scholes model for the pricing of options and delta-hedging options. The Black-Scholes model is a well-known option pricing model, widely used for calculating the premium of a European-style option (i.e., an option that can only be exercised at the end of its life).

The delta hedge mechanism that hedges the Index's synthetic short call position is a variable mechanism that is switched on and off and adjusted based on the closing level of the Volatility Index. The delta hedge mechanism will only be activated when the closing level of the Volatility Index is below either its 6-month moving average or its 5-year moving average. And the delta hedge will be implemented gradually, i.e., when the closing level of the Volatility Index decreases to less than 100% of its 6-month moving average or its 5-year moving average, the delta hedge will be activated and partially implemented; when the closing level of the Volatility Index decreases to less than 80% of its 6-month moving average or its 5-year moving average, the delta hedge will be fully implemented. If the Volatility Index is below its 6-month moving average, it is generally a sign of rising equity markets, recovering from a period of distress. If the Volatility Index is below its 5-year moving average, it is generally a sign of stable and bullish equity markets. Therefore, on any Index Calculation Day on which the delta hedge is activated, the Index will implement, for that day, a long exposure to the Price Return Equity Index through a synthetic long investment in futures contracts on the Price Return Equity Index, which aims to mitigate the impact of the Index's synthetic short call position, and, as a result, the Index will have an upside exposure to the Total Return Equity Index through its synthetic long position in that index that approximates an uncapped upside exposure. However, if the condition described above is not met, the delta hedge will not be activated, even if the Index is maintaining a synthetic short call position. Under these circumstances, the Index will be subject to the upside exposure cap effectively imposed by the synthetic short call position.

Certain Other Defined Terms

An "**Index Calculation Day**" means any day that is an Equity Index Business Day for the Equity Index, an Option Constituent Business Day for each Option Constituent, a Volatility Index Business Day for the Volatility Index, a Futures Constituent Business Day for each Futures Constituent and a Settlement Index Business Day for the Settlement Index.

An "**Equity Index Business Day**" means any day on which the Exchange and each Related Exchange are scheduled to be open for trading for their respective regular trading sessions.

An "**Option Constituent Business Day**" means, with respect to an Option Constituent, any day on which the Related Exchange is scheduled to be open for trading for its regular trading session.

A "**Volatility Index Business Day**" means any day with respect to which the sponsor of the Volatility Index is scheduled to publish the level of the Volatility Index.

A "**Futures Constituent Business Day**" means, with respect to a Futures Constituent, any day on which the Related Exchange is scheduled to be open for trading for its regular trading session.

A "**Settlement Index Business Day**" means any day with respect to which the sponsor of the Settlement Index is scheduled to publish the level of the Settlement Index.

A "**Futures Constituent**" means any of the Earlier Expiry Futures Contract and the Later Expiry Futures Contract, each as specified in Table 2: Futures Constituents below.

"**Settlement Index**" means the S&P 500® Index Opening Settlement Value, as specified in Table 3: Index Constituents below.

"**Exchange**" means, with respect to a Constituent that is an index, each exchange or quotation system specified as such for that Constituent in Table 3: Index Constituents below, any successor to such exchange or quotation system or any substitute exchange or quotation system to which trading in the shares or other components underlying that Constituent has temporarily relocated (provided that the Index Calculation Agent has determined that there is comparable liquidity relative to the shares or other components underlying that Constituent on that temporary substitute exchange or quotation system as on the original Exchange).

"**Related Exchange**" means, with respect to a Constituent, each exchange or quotation system specified as such for that Constituent in Table 1, Table 2 and Table 3, any successor to such exchange or quotation system or any substitute exchange or quotation system to which trading in (i) futures or option contracts relating to the Equity Index, (ii) an Option Constituent, or (iii) a Futures Constituent has temporarily relocated (provided that the Index Calculation Agent has determined that there is comparable liquidity relative to the futures and option contracts relating to the Equity Index, Option Constituent or Futures Constituent (as the case may be) on such temporary substitute exchange or quotation system as on the original exchange or quotation system).

A "**Constituent**" means any of the Price Return Equity Index, Total Return Equity Index, Option Constituents, Earlier Expiry Futures Contract, Later Expiry Futures Contract, Settlement Index and Volatility Index.

A "**Call Rebalancing Date**" means, with respect to each calendar month, the scheduled monthly final settlement date (as specified in the rules of the Related Exchange) for each Call Option Contract expiring in that calendar month, which is expected to occur on the first business day following the third Friday of each calendar month.

A "**Put Rebalancing Date**" means, with respect to each calendar quarter, the scheduled quarterly final settlement date (as specified in the rules of the Related Exchange) for any Put Option Contract expiring in the months of January, April, July or October, which is expected to occur on the first business day following the third Friday of each January, April, July and October.

Table 2: Futures Constituents

Type of Futures Contracts	Futures Contract Details	Related Exchange	Bloomberg Ticker
Earlier Expiry Futures Contract	The front expiry E-mini futures contract on the S&P 500® Index† (i.e., the E-mini futures contract on the S&P 500® Index whose actual expiry day is expected to be the next expiry day to occur for an E-mini futures contract on the S&P 500® Index)	The Chicago Mercantile Exchange ("**CME**")	ES1 Index
Later Expiry Futures Contract	The second expiry E-mini futures contract on the S&P 500® Index (i.e., the E-mini futures contract on the S&P 500® Index whose scheduled expiry day is scheduled to be the next expiry day to occur following the actual expiry day of the front expiry E-mini futures contract on the S&P 500® Index)	CME	ES2 Index

†An "E-minis" futures contracts on the S&P 500® Index is a type of futures contract on the S&P 500® Index that represents a fraction of the value of a generic futures contract on the S&P 500® Index.

Table 3: Index Constituents

Relevant Index	Exchange	Related Exchange	Index Sponsor	Bloomberg Ticker
The S&P 500® Index (the "**Price Return Equity Index**")	New York Stock Exchange ("**NYSE**") and the NASDAQ Global Select Market ("**NASDAQ**")	CME	Standard & Poor's Financial Services LLC, a subsidiary of The McGraw-Hill Companies, Inc. ("**S&P**")	SPX <Index>
The S&P 500® Total Return Index (the "**Total Return Equity Index**")	NYSE and NASDAQ	CME	S&P	SPTR <Index>
The CBOE Volatility Index (the "**Volatility Index**")	CBOE	N/A	CBOE	VIX <Index>
The S&P 500® Index Opening Settlement Value (the "**Settlement Index**")	CBOE	N/A	CBOE	SPXSET <Index>

The Calculation of the Index

On each Index Calculation Day that is not an Index Disrupted Day, the Index Calculation Agent will calculate the closing level of the Index as the sum of (i) the closing level of the Index on the immediately preceding Index Calculation Day that was not an Index Disrupted Day, plus (ii) the "**Marked-To-Market Value**" for that Index Calculation Day, minus (iii) the cost of rebalancing the Index's synthetic short call position during the most recent rebalancing and minus (iv) the cost of rebalancing the Index's synthetic long put position, if applicable, during the most recent rebalancing. Specifically, the closing level of the Index will be calculated as follows:

$$\text{Index}_t = \text{Max}(0, \text{Index}_{(t)\text{prior}} + \text{MTM}_t - \text{PutCost}_t - \text{CallCost}_t)$$

Where:

"**Index_t**" means the closing level of the Index on the applicable Index Calculation Day.

"**$\text{Index}_{(t)\text{prior}}$**" means the closing level of the Index on the immediately preceding Index Calculation Day that was not an Index Disrupted Day.

"**CallCost_t**" means the cost of rebalancing the Index's synthetic short call position during the most recent rebalancing, as further described below.

"**PutCost_t**" means the cost of rebalancing the Index's synthetic long put position during the most recent rebalancing, as further described below.

"**MTM_t**" means an amount calculated as follows:

$$MTM_t = \Big(NCalls_k \times \big(CallMTM_{(t)prior} - CallMTM_t\big) + \sum_{j=1}^{3}\Big(NPuts_{h,j} \times \big(PutMTM_{t,j} - PutMTM_{(t)prior\,,j}\big)\Big) + DeltaHedge_t - DeltaCost_t - AF \times Index_{(t)prior} \times \frac{Act\,(DayCount\ )}{365} + Index_{(t)prior} \times \Big(\frac{ST_t}{ST_{(t)prior}} - 1\Big)\Big)$$

Where:

"**$NCalls_k$**" means the number of units of the Call Option Constituent synthetically sold on the immediately preceding Call Rebalancing Date.

"**$CallMTM_t$**" means:

(a) if either:

(i) the Index Calculation Day is a Call Rebalancing Date; or

(ii) the Index Calculation Day is not a Call Rebalancing Date, but a Call Rebalancing Date has occurred between that Index Calculation Day and the immediately preceding Index Calculation Day that was not an Index Disrupted Day,

an amount calculated as follows:

$$CallMTM_t = MAX\,(R_t - CallStrike_k, 0)$$

Where:

"**R_t**" means the closing level of the Settlement Index with respect to the Call Rebalancing Date.

"**$CallStrike_k$**" means the Call Strike of the Call Option Constituent.

(b) if the Index Calculation Day is not a Call Rebalancing Date, and a Call Rebalancing Date has not occurred between that Index Calculation Day and the immediately preceding Index Calculation Day that was not an Index Disrupted Day, an amount equal to the Settlement Price of the Call Option Constituent on that Index Calculation Day.

"**$CallMTM_{(t)prior}$**" means, with respect to the Index Calculation Day, the Settlement Price of the Call Option Constituent on the immediately preceding Index Calculation Day that was not an Index Disrupted Day.

"**$NPut_{h,j}$**" means, with respect to the Index Calculation Day and each Put Option Constituent (j) (j from 1 to 3 (or any lesser number equal to the number of the total Put Option Constituents)), the number of units of each Put Option Constituent.

"**$PutMTM_{t,j}$**" means, with respect to the Index Calculation Day and each Put Option Constituent (j) (j from 1 to 3 (or any lesser number equal to the number of the total Put Option Constituents)), the Settlement Price of each Put Option Constituent on the Index Calculation Day.

"**$PutMTM_{(t)prior,j}$**"	means, with respect to the Index Calculation Day and each Put Option Constituent (j) (j from 1 to 3 (or any lesser number equal to the number of the total Put Option Constituents)), the Settlement Price of each Put Option Constituent on the immediately preceding Index Calculation Day that was not an Index Disrupted Day.
"**$Deltahedge_t$**"	means the difference in the marked-to-market value of the Futures Constituents synthetically purchased and sold for the Index Calculation Day.
"**$DeltaCost_t$**"	means the cost of making adjustments to the Futures Constituents for the Index Calculation Day.
"**AF**"	means the Adjustment Factor of 0.75% per annum.
"**Act(DayCount)**"	means, with respect to the Index Calculation Day, the number of calendar days from, but excluding, the immediately preceding Index Calculation Day that was not an Index Disrupted Day to, and including, the Index Calculation Day.
"**ST_t**"	means the closing level of the Total Return Equity Index on the Index Calculation Day.
"**$ST_{(t)prior}$**"	means the closing level of the Total Return Equity Index on the immediately preceding Index Calculation Day that was not an Index Disrupted Day.

For each Index Calculation Day that is not an Index Disrupted Day, the "**Marked-To-Market Value**" is calculated as the sum of (i) the net change in the marked-to-market value of the Call Option Constituent and the Put Option Constituents synthetically sold or purchased by the Index, plus (ii) the difference in the marked-to-market value of the Futures Constituents synthetically purchased and sold for that Index Calculation Day as a result of any adjustment to the delta hedge of the Index's synthetic short call position, minus (iii) the "**Delta Deduction**" or the cost of synthetically buying and selling the Futures Constituents for that Index Calculation Day, minus (iv) the daily deduction of the Adjustment Factor of 0.75% of the closing level of the Index on the immediately preceding Index Calculation Day that was not an Index Disrupted Day and plus (v) the return of the Total Return Equity Index for that Index Calculation Day.

With respect to each Index Calculation Day, the marked-to-market value of each Put Option Constituent is the "**Settlement Price**" (as defined below) of each Put Option Constituent on that Index Calculation Day. The change in the marked-to-market value of each Put Option Constituent is the difference in its Settlement Price between that Index Calculation Day and the immediately preceding Index Calculation Day that was not an Index Disrupted Day.

With respect to each Index Calculation Day, if it is a Call Rebalancing Date or if a Call Rebalancing Date has occurred between that Index Calculation Day and the immediately preceding Index Calculation Day that was not an Index Disrupted Day, the marked-to-market value of the Call Option Constituent is equal to the closing level of the Settlement Index on that Call Rebalancing Date minus the Call Strike; provided that the marked-to-market value of the Call Option Constituent may not be less than 0. The Settlement Index tracks the settlement value of options on the Price Return Equity Index, and, with respect to an option, comparing the settlement value of that option with its strike price will tell market participants how much cash, if any, would hypothetically change hands between the option buyer and seller to settle the option. With respect to any other Index Calculation Day, the marked-to-market value of the Call Option Constituent is the Settlement Price of the Call Option Constituent on that Index Calculation Day. Once the marked-to-market value of the Call Option Constituent is calculated, the change in the marked-to-market value of the Call Option Constituent is calculated as the difference between the Settlement Price of the Call Option Constituent on the

immediately preceding Index Calculation Day that was not an Index Disrupted Day and the marked-to-market value of the Call Option Constituent on that Index Calculation Day.

With respect to each Index Calculation Day, if it is a Call Rebalancing Date or if a Call Rebalancing Date has occurred between that Index Calculation Day and the immediately preceding Index Calculation Day that was not an Index Disrupted Day, the net change in the value of the delta hedge is calculated as the product of (i) the delta of the Price Return Equity Index and the Call Option Constituent, (ii) an indicator calculated based on the comparison of the applicable closing level of the Volatility Index and its 5-year moving average and 6-month moving average on that Call Rebalancing Date, (iii) the number of units of the Call Option Constituent and (iv) the difference between the closing level of the Settlement Index for that Index Calculation Day and the closing level of the Price Return Equity Index on the immediately preceding Index Calculation Day that was not an Index Disrupted Day. Since the delta hedge serves as a hedge for the Index's synthetic short call position, on any Index Calculation Day on which the Index does not maintain a synthetic short call position, the delta hedge should be switched off and the value of the delta hedge should be 0. The formula reflects this feature of the Index, and it is implemented through the indicator factor in (ii). If the applicable closing level of the Volatility Index is equal to or above its 5-year moving average or its 6-month moving average, the indicator will be 0, and consequently, the value of the delta hedge will be 0. On any other Index Calculation Day, the calculation is the same except that factor (iv) will be changed to the difference between the closing prices of the applicable Futures Constituents on that Index Calculation Day and on the immediately preceding Index Calculation Day that was not an Index Disrupted Day.

With respect to each Index Calculation Day, the Delta Deduction is calculated as a fixed percentage of the increase or decrease in the Index's exposure to the Future Constituents used to delta-hedge the Index's short call position. This percentage is equal to 0.03%.

With respect to each Index Calculation Day, if it is a Call Rebalancing Date or if a Call Rebalancing Date has occurred between that Index Calculation Day and the immediately preceding Index Calculation Day that was not an Index Disrupted Day, the cost of rebalancing the Index's synthetic short call position (the "**Call Deduction**") is calculated based on (i) the Vega (as defined below) of the Call Option Constituent selected on that Call Rebalancing Date, (ii) the number of units of the Call Option Constituent determined on that Call Rebalancing Date, (iii) the Volatility Spread (as defined below) for that Index Calculation Day and (iv) the marked-to-market value of the Call Option Constituent on that Call Rebalancing Date. The Call Deduction calculated on each such Index Calculation Day is subject to both (x) a minimum amount of 0.05% times the closing level of the Index on the immediately preceding Index Calculation Day that was not an Index Disrupted Day and (y) a maximum amount equal to the product of (A) the number of units of the Call Option Constituent on that Call Rebalancing Date and (B) the marked-to-market value of the Call Option Constituent on that Call Rebalancing Date. "**Vega**" is the measurement of an option's sensitivity to changes in the volatility of the underlying asset of that option. Vega represents the amount that an option contract's price changes in reaction to a 1% change in the volatility of the underlying asset. With respect to any other Index Calculation Day, the Call Deduction is 0.

With respect to each Index Calculation Day, if it is a Put Rebalancing Date or if a Put Rebalancing Date has occurred between that Index Calculation Day and the immediately preceding Index Calculation Day that was not an Index Disrupted Day, the cost of rebalancing the Index's synthetic long put position (the "**Put Deduction**") is calculated based on (i) the Vegas of the Incoming Put Option Constituent selected on that Put Rebalancing Date and the Outgoing Put Option Constituent, (ii) the number of units of the Incoming Put Option Constituent determined on that Put Rebalancing Date and the number of units of the Outgoing Put Option Constituent, (iii) the Volatility Spread for that Index Calculation Day and (iv) the marked-to-market value of the Outgoing Put Option Constituent on that Put Rebalancing Date. With respect to the Put Deduction calculated on each such Index Calculation Day, the calculation of the part of the Put Deduction relating to the Incoming Put Option Constituent is subject to a minimum amount of 0.05% times the closing level of the Index on the immediately preceding Index Calculation Day that was not an Index Disrupted Day; and the calculation of the part of the Put Deduction relating to the Outgoing Put Option Constituent is subject to both (x) a minimum

amount of 0.05% times the closing level of the Index on the immediately preceding Index Calculation Day that was not an Index Disrupted Day and (y) a maximum amount equal to the product of (A) the number of units of the Outgoing Put Option Constituent on that Put Rebalancing Date and (B) the marked-to-market value of the Outgoing Put Option Constituent on that Put Rebalancing Date. With respect to any other Index Calculation Day, the Put Deduction is 0.

"**Volatility Spread**," with respect of an Index Calculation Day, means:

(i) 0.30% if the closing level of the Volatility Index on that Index Calculation Day is less than or equal to 20;

(ii) 0.50% if the closing level of the Volatility Index on that Index Calculation Day is greater than 20 but less than or equal to 25;

(iii) 0.75% if the closing level of the Volatility Index on that Index Calculation Day is greater than 25 but less than or equal to 30;

(iv) 1.00% if the closing level of the Volatility Index on that Index Calculation Day is greater than 30 but less than or equal to 35;

(v) 1.50% if the closing level of the Volatility Index on that Index Calculation Day is greater than 35 but less than or equal to 60; or

(vi) 3.00% if the closing level of the Volatility Index on that Index Calculation Day is greater than 60.

The calculation of the Call Deduction and the Put Deduction is partly based on the closing level of the Volatility Index because the Volatility Index measures the 30-day expected volatility of the Price Return Equity Index, and the cost of rebalancing the Index's synthetic short call position and long put position results from synthetically selling call options and buying put options at prices set by the market based on the expected volatility level of the Price Return Equity Index. Therefore, determining the Call Deduction and the Put Deduction based on the applicable level of the Volatility Index would approximate the actual market costs for trading those option contracts.

"**Settlement Price**" means:

(a) With respect to any Call Option Constituent, for any Index Calculation Day that is not an Index Disrupted Day,

> (i) if both the last bid price and the last offer price (as specified in the rules of the Related Exchange), with respect to the Call Option Constituent, are quoted and published for that Index Calculation Day by the Related Exchange, the arithmetic average of such last bid price and such last offer price; or
>
> (ii) if the last bid price (as specified in the rules of the Related Exchange), with respect to the Call Option Constituent, is not quoted and not published for that Index Calculation Day by the Related Exchange, but the last offer price (as specified in the rules of the Related Exchange), with respect to the Call Option Constituent, is quoted and published for that Index Calculation Day by the Related Exchange, the last offer price.

For the avoidance of doubt, if the last offer price (as specified in the rules of the Related Exchange), with respect to the Call Option Constituent, is not quoted and not published for that Index Calculation Day by the Related Exchange, then that Index Calculation Day will be an Index Disrupted Day.

(b) With respect to any Put Option Constituent, for any Index Calculation Day that is not an Index Disrupted Day:

(i) if both the last bid price and the last offer price (as specified in the rules of the Related Exchange), with respect to the Put Option Constituent, are quoted and published for that Index Calculation Day by the Related Exchange, the arithmetic average of such last bid price and such last offer price; or

(ii) if the last bid price (as specified in the rules of the Related Exchange), with respect to the Put Option Constituent, is not quoted and not published for that Index Calculation Day by the Related Exchange, but the last offer price (as specified in the rules of the Related Exchange), with respect to the Put Option Constituent, is quoted and published for that Index Calculation Day by the Related Exchange, the arithmetic average of zero and such last offer price.

For the avoidance of doubt, if the last offer price (as specified in the rules of the Related Exchange), with respect to the Put Option Constituent, is not quoted and not published for that Index Calculation Day by the Related Exchange, then that Index Calculation Day will be an Index Disrupted Day.

With respect to each Index Calculation Day, the calculation of the closing level of the Index reflects a daily deduction of the Adjustment Factor of 0.75% per annum.

Index Sponsor and Index Calculation Agent

JPMS plc is the sponsor of the Index (the "**Index Sponsor**"). The Index Sponsor may designate any entity (including a non-related third party) from time to time to act as calculation agent for the Index (the "**Index Calculation Agent**"). As of the date of this underlying supplement, JPMS plc is acting as the Index Calculation Agent.

Each of the Index Sponsor and the Index Calculation Agent will act in good faith and in a commercially reasonable manner with respect to determinations, interpretations and calculations made by it pursuant to the Rules.

All determinations, interpretations and calculations of the Index Sponsor and the Index Calculation Agent relating to the Rules will be final, conclusive and binding and no person will be entitled to make any claim against the Index Sponsor, the Index Calculation Agent or any other Relevant Person in respect thereof. None of the Index Sponsor, the Index Calculation Agent and any other Relevant Person will:

- be under any obligation to revise any determination, interpretation or calculation made or action taken for any reason in connection with the Rules or the Index; or
- 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) with respect to the 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 the Index or the Index Levels.

"**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.

Publication of Index Levels

Unless an Index Calculation Day is an Index Disrupted Day, the Index Calculation Agent will calculate and publish (in a manner determined by the Index Calculation Agent from time to time) the level of the Index (the "**Index Level**") with respect to each Index Calculation Day. All Index Levels are rounded to two decimal places only for purposes of publication and are published in the currency of the Index.

If an Index Calculation Day is an Index Disrupted Day, then the Index Calculation Agent will not calculate or publish the Index Level for that Index Calculation Day and will suspend the calculation and

publication of the Index Level until the first succeeding Index Calculation Day that is not an Index Disrupted Day.

Index Market Disruption Events

An "**Index Disrupted Day**" means any Index Calculation Day on which:

(i) an Index Market Disruption Event has occurred or is continuing with respect to the Equity Index, any Option Constituent, any Futures Constituent, the Settlement Index or the Volatility Index;

(ii) any Exchange or Related Exchange (as the case may be) fails to open for trading during its regular trading session; or

(iii) the last offer price (under the rules of the applicable Related Exchange) of any Option Constituent is not quoted and not published for that Index Calculation Day by that Related Exchange**.**

A "**Disrupted Equity Index Business Day**" means any Index Calculation Day on which (i) an Index Market Disruption Event has occurred or is continuing with respect to the Equity Index; or (ii) any Exchange or Related Exchange for the Equity Index fails to open for trading during its regular trading session.

A "**Disrupted Volatility Index Business Day**" means any Index Calculation Day on which an Index Market Disruption Event has occurred or is continuing with respect to the Volatility Index.

An "**Index Market Disruption Event**" means the occurrence of one or more of the following events that, in the determination of the Index Calculation Agent in its sole discretion, materially interferes with the ability of market participants to transact in positions with respect to the Index or any Constituent:

(a) with respect to the Equity Index and an Equity Index Business Day:

(i) a failure by the sponsor of the Equity Index to calculate and publish the closing level for the Equity Index on that day within the scheduled or usual timeframe for publication; or

(ii) the occurrence or existence of (x) (A) a Trading Disruption or (B) an Exchange Disruption, in either case that the Index Calculation Agent determines is material, at any time during the one hour period that ends at the Scheduled Closing Time or (y) an Early Closure.

For the purpose of determining whether an Index Market Disruption Event with respect to the Equity Index exists at any time, if there is an Index Market Disruption Event with respect to a security included in the Equity Index at any time on an Equity Index Business Day, the relevant percentage contribution of that security to the level of the Equity Index will be the percentage contribution of that security as of the Scheduled Closing Time on the immediately preceding Equity Index Business Day, as published by Bloomberg Financial Markets (or if Bloomberg Financial Markets ceases to publish such percentage contributions, a replacement therefor acceptable to the Index Calculation Agent) (the "**Percentage Publisher**"); provided that if the Percentage Publisher does not publish such a percentage contribution at that time, the relevant percentage contribution will be determined by the Index Calculation Agent based on the prices for the securities included in the Equity Index as of the Scheduled Closing Time on the immediately preceding Equity Index Business Day, as reported in the official real-time price dissemination mechanism for the Exchange (or, if trading in a security included in the Equity Index is disrupted at that time, based on its estimate of the value of the relevant security at that time); or

(b) with respect to an Option Constituent and an Option Constituent Business Day, the occurrence or existence, with respect to such Option Constituent, of: (A) at any time during the one hour period that ends at the Scheduled Closing Time for the Related Exchange (1) a Trading

Disruption or (2) an Exchange Disruption, that in either case the Index Calculation Agent determines is material, or (B) an Early Closure; or

(c) with respect to the Volatility Index and a Volatility Index Business Day, a failure by the sponsor of the Volatility Index to calculate and publish the closing level for the Volatility Index on such day within the scheduled or usual timeframe for publication; or

(d) with respect to a Futures Constituent and a Futures Constituent Business Day, the occurrence or existence, with respect to such Futures Constituent, of: (A) at any time during the one hour period that ends at the Scheduled Closing Time for the Related Exchange (1) a Trading Disruption or (2) an Exchange Disruption, that in either case the Index Calculation Agent determines is material, or (B) an Early Closure; or

(e) with respect to the Settlement Index and a Settlement Index Business Day, a failure by the sponsor of the Settlement Index to calculate and publish the closing level for the Settlement Index on such day within the scheduled or usual timeframe for publication.

"**Trading Disruption**" means:

(a) with respect to the Equity Index, any suspension of or limitation imposed on trading by the Exchange or Related Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the Exchange or Related Exchange or otherwise: (i) relating to securities that comprise 20 percent or more of the closing level for the Equity Index, or (ii) in futures or options contracts relating to the Equity Index on the Related Exchange; or

(b) with respect to an Option Constituent, any suspension of or limitation imposed on trading by the Related Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the Related Exchange or otherwise relating to such Option Constituent; or

(c) with respect to a Futures Constituent, any suspension of or limitation imposed on trading by the Related Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the Related Exchange or otherwise relating to such Futures Constituent.

"**Exchange Disruption**" means:

(a) with respect to the Equity Index, any event (other than an Early Closure) that disrupts or impairs (as determined by the Index Calculation Agent) the ability of market participants in general (i) to effect transactions in, or obtain market values relating to, securities that comprise 20 percent or more of the level of the Equity Index, or (ii) to effect transactions in, or obtain market values for, futures or options contracts relating to the Equity Index on the Related Exchange;

(b) with respect to an Option Constituent, any event (other than an Early Closure) that disrupts or impairs (as determined by the Index Calculation Agent) the ability of market participants in general to effect transactions in, or to obtain market values for, such Option Constituent on the Related Exchange; or

(c) with respect to a Futures Constituent, any event (other than an Early Closure) that disrupts or impairs (as determined by the Index Calculation Agent) the ability of market participants in general to effect transactions in, or to obtain market values for, such Futures Constituent on the Related Exchange.

"**Early Closure**" means:

(a) with respect to the Equity Index, the closure on any Equity Index Business Day of (x) the Exchange relating to securities that comprise 20 percent or more of the level of the Equity Index or (y) any Related Exchange prior to its Scheduled Closing Time unless such earlier closing is announced by such Exchange or Related Exchange (as the case may be) at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on such Exchange or Related Exchange (as the case

may be) on such Equity Index Business Day; and (ii) the submission deadline for orders to be entered into the Exchange or Related Exchange system for execution at the Scheduled Closing Time on such Equity Index Business Day;

(b) with respect to an Option Constituent, the closure on any Option Constituent Business Day of the Related Exchange prior to its Scheduled Closing Time unless such earlier closing is announced by such Related Exchange at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on such Related Exchange on such Option Constituent Business Day and (ii) if applicable, the submission deadline for orders to be entered into the Related Exchange system for execution at the Scheduled Closing Time on such Option Constituent Business Day; or

(c) with respect to a Futures Constituent, the closure on any Futures Constituent Business Day of the Related Exchange prior to its Scheduled Closing Time unless such earlier closing is announced by such Related Exchange at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on such Related Exchange on such Futures Constituent Business Day and (ii) if applicable, the submission deadline for orders to be entered into the Related Exchange system for execution at the Scheduled Closing Time on such Futures Constituent Business Day.

"**Scheduled Closing Time**" means:

(a) With respect to the Equity Index, the scheduled weekday closing time of the relevant Exchange or Related Exchange (as applicable) on a relevant day, without regard to after hours or any other trading outside of the regular trading session hours; and

(b) With respect to a Constituent that is an Option Constituent or a Futures Constituent, the scheduled weekday closing time of the applicable Related Exchange on the relevant Option Constituent Business Day or Futures Constituent Business Day, without regard to after hours or any other trading outside of the regular trading session hours.

Extraordinary Events

Certain events, which we refer to as "**Extraordinary Events**," will cause the Index Calculation Agent to replace or remove a Constituent, make an adjustment to the Rules as it determines in good faith is appropriate or cease publication of the Index.

Successor Constituent

If, with respect to the Index:

- a Constituent (other than an Option Constituent or a Futures Constituent) is (i) not calculated and announced by the sponsor of that Constituent, but is calculated and announced by a successor sponsor acceptable to the Index Calculation Agent, or (ii) replaced by a successor index or tracker (as applicable) 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 that Constituent; or

- trading in an Option Constituent or a Futures Constituent relocates to an exchange or quotation system on which there is comparable liquidity relative to such Option Constituent or such Futures Constituent as on the original Related Exchange for such Option Constituent or such Futures Constituent,

(each such Constituent, an "**Affected Constituent**"), then that equity index, option contract, volatility index, futures contract and/or settlement index, as the case may be, (each, a "**Successor Constituent**") will be deemed to be or continue to be, as the case may be, the Affected Constituent with effect from a date determined by the Index Calculation Agent which may make such adjustments to the Rules as it determines appropriate to account for such change.

Material Change to a Constituent or Cancellation or Non-Publication of a Constituent

If, on or prior to any Index Calculation Day:

- with respect to a Constituent (other than an Option Constituent or a Futures Constituent), the sponsor of that Constituent (i) makes a material change in the formula for or the method of calculating such Constituent or in any other way materially modifies that Constituent (other than a modification prescribed in that formula or method to maintain that Constituent in the event of changes in components and/or other routine or contemplated events), or (ii) permanently cancels such Constituent and no Successor Constituent exists or is otherwise unable or unwilling to publish a level for such Constituent; or

- with respect to an Option Constituent or a Futures Constituent, (i) the terms of such Option Constituent or such Futures Constituent are materially changed or modified including, but not limited to, a change to the final settlement date of the Option Constituent or the Futures Constituent, or (ii) trading in such Option Constituent or such Futures Constituent is permanently discontinued or relocates to an exchange or quotation system on which there is not comparable liquidity relative to such Option Constituent or such Futures Constituent as on the original Related Exchange for such Option Constituent or such Futures Constituent, and no Successor Constituent exists,

(each such Constituent, an "**Affected Constituent**"), then the Index Calculation Agent may (i) exclude the Affected Constituent from the Index or substitute for the Affected Constituent in the Index; (ii) adjust the Rules as it determines to be appropriate to account for such change(s) including, without limitation, selecting a replacement equity index, option contract, volatility index, futures contract and/or settlement index (as the case may be) having similar characteristics to the Affected Constituent and the date such replacement is effective; or (iii) cease publication of the Index on such date as is determined by the Index Calculation Agent.

Cancellation of Relevant License or Permission

If, with respect to the Index, 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 Constituent (for purposes of this paragraph, an "**Affected Constituent**") for the purposes of the Index terminates, or the rights of the Index Sponsor or the Index Calculation Agent (or any of their affiliates) to use the Affected Constituent for the purposes of the Index is otherwise disputed, impaired or ceases (for any reason), then the Index Calculation Agent may (a) exclude the Affected Constituent from the Index or substitute for the Affected Constituent in the Index, and in either case may adjust the Rules as it determines to be appropriate to account for that event including, without limitation, in the case of substitution selecting (i) a replacement equity index, option contract, volatility index, futures contract and/or settlement index having characteristics similar to the equity index, option contract, volatility index, futures contract and/or settlement index (as the case may be) being replaced and (ii) the date such replacement is effective or (b) cease publication of the Index on such date as is determined by the Index Calculation Agent.

Change in Law

Without prejudice to the ability of the Index Sponsor or the Index Calculation Agent to amend or adjust the Rules, upon the occurrence of a Change in Law that affects any Constituent (for purposes of this paragraph, an "**Affected Constituent**"), the Index Calculation Agent may, with respect to the Index, (a) exclude the Affected Constituent from the Index or substitute for the Affected Constituent in the Index, and in either case may adjust the Rules as it determines to be appropriate to account for such change(s) including, without limitation, in the case of substitution, selecting (i) a replacement equity index, option contract, volatility index, futures contract and/or settlement index having characteristics similar to the equity index, option contract, volatility index, futures contract and/or settlement index (as the case may be) being replaced and (ii) the date such replacement is effective, or (b) cease publication of the Index on such date as is determined by the Index Calculation Agent.

"**Change in Law**" means on or after September 17, 2013 due to (a) 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 (b) 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 and Futures Trading Commission, the U.S. Securities and Exchange Commission or any exchange or trading facility), whether in the case of clause (a) or (b) of this definition the Index Calculation Agent determines that (i) it is contrary to that 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 financial asset, transaction or interest in or relating to a Constituent or any component of a Constituent or (ii) holding a position in any financial asset, transaction or interest in or relating to a Constituent or any component of a Constituent 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, regulation, order or rule.

Amendments to the Rules

The Rules 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 that amendment.

Although the 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 Rules to reflect such resolution.

Corrections

If, with respect to the Index:

- the level or price of any Constituent or other variable, input or other matter that is used to calculate the Index Level for any Index Calculation Day is subsequently corrected and the correction is published by the sponsor of the relevant Constituent for a Constituent that is not an Option Constituent or a Futures Constituent, or the Related Exchange with respect to an Option Constituent or a Futures Constituent, or relevant publication source; or

- the Index Calculation Agent identifies an error or omission in any of its calculations or determinations with respect to the Index Level of the Index for any Index Calculation Day,

then the Index Calculation Agent may, if practicable and if it considers that correction, error or omission material, correct the published Index Level for that day and/or each subsequent Index Calculation Day. The Index Calculation Agent will publish (in the manner determined by the Index Calculation Agent) such corrected Index Level(s) as soon as reasonably practicable.

BACKGROUND ON THE S&P 500® INDEX

We have derived all information contained in this underlying supplement regarding the S&P 500® Index, including, without limitation, its make-up, method of calculation and changes in its components, from publicly available information, without independent verification. This information reflects the policies of, and is subject to change by, Standard & Poor's Financial Services LLC ("S&P"). The S&P 500® Index was developed by S&P and is calculated, maintained and published by S&P. S&P has no obligation to continue to publish, and may discontinue the publication of, the S&P 500® Index.

The S&P 500® Index is reported by Bloomberg L.P. under the ticker symbol "SPX."

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, which owns the S&P Indices business and the Dow Jones Indexes business, including the S&P 500® Index.

The S&P 500® Index is designed to provide a performance benchmark for the U.S. equity markets. The calculation of the level of the S&P 500® Index (discussed below in further detail) is based on the relative value of the aggregate Market Value (as defined below) of the common stocks of 500 companies (the "S&P Component Stocks") as of a particular time as compared to the aggregate average Market Value of the common stocks of 500 similar companies during the base period of the years 1941 through 1943. Historically, the "Market Value" of any S&P Component Stock was calculated as the product of the market price per share and the number of the then-outstanding shares of such S&P Component Stock. As discussed below, on March 21, 2005, S&P began to use a new methodology to calculate the Market Value of the S&P Component Stocks and on September 16, 2005, S&P completed its transition to the new calculation methodology. The 500 companies are not the 500 largest companies listed on the New York Stock Exchange (the "NYSE") and not all 500 companies are listed on such exchange. S&P chooses companies for inclusion in the S&P 500® Index with the objective of achieving a distribution by broad industry groupings that approximates the distribution of these groupings in the common stock population of the U.S. equity market. S&P may from time to time, in its sole discretion, add companies to, or delete companies from, the S&P 500® Index to achieve the objectives stated above. Relevant criteria employed by S&P include the viability of the particular company, the extent to which that company represents the industry group to which it is assigned, the extent to which the company's common stock is widely-held and the Market Value and trading activity of the common stock of that company.

The S&P 500® Index is a float-adjusted index. Under float adjustment, the share counts used in calculating the S&P 500® Index reflect only those shares that are available to investors, not all of a company's outstanding shares. Float adjustment excludes shares that are closely held by control groups, other publicly traded companies or government agencies.

S&P currently defines three groups of shareholders whose holdings are subject to float adjustment if the relevant group's holdings exceed 10% of the outstanding shares:

- holdings by other publicly traded corporations, venture capital firms, private equity firms, strategic partners, or leveraged buyout groups;
- holdings by government entities, including all levels of government in the United States or foreign countries; and
- holdings by current or former officers and directors of the company, founders of the company or family trusts of officers, directors or founders, as well as holdings of trusts, foundations, pension funds, employee stock ownership plans, or other investment vehicles associated with and controlled by the company.

Under the current float-adjustment rules, in cases where holdings in a group exceed 10% of the outstanding shares of a company, the holdings of that group will be excluded from the float-adjusted count of shares to be used in the S&P 500® Index calculation. Mutual funds, investment advisory firms, pension funds or foundations not associated with the company and investment funds in insurance companies and shares that trust beneficiaries may buy or sell without difficulty or significant additional expense beyond typical brokerage fees are currently part of the float.

Beginning in September 2012, all share-holdings with a position greater than 5% of a stock's outstanding shares, other than holdings by "block owners," will be removed from the float for purposes of calculating the S&P 500® Index. Generally, these "control holders" will include officers and directors, private equity, venture capital & special equity firms, other publicly traded companies that hold shares for control, strategic partners, holders of restricted shares, ESOPs, employee and family trusts, foundations associated with the company, holders of unlisted share classes of stock or government entities at all levels (other than government retirement/pension funds) and any individual person who controls a 5% or greater stake in a company as reported in regulatory filings. Holdings by block owners, such as depositary banks, pension funds, mutual funds & ETF providers, 401(k) plans of the company, government retirement/pension funds, investment funds of insurance companies, asset managers and investment funds, independent foundations and savings and investment plans, will ordinarily be considered part of the float.

Treasury stock, stock options, equity participation units, warrants, preferred stock, convertible stock and rights are generally not part of the float. However, shares held in a trust to allow investors in countries outside the country of domicile (e.g., ADRs, CDIs and Canadian exchangeable shares) are normally part of the float unless those shares form a control block. If a company has more than one class of stock outstanding, shares in an unlisted or non-traded class are treated as a control block.

For each stock, an investable weight factor ("IWF") is calculated by dividing the available float shares by the total shares outstanding. Available float shares are currently defined as the total shares outstanding less shares held in one or more of the three groups listed above where the group holdings exceed 10% of the outstanding shares. Beginning in September 2012, available float shares will be defined as total shares outstanding less shares held by control holders. The S&P 500® Index is calculated by dividing the sum of the IWF multiplied by both the price and the total shares outstanding for each stock by the Index Divisor.

As of the date of this underlying supplement, the S&P 500® Index is calculated using a base-weighted aggregate methodology: the level of the S&P 500® Index reflects the total Market Value of all 500 S&P Component Stocks relative to the S&P 500® Index's base period of 1941–43 (the "Base Period").

An indexed number is used to represent the results of this calculation in order to make the value easier to work with and track over time.

The actual total Market Value of the S&P Component Stocks during the Base Period has been set equal to an indexed value of 10. This is often indicated by the notation 1941–43=10. In practice, the daily calculation of the S&P 500® Index is computed by dividing the total Market Value of the S&P Component Stocks by a number called the Index Divisor. By itself, the Index Divisor is an arbitrary number. However, in the context of the calculation of the S&P 500® Index, it is the only link to the original Base Period level of the S&P 500® Index. The Index Divisor keeps the S&P 500® Index comparable over time and is the manipulation point for all adjustments to the S&P 500® Index ("Index Maintenance").

Index Maintenance includes monitoring and completing the adjustments for company additions and deletions, share changes, stock splits, stock dividends and stock price adjustments due to company restructurings or spin-offs.

To prevent the level of the S&P 500® Index from changing due to corporate actions, all corporate actions which affect the total Market Value of the S&P 500® Index require an Index Divisor adjustment. By adjusting the Index Divisor for the change in total Market Value, the level of the S&P 500® Index remains constant. This helps maintain the level of the S&P 500® Index as an accurate barometer of stock market performance and ensures that the movement of the S&P 500® Index does not reflect the corporate actions of individual companies in the S&P 500® Index. All Index Divisor adjustments are made after the close of trading and after the calculation of the closing level of the S&P 500® Index. Some corporate actions, such as stock splits and stock dividends, require simple changes in the common shares outstanding and the stock prices of the companies in the S&P 500® Index and do not require Index Divisor adjustments.

The table below summarizes the types of Index Maintenance adjustments and indicates whether or not an Index Divisor adjustment is required.

Type of Corporate Action	Comments	Divisor Adjustment
Company added/ deleted	Net change in market value determines divisor adjustment.	Yes
Change in shares outstanding	Any combination of secondary issuance, share repurchase or buy back – share counts revised to reflect change.	Yes
Stock split	Share count revised to reflect new count. Divisor adjustment is not required since the share count and price changes are offsetting.	No
Spin-off	If the spun-off company is not being added to the index, the divisor adjustment reflects the decline in index market value (i.e., the value of the spun-off unit).	Yes
Spin-off	Spun-off company added to the index, another company removed to keep number of names fixed. Divisor adjustment reflects deletion.	Yes
Change in IWF due to a corporate action or a purchase or sale by an inside holder	Increasing (decreasing) the IWF increases (decreases) the total market value of the index. The divisor change reflects the change in market value caused by the change to an IWF.	Yes
Special dividend	When a company pays a special dividend the share price is assumed to drop by the amount of the dividend; the divisor adjustment reflects this drop in index market value.	Yes
Rights offering	Each shareholder receives the right to buy a proportional number of additional shares at a set (often discounted) price. The calculation assumes that the offering is fully subscribed. Divisor adjustment reflects increase in market cap measured as the shares issued multiplied by the price paid.	Yes

Stock splits and stock dividends do not affect the Index Divisor, because following a split or dividend, both the stock price and number of shares outstanding are adjusted by S&P so that there is no change in the Market Value of the S&P Component Stock. All stock split and dividend adjustments are made after the close of trading on the day before the ex-date.

Each of the corporate events exemplified in the table requiring an adjustment to the Index Divisor has the effect of altering the Market Value of the S&P Component Stock and consequently of altering the aggregate Market Value of the S&P Component Stocks (the "Post-Event Aggregate Market Value"). In order that the level of the S&P 500® Index (the "Pre-Event Index Value") not be affected by the altered Market Value (whether increase or decrease) of the affected Component Stock, a new Index Divisor ("New Divisor") is derived as follows:

$$\frac{\text{Post-Event Aggregate Market Value}}{\text{New Divisor}} = \text{Pre-Event Index Value}$$

$$\text{New Divisor} = \frac{\text{Post-Event Aggregate Market Value}}{\text{Pre-Event Index Value}}$$

A large part of the Index Maintenance process involves tracking the changes in the number of shares outstanding of each of the S&P 500® Index companies. Four times a year, on a Friday close to the end of each calendar quarter, the share totals of companies in the S&P 500® Index are updated as required by any changes in the number of shares outstanding. After the totals are updated, the Index Divisor is adjusted to compensate for the net change in the total Market Value of the S&P 500® Index. In addition, any changes over 5% in the current common shares outstanding for the S&P 500® Index companies are carefully reviewed on a weekly basis, and when appropriate, an immediate adjustment is made to the Index Divisor.

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BACKGROUND ON THE S&P 500® TOTAL RETURN INDEX

We have derived all information contained in this underlying supplement regarding the S&P 500® Total Return Index from publicly available information, without independent verification. This information reflects the policies of, and is subject to change by, Standard & Poor's Financial Services LLC ("S&P"). The S&P 500® Total Return Index was developed by S&P and is calculated, maintained and published by S&P. S&P has no obligation to continue to publish, and may discontinue the publication of, the S&P 500® Index.

The S&P 500® Total Return Index is reported by Bloomberg L.P. under the ticker symbol "SPTR."

The S&P 500® Total Return Index represents the total return earned on a portfolio that tracks the S&P 500® Index and reinvests dividend income in the S&P 500® Index, not in the specific stock paying the dividend. While changes in the level of the S&P 500® Index reflect only changes in stock prices, changes in the level of the S&P 500® Total Return Index reflect both movements in stock prices and the reinvestment of dividend income.

The S&P 500® Total Return Index is calculated from the S&P 500® Index and daily total dividend returns. First, on each trading day, the total dividend paid on that day is measured in dollars and converted into index points of the S&P 500® Index by dividing the total dividend paid by the divisor for the S&P 500® Index.

The next step is to apply the usual definition of a total return from a financial instrument to the S&P 500® Index. The first equation below gives the definition. The second equation below applies it to the S&P 500® Index:

$$\text{TotalReturn} = \left(\frac{P_t + D_t}{P_{t-1}}\right) - 1$$

$$\text{DTR}_t = \left(\frac{\text{IndexLevel}_t + \text{IndexDividend}_t}{\text{IndexLevel}_{t-1}}\right) - 1$$

where the TotalReturn and the daily total return for the index (DTR) are stated as decimals. The DTR is used to update the S&P 500® Total Return Index from one day to the next:

$$\text{TotalReturnIndex}_t = \left(\text{TotalReturnIndex}_{t-1}\right) \times \left(1 + \text{DTR}_t\right)$$

The S&P 500® Total Return Index reflects both ordinary and special dividends. Ordinary cash dividends are applied on the ex-date in calculating the S&P 500® Total Return Index. Special dividends are those dividends that are outside of the normal payment pattern established historically by the issuer of the stocks composing the S&P 500® Index. These may be described by the issuer as "special," "extra," "year-end," or "return of capital." Whether a dividend is funded from operating earnings or from other sources of cash does not affect the determination of whether it is ordinary or special. Special dividends are treated as corporate actions with offsetting price and divisor adjustments.

For more information about the S&P 500® Index, please see "Background on the S&P 500® Index" in this underlying supplement.

BACKGROUND ON THE S&P 500® INDEX OPENING SETTLEMENT VALUE

We have derived all information contained in this underlying supplement regarding the S&P 500® Index Opening Settlement Value from publicly available information, without independent verification. This information reflects the policies of, and is subject to change by, The Chicago Board Options Exchange, Incorporated ("**CBOE**"). The S&P 500® Index Opening Settlement Value is published by Bloomberg LP under the ticker symbol "SPXSET."

The S&P 500® Index Opening Settlement Value is used for settlement of expiring options on the S&P 500® Index, and is calculated using the opening sales price in the primary market of each component security of the S&P 500® Index on the last business day (usually a Friday) before the expiration date of the applicable option. The exercise of an option will result in delivery of cash on the business day following the expiration of the option. The exercise-settlement amount is the amount of cash delivered upon the settlement of an option, and, in the case of options on the S&P 500® Index, is equal to the difference between the S&P 500® Index Opening Settlement Value and the exercise price of the option, multiplied by $100.

For more information about the S&P 500® Index, please see "Background on the S&P 500® Index" in this underlying supplement.

BACKGROUND ON OPTION CONTRACTS ON THE S&P 500® INDEX

Option contracts on the S&P 500® Index are currently traded on The Chicago Board Options Exchange, Incorporated. These options expire ranging from one month from the date of issuance to twelve months from the date of issuance.

Overview of Option Markets

An option is a contract which gives the buyer of the option the right, but not the obligation, to buy or sell an underlying asset or instrument at a specified strike price on or before a specified date, which is referred to as "exercising" its option. The seller of the option has the corresponding obligation to fulfill the transaction if the buyer chooses to exercise the option. The buyer of an option pays a premium to the seller for this right. An option which conveys to the buyer the right to buy the relevant underlying asset at a specific price is referred to as a call; an option which conveys to the buyer the right to sell the relevant underlying asset at a specific price is referred to as a put. An option contract provides for a specified settlement month in which the cash settlement is made or in which the underlying asset or financial instrument is to be delivered by the seller (whose position is therefore described as "short") and acquired by the buyer (whose position is therefore described as "long").

Unlike equity securities, option contracts, by their terms, have stated expirations at a specified point in time. An American-style option permits the option buyer to exercise its option on any trading day on or before the option's expiration, whereas a European option only permits the option buyer to exercise its option upon the option's expiration. A market participant wishing to maintain its option position in a particular underlying asset or financial instrument must roll its position in a new option contract as the current contract expires.

In the United States, option contracts are created in standardized forms and traded through clearing houses on regulated options exchanges, or are written as bilateral, customized contracts between a single buyer and seller in the over-the-counter market. As of the date of this underlying supplement, all of the option contracts included in the Index are exchange-traded option contracts.

BACKGROUND ON FUTURES CONTRACTS ON THE S&P 500® INDEX

Futures contracts on the S&P 500® Index are currently traded on The Chicago Mercantile Exchange. At any time, there are eight futures contracts on the S&P 500® Index that require delivery in a month in the March quarterly cycle and three additional contracts that are due to be delivered in December of future years. The futures contracts on S&P 500® Index included in the Index are "E-minis" futures contracts on the S&P 500® Index. Each E-mini futures contract on the S&P 500® Index represents a fraction of the value of a generic futures contract on the S&P 500® Index. E-minis futures contracts on the S&P 500® Index are reported by Bloomberg L.P. under the ticker symbol "ES."

Overview of Futures Markets

Futures contracts are traded on regulated futures exchanges, in the over-the-counter market and on various types of electronic trading facilities and markets. As of the date of this underlying supplement, all of the futures contracts included in the Index are exchange-traded futures contracts. An exchange-traded futures contract provides for the purchase and sale of a specified type and quantity of an underlying asset or financial instrument during a stated delivery month for a fixed price. A futures contract provides for a specified settlement month in which the cash settlement is made or in which the underlying asset or financial instrument is to be delivered by the seller (whose position is therefore described as "short") and acquired by the purchaser (whose position is therefore described as "long").

No purchase price is 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 it may be lower than 5% of the notional value of the contract. This margin deposit provides collateral for the obligations of the parties to the futures contract.

By depositing margin, which may vary in form depending on the exchange, with the clearing house or broker involved, a market participant may be able to earn interest on its margin funds, thereby increasing the total return that it may realize from an investment in futures contracts.

In the United States, futures contracts are traded on organized exchanges, known as "designated contract markets." At any time prior to the expiration of a futures contract, a trader may elect to close out its position by taking an opposite position on the exchange on which the trader obtained the position, subject to the availability of a liquid secondary market. This operates to terminate the position and fix the trader's profit or loss. Futures contracts are cleared through the facilities of a centralized clearing house and a brokerage firm, referred to as a "futures commission merchant," which is a member of the clearing house.

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 asset 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. The structure and nature of trading on non-U.S. exchanges, however, may differ from this description.

BACKGROUND ON THE CBOE VOLATILITY INDEX®

We have derived all information contained in this underlying supplement regarding the CBOE Volatility Index® (the "VIX Index") including, without limitation, its make-up, method of calculation and changes in its components, from publicly available information, without independent verification. This information reflects the policies of, and is subject to change by, the Chicago Board Options Exchange, Incorporated (the "CBOE"). The VIX Index was developed by the CBOE and is calculated, maintained and published by the CBOE. The CBOE has no obligation to continue to publish, and may discontinue the publication of, the VIX Index.

The VIX Index is reported by Bloomberg L.P. under the ticker symbol "VIX."

Index Overview

The VIX Index is a benchmark index designed to measure the market price of 30-calendar day expected volatility of large cap U.S. stocks, and is calculated based on the prices of certain put and call options on the S&P 500® Index. For more information about the S&P 500® Index, please see "Background on the S&P 500® Index" in this underlying supplement.

The VIX Index measures the premium paid by investors for certain options linked to the level of the S&P 500® Index. During periods of market instability, the implied level of volatility of the S&P 500® Index typically increases and, consequently, the prices of options linked to the S&P 500® Index typically increase (assuming all other relevant factors remain constant or have negligible changes). This, in turn, causes the level of the VIX Index to increase. The VIX Index has historically had negative correlations to the S&P 500® Index.

The calculation of the VIX Index involves a formula that uses the prices of a weighted series of out-of-the money put and call options on the level of the S&P 500® Index ("SPX Options") with two adjacent expiry terms to derive a constant 30-calendar day measure of expected market volatility. The VIX Index is calculated independent of any particular option pricing model.

Calculation of the VIX Index Level

Although the VIX Index measures the 30-calendar day forward volatility of the S&P 500® Index as implied by the SPX Options, 30-calendar day options are available only once a month. To arrive at the VIX Index Level, a broad range of out-of-the money SPX Options expiring on the two closest nearby months ("near-term options" and "next-term options," respectively) are selected to bracket a 30-calendar day calendar period. SPX Options having a maturity of less than eight days are excluded at the outset and, when the near-term options have eight days or less left to expiration, the VIX Index rolls to the second and third contract months in order to minimize pricing anomalies that occur close to expiration. The model-free implied volatility using prices of the near-term options and next-term options are then calculated on a strike price weighted average basis to arrive at a single average implied volatility value for each month. The results of each of the two months are then interpolated to arrive at a single value with a constant maturity of 30 days to expiration. The VIX Index Level is expressed in percentage points.

Stock indices, such as the S&P 500® Index, are calculated using the prices of their component stocks. Each index employs rules that govern the selection of component securities and a formula to calculate index values. The VIX Index is a volatility index comprised of options rather than stocks, with the price of each option reflecting the market's expectation of future volatility. Like conventional indices, the VIX Index employs rules for selecting component options and a formula to calculate index values.

The generalized formula used in the VIX Index Level calculation:

$$\sigma^2 = \frac{2}{T}\sum_i \frac{\Delta K_i}{K_i^2} e^{RT} Q(K_i) - \frac{1}{T}\left[\frac{F}{K_0} - 1\right]^2$$

where:

σ is	VIX Index Level/100 ⇨ VIX Index Level = σ x 100
T	Time to expiration
F	Forward index level derived from index option prices
K_0	First strike below the forward index level, F
K_i	Strike price of ith out-of-the-money option; a call if $K_i > K_0$ and a put if $K_i < K_0$; both put and call if $K_i = K_0$
ΔK_i	Interval between strike prices - half the distance between the strike on either side of K_i: $$\Delta K_i = \frac{K_{i+1} - K_{i-1}}{2}$$ (Note: ΔK for the lowest strike is simply the difference between the lowest strike and the next higher strike. Likewise, ΔK for the highest strike is the difference between the highest strike and the next lower strike.)
R	Risk-free interest rate to expiration
$Q(K_i)$	The midpoint of the bid-ask spread for each option with strike K_i.

Hypothetical Calculation of VIX Index Level

The following example illustrates how the VIX Index Level may be calculated in a hypothetical scenario.

Getting Started

The VIX Index measures 30-calendar day expected volatility of the S&P 500® Index. The components of the VIX Index are near- and next-term put and call options, usually in the first and second SPX Option contract months. "Near-term" options must have at least one week to expiration; a requirement intended to minimize pricing anomalies that might occur close to expiration. When the near-term options have less than a week to expiration, the VIX Index "rolls" to the second and third SPX Option contract months. For example, on the second Friday in June, the VIX Index would be calculated using SPX options expiring in June and July. On the following Monday, July would replace June as the "near-term" and August would replace July as the "next-term."

In this hypothetical example, the near-term and next-term options have 9 days and 37 days to expiration, respectively, and reflect prices observed at the open of trading – 8:30 a.m. Chicago time. For the purpose of calculating time to expiration, SPX Options are deemed to "expire" at the open of trading on SPX Option settlement day - the third Friday of the month.

Technically, the expiration date for the SPX Options is the "Saturday following the third Friday of the expiration month." In this example, however, expiration is deemed to take place at the determination of the exercise settlement value of the SPX Option, which is based on the opening prices of component securities of the S&P 500® Index.

The VIX Index calculation measures time to expiration, T, in calendar days and divides each day into minutes in order to replicate the precision that is commonly used by professional option and volatility traders. The time to expiration is given by the following expression:

$$T = \{M_{\text{Current day}} + M_{\text{Settlement day}} + M_{\text{Other days}}\}/\text{Minutes in a year}$$

where:

$M_{Current\ day}$ = number of minutes remaining until midnight of the current day

$M_{Settlement\ day}$ = number of minutes from midnight until 8:30 a.m. on SPX settlement day

$M_{Other\ days}$ = total number of minutes in the days between current day and settlement day

Using 8:30 a.m. as the time of the calculation, T for the near-term and next-term options, T1 and T2, respectively, is:

T1 = {930 + 510 + 11,520} / 525,600 = **0.0246575**
T2 = {930 + 510 + 51,840} / 525,600 = **0.1013699**

The risk-free interest rate, R, is the bond-equivalent yield of the U.S. T-bill maturing closest to the expiration dates of relevant SPX options. As such, the VIX Index calculation may use different risk-free interest rates for near- and next-term options. In this example, however, assume that R = 0.38% for both sets of options.

Since many of the interim calculations are repetitive, only representative samples appear below.

Step 1: Select the options to be used in the VIX Index Level calculation

The selected options are out-of-the-money SPX calls and out-of-the-money SPX puts centered around an at-the-money strike price, K0. Only SPX Options quoted with non-zero bid prices are used in the VIX Index Level calculation.

As volatility rises and falls, the strike price range of options with non-zero bids tends to expand and contract. As a result, the number of options used in the VIX Index Level calculation may vary from month-to-month, day-to-day and possibly, even minute-to-minute.

For each contract month:

- Determine the forward SPX level, F, by identifying the strike price at which the absolute difference between the call and put prices is smallest. The call and put prices in the following table reflect the average of each option's bid / ask quotation. As shown below, the difference between the call and put prices is smallest at the **920** strike for both the near- and next-term options.

Near-term options				Next-term options			
Strike Price	**Call**	**Put**	**Absolute Difference**	**Strike Price**	**Call**	**Put**	**Absolute Difference**
900	48.95	27.25	21.70	900	73.60	52.80	20.80
905	46.15	29.75	16.40	905	70.35	54.70	15.65
910	42.55	31.70	10.85	910	67.35	56.75	10.60
915	40.05	33.55	6.50	915	64.75	58.90	5.85
920	**37.15**	**36.65**	**0.50**	**920**	**61.55**	**60.55**	**1.00**
925	33.30	37.70	4.40	925	58.95	63.05	4.10
930	32.45	40.15	7.70	930	55.75	65.40	9.65
935	28.75	42.70	13.95	935	53.05	67.35	14.30
940	27.50	45.30	17.80	940	50.15	69.80	19.65

Using the 920 call and put options in each contract month and the formula,

$$F = \text{Strike Price} + e^{RT} \times (\text{Call Price} - \text{Put Price})$$

the forward index prices, F_1 and F_2, for the near-term and next-term options, respectively, are:

$$F_1 = 920 + e^{(0.0038 \times 0.0246575)} \times (37.15 - 36.65) = \mathbf{920.50005}$$
$$F_2 = 920 + e^{(0.0038 \times 0.1013699)} \times (61.55 - 60.55) = \mathbf{921.00039}$$

- Next, determine K_0 - the strike price immediately below the forward index level, F - for the near- and next-term options. In this example, K_0,1 = 920 and K_0,2 = 920.
- Select out-of-the-money put options with strike prices < K_0. Start with the put strike immediately lower than K_0 and move to successively lower strike prices. Exclude any put option that has a bid price equal to zero (i.e., no bid). As shown below, once two puts with consecutive strike prices are found to have zero bid prices, no puts with lower strikes are considered for inclusion.

Put Strike	Bid	Ask	Include?
200	0.00	0.05	Not considered following two zero bids
250	0.00	0.05	
300	0.00	0.05	
350	0.00	0.05	No
375	0.00	0.10	No
400	0.05	0.20	Yes
425	0.05	0.20	Yes
450	0.05	0.20	Yes

- Next, select out-of-the-money call options with strike prices > K_0. Start with the call strike immediately higher than K_0 and move to successively higher strike prices, excluding call options that have a bid price of zero. As with the puts, once two consecutive call options are found to have zero bid prices, no calls with higher strikes are considered. (Note that the 1250 call option is not included despite having a nonzero bid price.)

Call Strike	Bid	Ask	Include?
1215	0.05	0.05	Yes
1220	0.05	1.00	Yes
1225	0.00	1.00	No
1230	0.00	1.00	No
1235	0.00	0.75	Not considered following two zero bids
1240	0.05	0.50	
1245	0.05	0.15	
1250	**0.05**	**0.10**	
1255	0.00	1.00	

- Finally, select both the put and call with strike price K_0. Notice that two options are selected at K_0, while a single option, either a put or a call, is used for every other strike price.

The following table contains the options used to calculate the VIX Index Level in this example. The VIX Index Level uses the average of quoted bid and ask, or mid-quote, prices for each option selected. The K_0 put and call prices are averaged to produce a single value. The price used for the 920 strike in the near-term is, therefore, (37.15 + 36.65)/2 = 36.90; and the price used in the next-term is (61.55 + 60.55)/2 = 61.05.

Near term Strike	Option Type	Mid-quote price	Next term Strike	Option Type	Mid-quote Price
400	Put	0.125	200	Put	0.325
425	Put	0.125	300	Put	0.30
450	Put	0.125	350	Put	0.50
-	-	-	-	-	-
910	Put	31.70	910	Put	56.75
915	Put	33.55	915	Put	58.90
920	**Put/Call Average**	**36.90**	**920**	**Put/Call Average**	**61.05**
925	Call	33.30	925	Call	58.95
930	Call	32.45	930	Call	55.75
-	-	-	-	-	-
1210	Call	0.275	1150	Call	0.825
1215	Call	0.275	1155	Call	0.725
1220	Call	0.525	1160	Call	0.60

Step 2: Calculate the volatility for both near term and next-term options

Applying the VIX Index formula described under "— Calculation of the VIX Index Level" to the near-term and next-term options with time to expiration of T_1 and T_2, respectively, yields:

$$\sigma^2{}_1 = \frac{2}{T_1}\sum_i \frac{\Delta K_i}{K_i^2} e^{RT_1} \mathrm{Q}(\mathrm{K}_i) - \frac{1}{T_1}\left[\frac{F_1}{K_0} - 1\right]^2$$

$$\sigma^2{}_2 = \frac{2}{T_2}\sum_i \frac{\Delta K_i}{K_i^2} e^{RT_2} Q(K_i) - \frac{1}{T_2}\left[\frac{F_2}{K_0} - 1\right]^2$$

The VIX Index is an amalgam of the information reflected in the prices of all of the selected options. The contribution of a single option to the VIX Index value is proportional to ΔK and the price of that option, and inversely proportional to the square of the option's strike price.

Generally, ΔK_i is half the distance between the strike prices on either side of K_i. For example, ΔK for the next-term 300 Put is 75: $\Delta K_{300\ \mathrm{Put}}$ = (350 – 200)/2. At the upper and lower edges of any given strip of options, ΔK_i is simply the difference between K_i and the adjacent strike price. In this example, the 400 Put is the lowest strike in the strip of near-term options and 425 is the adjacent strike price. Therefore, $\Delta K_{400\ \mathrm{Put}}$ = 25 (i.e., 425 – 400).

The contribution of the near-term 400 Put is given by:

$$\frac{\Delta K_{400Put}}{K_{400Put}^2} e^{RT_1} Q(400Put)$$

$$\frac{\Delta K_{400Put}}{K_{400Put}^2} e^{RT_1} Q(400Put) = \frac{25}{400^2} e^{(0.0038\ x\ 0.0246575)} (0.125) = 0.0000195$$

A similar calculation is performed for each option. The resulting values for the near-term options are then summed and multiplied by $2/T_1$. Likewise, the resulting values for the next-term options are summed and multiplied by $2/T_2$. The table below summarizes the results for each strip of options in our example:

Near term Strike	Option Type	Mid-quote Price	Contribution by Strike	Next term Strike	Option Type	Mid-quote Price	Contribution by Strike
400	Put	0.125	0.0000195	200	Put	0.325	0.0008128
425	Put	0.125	0.0000173	300	Put	0.300	0.0002501
450	Put	0.125	0.0000139	350	Put	0.500	0.0001531
-	-	-	-	-	-	-	-
910	Put	31.70	0.0001914	910	Put	56.75	0.0003428
915	Put	33.55	0.0002004	915	Put	58.90	0.0003519
920	**Put/Call Average**	**36.90**	**0.0002180**	**920**	**Put/Call Average**	**61.05**	**0.0003608**
925	Call	33.30	0.0001946	925	Call	58.95	0.0003446
930	Call	32.45	0.0001876	930	Call	55.75	0.0003224
-	-	-	-	-	-	-	-
1210	Call	0.275	0.0000009	1150	Call	0.825	0.0000031
1215	Call	0.275	0.0000009	1155	Call	0.725	0.0000027
1220	Call	0.525	0.0000018	1160	Call	0.600	0.0000022
$\frac{2}{T}\sum_i \frac{\Delta K_i}{K_i^2} e^{RT} Q(K_i)$	=	**0.4727799**		$\frac{2}{T}\sum_i \frac{\Delta K_i}{K_i^2} e^{RT} Q(K_i)$	=	**0.3668297**	

Next, calculate $\frac{1}{T}\left[\frac{F}{K_0}-1\right]^2$ for the near term (T_1) and next term (T_2):

$$\frac{1}{T_1}\left[\frac{F_1}{K_0}-1\right]^2 = \frac{1}{0.0246575}\left[\frac{920.50005}{920}-1\right]^2 = 0.0000120$$

$$\frac{1}{T_2}\left[\frac{F_2}{K_0}-1\right]^2 = \frac{1}{0.1013699}\left[\frac{921.00039}{920}-1\right]^2 = 0.0000117$$

Now calculate σ^2_1 and σ^2_2:

$$\boldsymbol{\sigma}^2{}_1 = \frac{2}{T_1}\sum_i \frac{\Delta K_i}{K_i^2} e^{RT_1} Q(K_i) - \frac{1}{T_1}\left[\frac{F_1}{K_0}-1\right]^2 = 0.4727799 - 0.0000120 = \mathbf{0.\ 4727679}$$

$$\boldsymbol{\sigma}^2{}_2 = \frac{2}{T_2}\sum_i \frac{\Delta K_i}{K_i^2} e^{RT_2} Q(K_i) - \frac{1}{T_2}\left[\frac{F_2}{K_0}-1\right]^2 = 0.3668297 - 0.0000117 = \mathbf{0.3668180}$$

Step 3: Calculate the 30-calendar day weighted average of σ^2_1 and σ^2_2. Then take the square root of that value and multiply by 100 to get the VIX Index Level

$$VIX\ Index\ Level = 100 \times \sqrt{\left\{T_1\sigma_1^2\left[\frac{N_{T_2} - N_{30}}{N_{T_2} - N_{T_1}}\right] + T_2\sigma_2^2\left[\frac{N_{30} - N_{T_1}}{N_{T_2} - N_{T_1}}\right]\right\} \times \frac{N_{365}}{N_{30}}}$$

When the near-term options have less than 30 days to expiration and the next-term options have more than 30 days to expiration, the resulting VIX Index value reflects an interpolation of σ^2_1 and σ^2_2;i.e., each individual weight is less than or equal to 1 and the sum of the weights equals 1.

At the time of the VIX Index "roll," both the near-term and next-term options have more than 30 days to expiration. The same formula is used to calculate the 30-calendar day weighted average, but the result is an extrapolation of σ^2_1 and σ^2_2;i.e., the sum of the weights is still 1, but the near-term weight is greater than 1 and the next-term weight is negative (e.g., 1.25 and –0.25).

Returning to the example…

N_{T1} = number of minutes to expiration of the near-term options (12,960)
N_{T2} = number of minutes to expiration of the next-term options (53,280)
N_{30} = number of minutes in 30 days (30 x 1,440 = 43,200)
N_{365} = number of minutes in a 365-day year (365 x 1,440 = 525,600)

VIX Index Level =

$$100 \times \sqrt{\left\{0.0246575 \times 0.4727679 \times \left[\frac{53{,}280 - 43{,}200}{53{,}280 - 12{,}960}\right] + 0.1013699 \times 0.3668180 \times \left[\frac{43{,}200 - 12{,}960}{53{,}280 - 12{,}960}\right]\right\} \times \frac{525{,}600}{43{,}200}}$$

VIX Index Level = 100 x 0.612179986 = 61.22

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We have entered into an agreement with the CBOE and S&P that provides us and certain of our affiliates or subsidiaries identified in that agreement with a non-exclusive license and, for a fee, with the right to use the VIX Index in connection with certain securities. The notes are not sponsored, endorsed, sold or promoted by S&P or the CBOE. S&P and the CBOE make no representation, condition or warranty, express or implied, to the owners of the notes or any member of the public regarding the advisability of investing in securities generally or in the notes. S&P's and the CBOE's only relationship to JPMS and its affiliates, is the licensing of certain trademarks and trade names of S&P, CBOE and the VIX Index which is determined, composed and calculated by CBOE without regard to JPMS and its affiliates or the notes. The CBOE has no obligation to take the needs of JPMS and its affiliates or the owners of the notes into consideration in determining, composing or calculating the VIX Index. S&P and the CBOE are not responsible for and have not participated in the determination of the timing of, prices, or quantities of the notes to be issued or in the determination or calculation of the equation by which the notes are to be converted into cash. S&P and the CBOE have no obligation or liability in connection with the administration, marketing or trading of the notes.

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ANNEX A

J.P. Morgan U.S. Long Equity Dynamic Overlay Index Series

Index Rules

J.P.Morgan

September 17, 2013, as amended and restated as of March 24, 2014

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Notices, Disclaimers and Conflicts Disclosure

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The Index is the exclusive property of the Index Sponsor and the Index Sponsor retains all proprietary rights in the Index.

Potential conflicts of interest may exist in the structure and operation of the Index and the conduct of normal business activities of the Index Sponsor, the Index Calculation Agent or any Relevant Person.

During the course of their businesses, the Index Sponsor, the Index Calculation Agent and any Relevant Person may enter into or promote, offer or sell transactions or investments (structured or otherwise) that reference the Index or any Constituent or component of a Constituent of 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 any Constituent or component of a 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 Index Level. The Index Sponsor, the Index Calculation Agent 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 favorable to anyone with exposure to the Index.

Neither the Index Sponsor nor the Index Calculation Agent is under any obligation to continue the calculation, publication or dissemination of the Index.

The foregoing notices, disclaimers and conflicts disclosure is not intended to be exhaustive. Anyone reading these Index Rules should seek such advice as they consider necessary from their professional advisors, legal, tax or otherwise, without reliance on the Index Sponsor, the Index Calculation Agent or any Relevant Person to satisfy them that they fully understand these Index Rules and the risks associated with the Index.

These Index Rules have been developed with the possibility of the Index Sponsor, the Index Calculation Agent or any of the Relevant Persons entering into or promoting, offering or selling transactions or investments (structured or otherwise) linked to one or more Indices and the hedging of such transactions or investments in any manner that they see fit.

These Index Rules shall be governed by and construed in accordance with the laws of the state of New York.

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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. EVEN IF YOU ARE A HIGHLY SOPHISTICATED INVESTOR WHO REGULARLY TRANSACTS IN PRODUCTS LINKED TO INDICES OF THIS TYPE, YOU ARE STRONGLY ADVISED TO TAKE SUCH ADVICE IN ANY EVENT.

Part A

General Rules

1. This document

1.1. Introduction

This document comprises the rules for the J.P. Morgan U.S. Long Equity Dynamic Overlay Index Series (the "**LEDO Series**"), a family of rules-based proprietary indices.

The Index Rules for each Index within the LEDO Series comprise:

(a) this Part A, which sets out the general rules applicable to each Index within the LEDO Series;

(b) the Applicable Part, which sets out the rules applicable to a specific Index within the LEDO Series. The definitions for the Index are also contained in the Applicable Part; and

(c) the Applicable Module, which sets out information relating to an Index, including (among other things): (1) the name of the Index and the Bloomberg ticker, (2) the Currency of the Index, (3) the Constituents of the Index and (4) other specific rules or information applicable to the Index.

1.2. 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, United Kingdom in its capacity as Index Sponsor.

The Index Sponsor may, in its discretion, publish only the Index Rules applicable to one or more of the Indices by removing the Parts and Modules from this document that do not apply to such Indices and amending section 1.1 above as necessary.

Copies of the Index Rules may be obtained free of charge on request from the Index Sponsor.

1.3. 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 and, if necessary, the Index Sponsor will amend the Index Rules to reflect such resolution.

1.4. No advice or offer of securities

The Index Rules do not constitute investment, taxation, legal, accounting or other advice, including within the meaning of Article 53 of the Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 or Article 4(4) of the Markets in Financial Instruments Directive 2004/39/EC. In constructing, calculating or otherwise performing any activity with respect to the Index, the Index Sponsor or the Index Calculation Agent (as the case may be) is solely using information that is already in the public domain.

The Index Rules neither constitute an offer to purchase or sell securities nor constitute specific advice of whatever form (tax, legal, accounting or regulatory) in respect of any investment strategy or investment that may be linked to any Index.

1.5. Each Index is synthetic

Each 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. Each Index merely identifies the Constituents and a rules-based trading strategy, the performance of which is used as a reference point for calculating Index Levels.

2. Index Sponsor and Index Calculation Agent

2.1. Identity

J.P. Morgan Securities plc is the sponsor of each Index (the "**Index Sponsor**").

In respect of each Index, the Index Sponsor may designate any entity (including a non-related third party) from time to time to act as calculation agent in connection with such Index (the "**Index Calculation Agent**"). Unless the Index Sponsor designates another entity as the Index Calculation Agent for an Index, the Index Sponsor shall be the Index Calculation Agent for such Index. As of the Index Live Date, unless otherwise indicated in the Applicable Module for an Index, the Index Sponsor has initially designated itself as the Index Calculation Agent.

2.2. Index Sponsor and Index Calculation Agent standards

Each of the Index Sponsor and the Index Calculation 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.

2.3. Index Sponsor and Index Calculation Agent determinations

All determinations, interpretations and calculations of the Index Sponsor and the Index Calculation Agent relating to the Index Rules shall be final, conclusive and binding and no person shall be entitled to make any claim against the Index Sponsor, the Index Calculation Agent or any other Relevant Person in respect thereof. None of the Index Sponsor, the Index Calculation Agent and any other 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 any Index; or

(b) have any responsibility to any person for any determination, interpretation or calculation made or anything done (or omitted to be determined or done) (whether as the result of negligence or otherwise) in respect of any 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 an Index or the Index Levels.

3. Index Levels

3.1. Base Level and Base Date

The Base Level and the Base Date for each Index are specified in the Applicable Module.

3.2. Publication of Index Levels

Unless an Index Calculation Day is a Disrupted Day, the Index Calculation Agent shall calculate and publish (in a manner determined by the Index Calculation Agent from time to time) the level of the Index (the "**Index Level**") in respect of each Index Calculation Day in accordance with the Index Rules.

All Index Levels are rounded to 2 decimal places only for purposes of publication and are published in the Currency of the Index.

4. Corrections in respect of an Index

If, in respect of an Index:

(a) the level or price of any Constituent or other variable, input or other matter that is used to calculate the Index Level for any Index Calculation Day is subsequently corrected and the correction is published by the relevant Constituent Sponsor for a Constituent that is not an Option Constituent or a Futures Constituent, or the Related Exchange in respect of an Option Constituent or a Futures Constituent, or relevant publication source; or

(b) the Index Calculation Agent identifies an error or omission in any of its calculations or determinations with respect to the Index Level of the Index for any Index Calculation Day,

then the Index Calculation Agent may, if practicable and if it considers such correction material, correct the published Index Level for such day and/or each subsequent Index Calculation Day. The Index Calculation Agent shall publish (in such manner determined by the Index Calculation Agent) such corrected Index Level(s) as soon as reasonably practicable.

5. Market Disruption Events

If an Index Calculation Day is a Disrupted Day, then the Index Calculation Agent will not calculate or publish 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 Day.

6. Extraordinary Events

6.1. Successor Constituent

If, in respect of an Index:

(a) a Constituent (other than an Option Constituent or a Futures Constituent) is (i) not calculated and announced by the applicable Constituent Sponsor, but is calculated and announced by a successor sponsor acceptable to the Index Calculation Agent, or (ii) replaced by a successor index or tracker (as applicable) 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 that Constituent; or

(b) trading in an Option Constituent or a Futures Constituent relocates to an exchange or quotation system on which there is comparable liquidity relative to such Option Constituent or such Futures Constituent as on the original Related Exchange for such Option Constituent or such Futures Constituent,

(each such Constituent, the "**Affected Constituent**"), then that equity index, options contract, volatility index, futures contract and/or settlement index, as the case may be, (the "**Successor Constituent**") will be deemed to be or continue to be, as the case may be, the Affected Constituent with effect from a date determined by the Index Calculation Agent which may make such adjustments to the Index Rules as it determines are appropriate to account for such change.

6.2. Material change to a Constituent, cancellation or non-publication

If, on or prior to any Index Calculation Day:

(a) in respect of a Constituent (other than an Option Constituent or a Futures Constituent), any Constituent Sponsor (i) makes a material change in the formula for or the method of calculating such Constituent or in any other way materially modifies that Constituent (other than a modification prescribed in that formula or method to maintain that Constituent in the event of changes in components and/or other routine or contemplated events), or (ii) permanently cancels such Constituent and no Successor Constituent exists or is otherwise unable or unwilling to publish a level for such Constituent; or

(b) in respect of an Option Constituent or a Futures Constituent, (i) the terms of such Option Constituent or such Futures Constituent are materially changed or modified including, but not limited to, a change to the final settlement date of the Option Constituent or the Futures Constituent, or (ii) trading in such Option Constituent or such Futures Constituent is permanently discontinued or relocates to an exchange or quotation system on which there is not comparable liquidity relative to such Option Constituent or such Futures Constituent as on the original Related Exchange for such Option Constituent or such Futures Constituent, and no Successor Constituent exists,

(each such Constituent, the "**Affected Constituent**"), then the Index Calculation Agent may (i) exclude the Affected Constituent from the Index or substitute for the Affected Constituent in the Index; (ii) adjust the Index Rules as it determines to be appropriate to account for such change(s) including, without limitation, selecting a replacement equity index, options contract, volatility index, futures contract and/or settlement index (as the case may be) having similar characteristics to the Affected Constituent and the date such replacement is effective; or (iii) cease publication of the Index on such date as is determined by the Index Calculation Agent.

6.3. Cancellation of relevant license or permission

If, in respect of an Index, at any time, the license granted (if required) to the Index Sponsor or the Index Calculation Agent (or any of their affiliates) to use any Constituent (the "**Affected Constituent**") for the purposes of such Index terminates, or the rights of the Index Sponsor or the Index Calculation Agent (or any of their affiliates) to use the Affected Constituent for the purposes of such Index is otherwise disputed, impaired or ceases (for any reason), then the Index Calculation Agent may (i) exclude the Affected Constituent from the Index or substitute for the Affected Constituent 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 subsititution, selecting (a) a replacement equity index, options contract, volatility index, futures contract and/or settlement index having similar characteristics to the Affected Constituent and (b) the date such replacement is effective and/or (ii) cease publication of the Index on such date as is determined by the Index Calculation Agent.

6.4. Change in Law

Without prejudice to the ability of the Index Sponsor or the Index Calculation Agent to amend of adjust the Index Rules, upon the occurrence of a Change in Law that affects any Constituent (the "**Affected Constituent**"), the Index Calculation Agent may, in respect of the Index, (i) exclude the Affected Constituent from the Index or substitute for the Affected Constituent in the Index and in either case may adjust the Index Rules as it determines to be appropriate to account for such change(s) including, without limitation, in the case of subsititution, selecting (a) a replacement equity index, options contract, volatility index, futures contract and/or settlement index having similar characteristics to the Affected Constituent and (b) the date such replacement is effective and/or (ii) cease publication of the Index on such date as is determined by the Index Calculation Agent.

Part B

J.P. Morgan U.S. Long Equity Dynamic Overlay Index Series

1. Introduction

The rules set forth in this Part B apply to each of the Indices specified in the Applicable Modules to this Part B. The Index Rules for each Index are comprised of Part A of this document, this Part B and the Applicable Module to this Part B.

Each Index is a rules-based index that tracks the performance of a rolling collar strategy applied to the Price Return Equity Index that is overlaid on a long exposure to the Total Return Equity Index. The strategy consists of (i) a long exposure to the Total Return Equity Index and (ii) a rolling collar strategy consisting of a a synthetic short exposure to a "delta-hedged" Call Option Constituent and a synthetic long exposure to Put Option Constituents, each in respect of the Price Return Equity Index. The Index implements the "delta-hedged" exposure to the Call Option Constituent through the addition of a variable synthetic long exposure to futures contracts referencing the Price Return Equity Index. As further described in the Definitions Annex, the delta hedging mechanism is a variable mechanism that is switched on and adjusted if the closing level of the Volatility Index is below the moving average of the closing levels of the Volatility Index over a five-year or six-month period. As a result, the delta hedging mechanism may not be activated on each Index Calculation Day. As more fully described in the remainder of this Part B, the Index Calculation Agent will determine the Index Level for each Index Calculation Day by implementing the following three steps:

Step 1: selecting the Option Constituents. Each month, on the Call Rebalancing Date, the Index Calculation Agent shall select the new Call Option Constituent that will be referenced in the Index for the period from, but excluding, the Call Rebalancing Date to, and including, the immediately following Call Rebalancing Date.

The new Call Option Constituent shall be the Call Option Contract that is due to expire on the immediately following Call Rebalancing Date and that has a Strike Price closest in value to the Target Call Strike Price.

On each quarterly Put Rebalancing Date, the Index Calculation Agent shall select, as the incoming Put Option Constituent (defined below as the "**Incoming Put Option Constituent**"), the Put Option Contract that is due to expire on the third Friday in the month falling eleven calendar months after such Put Rebalancing Date and that has a Strike Price closest in value to, but not greater than, the Target Put Strike Price. The Incoming Put Option Constituent selected on the Put Rebalancing Date, shall replace the Put Option Constituent that, as of such Put Rebalancing Date, is nearest to expiry (defined below as the "**Outgoing Put Option Constituent**").

The Incoming Put Option Constituent will be referenced in the Index from, but excluding, such Put Rebalancing Date to, and including, the Put Rebalancing Date falling two calendar months prior to the month in which the Incoming Put Option Constituent is due to expire.

At any point in time, the Index will have exposure to three Put Option Constituents, being the Incoming Put Option Constituent selected on the most recent Put Rebalancing Date and the Put Option Constituents (defined below as the "**Remaining Put Option Constituents**") selected on each of the two Put Rebalancing Dates immediately preceding the most recent one.

Step 2: determining the relevant number of each Option Constituent that are to be taken into account in the determination of the Index Level. On each Call Rebalancing Date or Put Rebalancing Date, the Index Calculation Agent shall determine the number (which may be less than one) of the Call Option Constituent or the Incoming Put Option Constituent (as the case may be) that are to be taken into account in the determination of the Index Level. The relevant number of an Option Constituent determined on the applicable Call Rebalancing Date or the applicable Put Rebalancing Date (as the case may be), will apply to the relevant Option Constituent for the period of time that it is referenced by the Index.

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 each Index Calculation Day. The Index Level for an Index Calculation Day takes into account the aggregation of the change in the Closing Level for the Total Return Equity Index, the Closing Levels for each Option Constituent, the Closing Levels of the Futures Constituents and the synthetic costs associated with the rebalancing of the Option Constituents and the Futures Constituents. An Adjustment Factor of 0.75 percent per annum is also taken into account when determining the Index Level for each Index Calculation Day.

The Index Level is subject to a minimum level of zero.

2. Index Methodology

Step 1: Selecting the Option Constituents

(a) Selecting the Call Option Constituent

On each Call Rebalancing Date ("**Call Rebalancing Date (k)**"), the Index Calculation Agent shall select, in respect of Call Rebalancing Date (k), the Call Option Constituent pursuant to the methodology described below. Subject to the occurrence of a Disrupted Day, the Index shall reference the Call Option Constituent selected on Call Rebalancing Date (k) for the period from, but excluding, Call Rebalancing Date (k) to, and including, the immediately following Call Rebalancing Date ("**Call Rebalancing Date (k+1)**").

The methodology for selecting the Call Option Constituent is as follows:

(i) On Call Rebalancing Date (k), the Index Calculation Agent shall identify the Call Option Contracts that, as of Call Rebalancing Date (k), are due to expire on Call Rebalancing Date (k+1) (each an "**Eligible Call Option Contract**").

(ii) The Index Calculation Agent shall determine the Target Call Strike Price for Call Rebalancing Date (k) in accordance with the following:

"**Target Call Strike Price**" means, in respect of Call Rebalancing Date (k):

(A) if $Vol_{(k)prior}$ is less than or equal to 20, the product of 103 percent and $S_{(k)prior}$ in respect of such Call Rebalancing Date (k);

(B) if $Vol_{(k)prior}$ is greater than 20, but less than or equal to 25, the product of 104 percent and $S_{(k)prior}$ in respect of such Call Rebalancing Date (k);

(C) if $Vol_{(k)prior}$ is greater than 25, but less than or equal to 30, the product of 105 percent and $S_{(k)prior}$ in respect of such Call Rebalancing Date (k);

(D) if $Vol_{(k)prior}$ is greater than 30, but less than or equal to 35, the product of 106 percent and $S_{(k)prior}$ in respect of such Call Rebalancing Date (k);

(E) if $Vol_{(k)prior}$ is greater than 35, but less than or equal to 60, the product of 107 percent and $S_{(k)prior}$ in respect of such Call Rebalancing Date (k); and

(F) if $Vol_{(k)prior}$ is greater than 60, the product of 108 percent and $S_{(k)prior}$ in respect of such Call Rebalancing Date (k);

Where:

"$\mathbf{S_{(k)prior}}$" means, in respect of Call Rebalancing Date (k), the Closing Level of the Price Return Equity Index in respect of the immediately preceding Index Calculation Day that was not a Disrupted Equity Index Business Day; and

"$\mathbf{Vol_{(k)prior}}$" means, in respect of Call Rebalancing Date (k), the Closing Level of the Volatility Index in respect of the immediately preceding Index Calculation Day that was not a Disrupted Volatility Index Business Day.

(iii) The Index Calculation Agent must select as the Call Option Constituent in respect of the Call Rebalancing Date (k) the Eligible Call Option Contract whose Strike Price is equal to or closest in value to the Target Call Strike Price for such Call Rebalancing Date (k) (irrespective of whether the Strike Price is greater than or less than the Target Call Strike Price, provided that if two or more Eligible Call Option Contracts were to have a Strike Price that is equally close to the Target Call Strike Price, then the Eligible Call Option Contract with the highest Strike Price shall be selected as the Call Option Constituent). The Strike Price of such Call Option Constituent is referred to as "**Call Strike (k)**".

(iv) If on Call Rebalancing Date (k), there is no Eligible Call Option Contract that has a Strike Price that is within 3 percent of the Target Call Strike Price, then no Call Option Constituent shall be selected for the period from, but excluding, Call Rebalancing Date (k) to, and including, Call Rebalancing Date (k+1).

(v) If Call Rebalancing Date (k) is a Disrupted Day, then the Index shall reference the Call Option Constituent selected on Call Rebalancing Date (k) from, but excluding, the first Index Calculation Day immediately following Call Rebalancing Date (k) that is not a Disrupted Day to, and including, Call Rebalancing Date (k+1).

(b) Selecting the Put Option Constituents

On each Put Rebalancing Date ("**Put Rebalancing Date (h)**"), the Index Calculation Agent shall select, in respect of Put Rebalancing Date (h), the Incoming Put Option Constituent (as defined below), if any, that will replace the Outgoing Put Option Constituent, if any, with effect from, but excluding, Put Rebalancing Date (h). Subject to the occurrence of a Disrupted Day, the Index shall reference the Incoming Put Option Constituent, if any, together with up to two Remaining Put Option Constituents, for the period from, but excluding, Put Rebalancing Date (h) to, and including, the immediately following Put Rebalancing Date ("**Put Rebalancing Date (h+1)**".

The methodology for selecting the Incoming Put Option Constituent is as follows:

(i) On Put Rebalancing Date (h), the Index Calculation Agent shall identify the Put Option Constituent that was selected for inclusion in the Index on the Put Rebalancing Date falling on or about nine months prior to Put Rebalancing Date (h), if any (the "**Outgoing Put Option Constituent**").

(ii) The Index Calculation Agent shall then identify, in respect of Put Rebalancing Date (h), the Put Option Contracts that are due to expire on the third Friday in the month falling eleven calendar months after Put Rebalancing Date (h) (each an "**Eligible Put Option Contract**").

(iii) The Index Calculation Agent shall determine the Target Put Strike Price for Put Rebalancing Date (h) in accordance with the following:

"**Target Put Strike Price**" means the product of the Target Put Strike Percentage and $S_{(h)prior}$,

Where:

"$\mathbf{S_{(h)prior}}$" means, in respect of Put Rebalancing Date (h), the Closing Level of the Price Return Equity Index in respect of the immediately preceding Index Calculation Day that was not a Disrupted Equity Index Business Day.

(iv) The Index Calculation Agent shall select the following as the Put Option Constituents for Put Rebalancing Date (h):

(A) each Put Option Constituent (each a "**Remaining Put Option Contract**") comprised in the Index immediately prior to Put Rebalancing Date (h) that is not the Outgoing Put Option Constituent, if any; and

(B) the Eligible Put Option Contract whose Strike Price is equal to or closest in value to, but not greater than, the Target Put Strike Price for such Put Rebalancing Date (h), subject to clause (vi) below (such Eligible Put Option Contract is referred to as the "**Incoming Put Option Constituent**").

(v) If, on Put Rebalancing Date (h), there are no Eligible Put Option Contracts that have a Strike Price that is equal to or less than the Target Put Strike Price, then the Target Put Strike Price shall be increased to be equal to the product of (i) the Target Put Strike Percentage plus 10 percent and (ii) $S_{(h)prior}$ (the "**Revised Target Put Strike Price**") and the Index Calculation Agent shall select the Eligible Put Option Contract whose Strike Price is closest to the Target Put Strike Price and equal to or less than the Revised Target Put Strike Price. If, on Put Rebalancing Date (h), there is no Eligible Put Option Contract that has a Strike Price that is equal to or less than the Revised Target Put Strike Price, then no Incoming Put Option Constituent shall be selected in respect of such Put Rebalancing Date (h) and therefore the Index shall reference no more than two Put Option Constituents for the period from, but excluding, Put Rebalancing Date (h) to, and including, the Put Rebalancing Date falling on or about nine months after Put Rebalancing Date (h).

(vi) If Put Rebalancing Date (h) is a Disrupted Day, then the Index shall (A) effect the removal of the Outgoing Put Option Constituent, if any, from, but excluding, the first Index Calculation Day immediately following Put Rebalancing Date (h) that is not a Disrupted Day and (B) reference the Incoming Put Option Constituent selected on Put Rebalancing Date (h) from, but excluding, the first Index Calculation Day immediately following Put Rebalancing Date (h) that is not a Disrupted Day to, and including, Put Rebalancing Date (h+1).

Step 2: Determining the Relevant Number of Call Options and the Relevant Number of Put Options

(a) Determining the Relevant Number of Call Options

On each Call Rebalancing Date (k), the Index Calculation Agent shall determine the relevant number (which may be less than one) of the Call Option Constituent selected on Call Rebalancing Date (k) (the "**Relevant Number of Call Options**" or "**$NCalls_k$**") as set forth below. The Relevant Number of Call Options shall apply to the Call Option Constituent for the entire period of time that it is referenced in the Index.

The Relevant Number of Call Options is equal to:

$$NCalls_k = \frac{Index_{(k)prior}}{S_{(k)prior}}$$

Where:

"**$Index_{(k)prior}$**" means, in respect of Call Rebalancing Date (k), the Index Level in respect of the immediately preceding Index Calculation Day that was not a Disrupted Day; and

"**$S_{(k)prior}$**" means, in respect of Call Rebalancing Date (k), the Closing Level of the Price Return Equity Index in respect of the immediately preceding Index Calculation Day that was not a Disrupted Equity Index Business Day.

(b) Determining the Relevant Number of Put Options

On Put Rebalancing Date (h), the Index Calculation Agent shall determine the relevant number (which may be less than one) of the Incoming Put Option Constituent, if any, selected on Put Rebalancing Date (h) (in respect of such Incoming Put Option Constituent, if any, the "**Relevant Number of Put Options**" or "**$NPuts_{h,j}$**"), as set forth below. The Relevant Number of Put Options shall apply to such Incoming Put Option Constituent for the entire period of time that it is referenced in the Index. Please note that "j" is a designation of a particular Incoming Put Option Constituent.

In respect of the Incoming Put Option Constituent the Relevant Number of Put Options is equal to:

$$NPuts_{h,j} = \frac{Index_{(h)prior}}{3 \times S_{(h)prior}}$$

Where:

"**$Index_{(h)prior}$**" means, in respect of Put Rebalancing Date (h), the Index Level in respect of the immediately preceding Index Calculation Day that was not a Disrupted Day; and

"**$S_{(h)prior}$**" means, in respect of a Put Rebalancing Date (h), the Closing Level of the Price Return Equity Index in respect of the immediately preceding Index Calculation Day that was not a Disrupted Equity Index Business Day.

In respect of each of the Remaining Put Option Constituents, the Relevant Number of Put Options shall be equal to the Relevant Number of Put Options applicable to such Remaining Put Option Constituent on the Put Rebalancing Date on which it was selected to be referenced in the Index.

Step 3: Calculating the Index Level

The Index Calculation Agent shall calculate the Index Level for each Index Calculation Day ("**Index Calculation Day (t)**") that is not a Disrupted Day as follows:

$$Index_t = Max(0, Index_{(t)prior} + MTM_t - PutCost_t - CallCost_t)$$

Where:

"**$Index_t$**"	means the Index Level in respect of Index Calculation Day (t).
"**$Index_{(t)prior}$**"	means, in respect of Index Calculation Day (t), the Index Level in respect of the immediately preceding Index Calculation Day that was not a Disrupted Day.
"**Call $Cost_t$**"	means the Call Cost for Index Calculation Day (t), as determined in accordance with the provisions set forth in the Definitions Annex.
"**Put $Cost_t$**"	means the Put Cost for Index Calculation Day (t), as determined in accordance with the provisions set forth in the Definitions Annex.
"**MTM_t**"	means an amount calculated as follows:

$$MTM_t = \left(NCalls_k \times \left(CallMTM_{(t)prior} - CallMTM_t\right) + \sum_{j=1}^{3}\left(NPuts_{h,j} \times \left(PutMTM_{t,j} - PutMTM_{(t)prior,j}\right)\right) + DeltaHedge_t - DeltaCost_t - AF \times Index_{(t)prior} \times \frac{Act\,(DayCount\ )}{365} + Index_{(t)prior} \times \left(\frac{ST_t}{ST_{(t)prior}} - 1\right)\right)$$

Where:

"**$NCalls_k$**"	means, in respect of Index Calculation Day (t), the Relevant Number of Call Options for the Call Option Constituent, as determined in accordance with step 2 above.
"**$CallMTM_t$**"	means:

(a) if either:

(i) Index Calculation Day (t) is a Call Rebalancing Date; or

(ii) Index Calculation Day (t) is not a Call Rebalancing Date, but a Call Rebalancing Date has occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day,

an amount calculated as follows:

$$CallMTM_t = MAX\,(R_t - CallStrike_k, 0)$$

Where:

"**R_t**" means the Closing Level of the Settlement Index in respect of the Call Rebalancing Date.

"**$CallStrike_k$**" means the Strike Price of the Call Option Constituent determined in accordance with Step 1 above.

(b) if Index Calculation Day (t) is not a Call Rebalancing Date, and a Call Rebalancing Date has not occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, an amount equal to the Settlement Price of the Call Option Constituent on Index Calculation Day (t).

"**$CallMTM_{(t)prior}$**"	means, in respect of Index Calculation Day (t), the Settlement Price of the Call Option Constituent on the immediately preceding Index Calculation Day that was not a Disrupted Day.
"**$NPut_{h,j}$**"	means, in respect of Index Calculation Day (t) and each Put Option Constituent (j) (j from 1 to 3 (or such lesser number that is the number of Put Option Constituents)), the Relevant Number of Put Options in respect of each Put Option Constituent as determined in accordance with Step 2 above.
"**$PutMTM_{t,j}$**"	means, in respect of Index Calculation Day (t) and each Put Option Constituent (j) (j from 1 to 3 (or such lesser number that is the number of Put Option Constituents)), the Settlement Price of each Put Option Constituent on Index Calculation Day (t).
"**$PutMTM_{(t)prior,j}$**"	means, in respect of Index Calculation Day (t) and each Put Option Constituent (j) (j from 1 to 3 (or such lesser number that is the number of Put Option Constituents)), the Settlement Price of each Put Option Constituent on the immediately preceding Index Calculation Day that was not a Disrupted Day.
"**$Deltahedge_t$**"	means the "Deltahedge" for Index Calculation Day (t), as determined in accordance with the provisions set forth in the Definitions Annex.
"**$DeltaCost_t$**"	means the "DeltaCost" for Index Calculation Day (t), as determined in accordance with the provisions set forth in the Definitions Annex.
"**AF**"	means the Adjustment Factor applicable to the Index as specified in the Applicable Module.
"**Act(DayCount)**"	means the number of calendar days from, but excluding, the Index Calculation Day immediately preceding Index Calculation Day (t) that was not a Disrupted Day to, and including, Index Calculation Day (t).
"**ST_t**"	means, in respect of Index Calculation Day (t), the Closing Level of the Total Return Equity Index in respect of Index Calculation Day (t).
"**$ST_{(t)prior}$**"	means, in respect of Index Calculation Day (t), the Closing Level of the Total Return Equity Index in respect of the immediately preceding Index Calculation Day that was not a Disrupted Day.

3. Definitions

Capitalized terms defined below shall have the following meanings in the Index Rules:

"**Affected Constituent**" means the Constituent affected by the relevant event or circumstance described in Section 6 (*Extraordinary Events*) of Part A of the Index Rules.

"**Applicable Module**" means the module that is applicable to an Index.

"**Applicable Part(s)**" means the part(s) that are applicable to an Index.

"**Base Date**" means, in respect of an Index, the date specified as such in the Applicable Module.

"**Base Level**" means, in respect of an Index, the level specified as such in the Applicable Module.

"**Call Cost**$_t$" has the meaning given to it in the Definitions Annex.

"**Call Option Constituent**" means, in respect of an Index and an Index Calculation Day, the Call Option Contract selected on Call Rebalancing Date (k), in accordance with step 1 of Part B of the Index Rules, for inclusion in the Index. Subject to the occurrence of a Disrupted Day, the Index shall reference the Call Option Constituent selected on Call Rebalancing Date (k) for the period from, but excluding, Call Rebalancing Date (k) to, and including, Call Rebalancing Date (k+1).

"**Call Option Contract**" means, in respect of an Index, each call option contract specified as such in the Applicable Module. For this purpose, each options contract will be specified by reference to (A) the Price Return Equity Index to which it relates, (B) the expiry month of such contract and (C) the Related Exchange on which it is traded.

"**Call Rebalancing Date**" has the meaning given to it in the Applicable Module.

"**Call Rebalancing Date (k)**" has the meaning given to it in step 1 of Part B of the Index Rules.

"**Call Rebalancing Date (k+1)**" means, in respect of Call Rebalancing Date (k), the immediately following Call Rebalancing Date.

"**Call Strike (k)**" has the meaning given to it in step 1 of Part B of the Index Rules.

"**Change in Law**" means on or after the Index 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 and Futures Trading Commission, the U.S. Securities and Exchange Commission or any exchange or trading facility), in the case of (i) or (ii) the Index 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) any financial asset, transaction or interest in or relating to a Constituent or any component of a Constituent or (y) holding a position in any financial asset, transaction or interest in or relating to a Constituent or any component of a Constituent 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, regulation, order or rule.

"**Closing Level**" means, in respect of Index Calculation Day (t) and:

(i) an Equity Index, the official closing level of such Equity Index, as published by the Equity Index Sponsor for such Equity Index on Index Calculation Day (t);

(ii) the Volatility Index, the official closing level of the Volatility Index, as published by the Volatility Index Sponsor on Index Calculation Day (t);

(iii) a Futures Constituent, (x) if Index Calculation Day (t) is a Call Rebalancing Date, the final settlement value (howsoever described in the rules of the Related Exchange) for such Futures Constituent as published by the Related Exchange in respect of such Call Rebalancing Date and (y) if Index Calculation Day (t) is not a Call Rebalancing Date, the official settlement price (howsoever described in the rules of the Related Exchange) for such Futures Constituent as published by the Related Exchange in respect of Index Calculation Day (t); and

(iv) the Settlement Index, the official closing level of the Settlement Index, as published by the Settlement Index Sponsor on Index Calculation Day (t).

"**Component Security**" means, in relation to an Equity Index for which "Multiple Exchange" is specified as applicable in the Applicable Module, each component security of such Equity Index.

"**Constituents**" means, in respect of an Index, the Price Return Equity Index, the Total Return Equity Index, the Option Constituents, the Earlier Expiry Futures Contract, the Later Expiry Futures Contract, the Settlement Index and the Volatility Index in respect of such Index (each a "**Constituent**").

"**Constituent Sponsor**" means, in respect of an Index, each Equity Index Sponsor, the Volatility Index Sponsor, the Related Exchange for each Futures Constituent, the Settlement Index Sponsor and the Related Exchange for each Option Constituent (each a "**Constituent Sponsor**").

"**Currency of the Index**" means, in respect of an Index, the currency of that Index, as specified in the Applicable Module.

"**Definitions Annex**" means the annex to the Index Rules containing the definitions of Call $Cost_t$, $DeltaCost_t$, $Deltahedge_t$, Put $Cost_t$ and Settlement Price.

"**$DeltaCost_t$**" has the meaning given to it in the Definitions Annex.

"**$Deltahedge_t$**" has the meaning given to it in the Definitions Annex.

"**Disrupted Constituent**" means, in respect of Index Calculation Day (t), a Constituent in respect of which a Market Disruption Event has occurred or is continuing on Index Calculation Day (t), or, the Exchange or Related Exchange (as the case may be) fails to open for trading during its regular trading session on such Index Calculation Day, in respect of such Constituent.

"**Disrupted Day**" means, in respect of an Index, any Index Calculation Day on which:

(i) a Market Disruption Event has occurred or is continuing in respect of any Equity Index, any Option Constituent, any Futures Constituent, the Settlement Index or the Volatility Index;

(ii) any Exchange or Related Exchange (as the case may be) fails to open for trading during its regular trading session; or

(iii) the last offer price (howsoever described in the rules of the Related Exchange), in respect of any Option Constituent, is not quoted and not published for Index Calculation Day (t) by the Related Exchange.

"**Disrupted Equity Index Business Day**" means, in respect of an Index, any Index Calculation Day on which (i) a Market Disruption Event has occurred or is continuing in respect of any Equity Index; or (ii) any Exchange or Related Exchange for any Equity Index fails to open for trading during its regular trading session.

"**Disrupted Volatility Index Business Day**" means, in respect of an Index, any Index Calculation Day on which a Market Disruption Event has occurred or is continuing in respect of the Volatility Index.

"**Earlier Expiry Futures Contract**" means, in respect of an Index, the futures contract identified as the "Earlier Expiry Futures Contract" in the Applicable Module.

"**Early Closure**" means:

(a) in respect of an Equity Index for which "Multiple Exchange" is specified as not applicable in the Applicable Module, the closure on any Equity Index Business Day of (x) the relevant Exchange relating to securities that comprise 20 percent or more of the level of such Equity Index or (y) any Related Exchange prior to its Scheduled Closing Time unless such earlier closing is announced by such Exchange or Related Exchange (as the case may be) at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on such Exchange or Related Exchange (as the case may be) on such Equity Index Business Day; and (ii) the submission deadline for orders to be entered into the Exchange or Related Exchange system for execution at the Scheduled Closing Time on such Equity Index Business Day;

(b) in respect of an Equity Index for which "Multiple Exchange" is specified as applicable in the Applicable Module, the closure on any Equity Index Business Day of (x) the Exchange in respect of any Component Security or (y) the Related Exchange prior to its Scheduled Closing Time unless such earlier closing is announced by such Exchange or Related Exchange (as the case may be) at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on such Exchange or Related Exchange (as the case may be) on such Equity Index Business Day and (ii) the submission deadline for orders to be entered into the Exchange or Related Exchange system for execution at the Scheduled Closing Time on such Equity Index Business Day;

(c) in respect of an Option Constituent, the closure on any Option Constituent Business Day of the Related Exchange prior to its Scheduled Closing Time unless such earlier closing is announced by such Related Exchange at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on such Related Exchange on such Option Constituent Business Day and (ii) if applicable, the submission deadline for orders to be entered into the Related Exchange system for execution at the Scheduled Closing Time on such Option Constituent Business Day; or

(d) in respect of a Futures Constituent, the closure on any Futures Constituent Business Day of the Related Exchange prior to its Scheduled Closing Time unless such earlier closing is announced by such Exchange at least one hour prior to the earlier of: (i) the actual closing time for the regular trading session on such Related Exchange on such Futures Constituent Business Day and (ii) if applicable, the submission deadline for orders to be entered into the Related Exchange system for execution at the Scheduled Closing Time on such Futures Constituent Business Day.

"**Eligible Call Option Contract**" has the meaning given to it in step 1 of Part B of the Index Rules.

"**Eligible Put Option Contract**" has the meaning given to it in step 1 of Part B of the Index Rules.

"**Equity Index**" means the Price Return Equity Index and/or the Total Return Equity Index, as applicable.

"**Equity Index Business Day**" means:

(a) in respect of an Equity Index for which "Multiple Exchange" is specified as not applicable in the Applicable Module, any day on which the Exchange and each Related Exchange are scheduled to be open for trading for their respective regular trading sessions; or

(b) in respect of an Equity Index for which "Multiple Exchange" is specified as applicable in the Applicable Module, any day on which (i) the applicable Equity Index Sponsor is scheduled to publish the level of such Equity Index and (ii) the Related Exchange is scheduled to be open for trading for its regular trading session.

"**Equity Index Sponsor**" means, in respect of an Equity Index, the entity named as such in the Applicable Module in respect of such Equity Index.

"**Exchange**" means, in respect of a Constituent, each exchange or quotation system specified as such for such Constituent in the Applicable Module, any successor to such exchange or quotation system or any substitute exchange or quotation system to which trading in the shares or other components underlying such Constituent has temporarily relocated (provided that the Index Calculation Agent has determined that there is comparable liquidity relative to the shares or other components underlying such Constituent on such temporary substitute exchange or quotation system as on the original Exchange).

"**Exchange Disruption**" means:

(a) in respect of an Equity Index for which "Multiple Exchange" is specified as not applicable in the Applicable Module, any event (other than an Early Closure) that disrupts or impairs (as determined by the Index Calculation Agent) the ability of market participants in general (i) to effect transactions in, or obtain market values relating to, securities that comprise 20 percent or more of the level of such Equity Index, or (ii) to effect transactions in, or obtain market values for, futures or options contracts relating to such Equity Index on the Related Exchange;

(b) in respect of an Equity Index for which "Multiple Exchange" is specified as applicable in the Applicable Module, any event (other than an Early Closure) that disrupts or impairs (as determined by the Index Calculation Agent) the ability of market participants in general to effect transactions in or obtain market values for: (i) any Component Security on the Exchange in respect of such Component Security, or (ii) futures or options contracts relating to such Equity Index on the Related Exchange; or

(c) in respect of an Option Constituent, any event (other than an Early Closure) that disrupts or impairs (as determined by the Index Calculation Agent) the ability of market participants in general to effect transactions in, or to obtain market values for, such Option Constituent on the Related Exchange.

(d) in respect of a Futures Constituent, any event (other than an Early Closure) that disrupts or impairs (as determined by the Index Calculation Agent) the ability of market participants in general to effect transactions in, or to obtain market values for, such Futures Constituent on the Related Exchange.

"**Futures Constituent**" means, in respect of an Index, the Earlier Expiry Futures Contract and the Later Expiry Futures Contract.

"**Futures Constituent Business Day**" means, in respect of a Futures Constituent, any day on which the Related Exchange is scheduled to be open for trading for its regular trading session.

"**Futures Rebalancing Date**" has the meaning given to it in the Applicable Module.

"**Incoming Put Option Constituent**" has the meaning given to it in step 1 of Part B of the Index Rules.

"**Index**" means the index that is part of the J.P. Morgan U.S. Long Equity Dynamic Overlay Index Series that is specified in the Applicable Module.

"**Index Calculation Agent**" has the meaning given to it in Section 2.1 of Part A of the Index Rules.

"**Index Calculation Day**" or "**Index Calculation Day (t)**" means, in respect of an Index, any day that is an Equity Index Business Day for each Equity Index, an Option Constituent Business Day for each Option Constituent, a Volatility Index Business Day for the Volatility Index, a Futures Constituent Business Day for each Futures Constituent and a Settlement Index Business Day for the Settlement Index.

"**Index Calculation Day ((t)prior)**" means in respect of Index Calculation Day (t), the immediately preceding Index Calculation Day that was not a Disrupted Day.

"**Index Level**" has the meaning given to it in Section 3.2 of Part A of the Index Rules.

"**Index Live Date**" has the meaning given to it in the Applicable Module.

"**Index Rules**" means, in respect of an Index, the Applicable Parts and the Applicable Module that comprise the Index Rules for the Index.

"**Index Sponsor**" has the meaning given to it in Section 2.1 of Part A of the Index Rules.

"**LEDO Series**" has the meaning given to it in Section 1.1 of Part A of the Index Rules.

"**Later Expiry Futures Contract**" means, in respect of an Index, the futures contract identified as the "Later Expiry Futures Contract" in the Applicable Module.

"**Market Disruption Event**" means, in respect of:

(a) an Equity Index for which "Multiple Exchange" is specified as not applicable in the Applicable Module and an Equity Index Business Day:

(i) a failure by the Equity Index Sponsor to calculate and publish the Closing Level for the Equity Index on such day within the scheduled or usual timeframe for publication; or

(ii) the occurrence or existence of (x)(A) a Trading Disruption or (B) an Exchange Disruption, in either case that the Index Calculation Agent determines is material, at any time during the one hour period that ends at the Scheduled Closing Time or (y) an Early Closure.

For the purpose of determining whether a Market Disruption Event in respect of an Equity Index exists at any time, if there is a Market Disruption Event in respect of a security included in such Equity Index at any time on an Equity Index Business Day, the relevant percentage contribution of that security to the level of such Equity Index shall be the percentage contribution of that security as of the Scheduled Closing Time on the immediately preceding Equity Index Business Day, as published by Bloomberg Financial Markets (or if Bloomberg Financial Markets ceases to publish such percentage contributions, a replacement therefor acceptable to the Index Calculation Agent) (the "**Percentage Publisher**"); provided that if the Percentage Publisher does not publish such a percentage contribution at that time, the relevant percentage contribution will be determined by the Index Calculation Agent based on the prices for the securities included in such Equity Index as of the Scheduled Closing Time on the immediately preceding Equity Index Business Day, as reported in the official real-time price dissemination mechanism for the relevant Exchange (or, if trading in a security included in such Equity Index is disrupted at that time, based on its estimate of the value of the relevant security at that time); or

(b) an Equity Index for which "Multiple Exchange" is specified as applicable in the Applicable Module and an Equity Index Business Day:

(i) a failure by the Equity Index Sponsor to calculate and publish the Closing Level for the Equity Index on such day within the scheduled or usual timeframe for publication;

(ii) (A) the occurrence or existence, in respect of any Component Security, of (1) a Trading Disruption, that the Index Calculation Agent determines is material, at any time during the one hour period that ends at the relevant Scheduled Closing Time in respect of the Exchange on which such Component Security is principally traded, (2) an Exchange Disruption, that the Index Calculation Agent determines is material, at any time during the one hour period that ends at the relevant Scheduled Closing Time in respect of the Exchange on which such Component Security is principally traded, or (3) an Early Closure, and (B) the aggregate of all Component Securities in respect of which a Trading Disruption, an Exchange Disruption or an Early Closure occurs or exists comprises 20 percent or more of the level of the Equity Index; or

(iii) the occurrence or existence, in respect of futures or options contracts relating to the Equity Index of: (a) a Trading Disruption; (b) an Exchange Disruption, that in either case the Index Calculation Agent determines is material, at any time during the one hour period that ends at the Scheduled Closing Time in respect of the Related Exchange; or (c) an Early Closure.

For the purpose of determining whether a Market Disruption Event exists in respect of an Equity Index at any time, the relevant percentage contribution of each Component Security to the level of such Equity Index shall be based on a comparison of (x) the portion of the level of such Equity Index attributable to that Component Security to (y) the overall level of such Equity Index, in each case using the official opening weightings as published by the applicable Equity Index Sponsor as part of the market "opening data"; or

(c) an Option Constituent and an Option Constituent Business Day, the occurrence or existence, in respect of such Option Constituent of: (A) at any time during the one hour period that ends at the Scheduled Closing Time for the Related Exchange (1) a Trading Disruption or (2) an Exchange Disruption, that in either case the Index Calculation Agent determines is material, or (B) an Early Closure; or

(d) a Volatility Index and a Volatility Index Business Day, a failure by the Volatility Index Sponsor to calculate and publish the Closing Level for the Volatility Index on such day within the scheduled or usual timeframe for publication; or

(e) a Futures Constituent and a Futures Constituent Business Day, the occurrence or existence, in respect of such Futures Constituent of: (A) at any time during the one hour period that ends at the Scheduled Closing Time for the Related Exchange (1) a Trading Disruption or (2) an Exchange Disruption, that in either case the Index Calculation Agent determines is material, or (B) an Early Closure; or

(f) a Settlement Index and a Settlement Index Business Day, a failure by the Settlement Index Sponsor to calculate and publish the Closing Level for the Settlement Index on such day within the scheduled or usual timeframe for publication.

"**Option Constituent**" means, in respect of an Index, the Call Option Constituent and each Put Option Constituent.

"**Option Constituent Business Day**" means, in respect of an Option Constituent, any day on which the Related Exchange is scheduled to be open for trading for its regular trading session.

"**Price Return Equity Index**" means, in respect of an Index, the equity index specified as such in the Applicable Module.

"**Put Cost**$_t$" has the meaning given to it in the Definitions Annex.

"**Put Option Constituent**" means, in respect of an Index and an Index Calculation Day, each Put Option Contract selected, in accordance with step 1 of Part B of the Index Rules, for inclusion in the Index. Subject to the occurrence of a Disrupted Day, the Index shall reference the Incoming Put Option Constituent, together with up to two Remaining Put Option Constituents, for the period from, but excluding, Put Rebalancing Date (h) to, and including, the immediately following Put Rebalancing Date (h+1).

"**Put Option Contract**" means, in respect of an Index, each put option contract specified as such in the Applicable Module. Each put option contract will be specified by reference to (A) the Price Return Equity Index to which it relates, (B) the expiry month of such contract and (C) the Related Exchange on which it is traded.

"**Put Rebalancing Date**" has the meaning given to it in the Applicable Module.

"**Put Rebalancing Date (h)**" has the meaning given to it in step 1 of Part B of the Index Rules.

"**Put Rebalancing Date (h+1)**" means, in respect of a Put Rebalancing Date (h), the immediately following Put Rebalancing Date.

"**Related Exchange**" means, in respect of a Constituent, each exchange or quotation system specified as such for such Constituent in the Applicable Module, any successor to such exchange or quotation system or any substitute exchange or quotation system to which trading in (i) futures or option contracts relating to an Equity Index, (ii) an Option Constituent, or (iii) a Futures Constituent has temporarily relocated (provided that the Index Calculation Agent has determined that there is comparable liquidity relative to the futures and option contracts relating to such Equity Index, the relevant Option Constituent or the relevant Futures Constituent (as the case may be) on such temporary substitute exchange or quotation system as on the original exchange or quotation system).

"**Relevant Number of Call Options**" or **NCalls**$_k$" has the meaning given to it in step 2 of Part B of the Index Rules.

"**Relevant Number of Put Options**" or **NPuts**$_{h,j}$" has the meaning given to it in step 2 of Part B of the Index Rules.

"**Relevant Persons**" means the affiliates and subsidiaries of the Index Sponsor and the Index Calculation Agent, and the directors, officers, employees, representatives, delegates and agents of the Index Sponsor and the Index Calculation Agent (each, a "**Relevant Person**").

"**Revised Target Put Strike Price**" has the meaning given to it in step 1 of Part B of the Index Rules.

"**Scheduled Closing Time**" means:

(a) for a Constituent that is an Equity Index, the scheduled weekday closing time of the relevant Exchange or Related Exchange (as applicable) on a relevant day, without regard to after hours or any other trading outside of the regular trading session hours; and

(b) for a Constituent that is an Option Constituent or a Futures Constituent, the scheduled weekday closing time of the applicable Related Exchange on the relevant Option Constituent Business Day or Futures Constituent Business Day, without regard to after hours or any other trading outside of the regular trading session hours.

"**Settlement Index**" means, in respect of the Price Return Equity Index, the settlement index specified as such in the Applicable Module.

"**Settlement Index Business Day**" means, in respect of a Settlement Index, any day in respect of which the Settlement Index Sponsor is scheduled to publish the level of such Settlement Index.

"**Settlement Index Sponsor"** means, in respect of a Settlement Index, the entity named as such in the Applicable Module.

"**Settlement Price**" has the meaning given to it in the Definitions Annex.

"**Strike Price**" means, in respect of an Option Constituent, the strike price for such Option Constituent as published by the Related Exchange or relevant publication source.

"**Successor Constituent**" has the meaning given to it in Section 6.1 of Part A of the Index Rules.

"**Target Call Strike Price**" has the meaning given to it in step 1 of Part B of the Index Rules.

"**Target Put Strike Price**" has the meaning given to it in step 1 of Part B of the Index Rules.

"**Target Put Strike Percentage**" means the percentage level specified in the Applicable Module.

"**Total Return Equity Index**" means, in respect of an Index, the equity index specified as such in the Applicable Module.

"**Trading Disruption**" means:

(a) in respect of an Equity Index for which "Multiple Exchange" is specified as not applicable in the Applicable Module, 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: (i) relating to securities that comprise 20 percent or more of the Closing Level for such Equity Index, or (ii) in futures or options contracts relating to such Equity Index on the Related Exchange; or

(b) in respect of an Equity Index for which "Multiple Exchange" is specified as applicable in the Applicable Module, 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: (i) relating to any Component Security on the Exchange in respect of such Component Security, or (ii) in futures or options contracts relating to such Equity Index on the Related Exchange; or

(c) in respect of an Option Constituent, any suspension of or limitation imposed on trading by the Related Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the Related Exchange or otherwise relating to such Option Constituent; or

(d) in respect of a Futures Constituent, any suspension of or limitation imposed on trading by the Related Exchange or otherwise and whether by reason of movements in price exceeding limits permitted by the Related Exchange or otherwise relating to such Futures Constituent.

"**Volatility Index**" means, in respect of an Index, the volatility index specified as such in the Applicable Module.

"**Volatility Index Business Day**" means, in respect of the Volatility Index, any day in respect of which the relevant Volatility Index Sponsor is scheduled to publish the level of such Volatility Index.

"**Volatility Index Sponsor**" means, in respect of a Volatility Index, the entity named as such in the Applicable Module.

Definitions Annex

Capitalized terms defined below shall have the following meanings in the Index Rules:

"**Settlement Price**" means

(A) In respect of any Call Option Constituent, the following methodology will determine the Settlement Price for any Index Calculation Day (t) that is not a Disrupted Day:

(i) If both the last bid price and the last offer price (howsoever described in the rules of the Related Exchange), in respect of the Call Option Constituent, are quoted and published for Index Calculation Day (t) by the Related Exchange, then the Settlement Price will be equal to the arithmetic average of such last bid price and such last offer price; or

(ii) If the last bid price (howsoever described in the rules of the Related Exchange), in respect of the Call Option Constituent, is not quoted and not published for Index Calculation Day (t) by the Related Exchange, but the last offer price (howsoever described in the rules of the Related Exchange), in respect of the Call Option Constituent, is quoted and published for Index Calculation Day (t) by the Related Exchange, then the Settlement Price will be equal to such last offer price.

For the avoidance of doubt, if the last offer price (howsoever described in the rules of the Related Exchange), in respect of the Call Option Constituent, is not quoted and not published for Index Calculation Day (t) by the Related Exchange, then Index Calculation Day (t) shall be a Disrupted Day.

(B) In respect of any Put Option Constituent, the following methodology will determine the Settlement Price for any Index Calculation Day (t) that is not a Disrupted Day:

(i) If both the last bid price and the last offer price (howsoever described in the rules of the Related Exchange), in respect of the Put Option Constituent, are quoted and published for Index Calculation Day (t) by the Related Exchange, then the Settlement Price will be equal to the arithmetic average of such last bid price and such last offer price; or

(ii) If the last bid price (howsoever described in the rules of the Related Exchange), in respect of the Put Option Constituent, is not quoted and not published for Index Calculation Day (t) by the Related Exchange, but the last offer price (howsoever described in the rules of the Related Exchange), in respect of the Put Option Constituent, is quoted and published for Index Calculation Day (t) by the Related Exchange, then the Settlement Price will be equal to the arithmetic average of zero and such last offer price.

For the avoidance of doubt, if the last offer price (howsoever described in the rules of the Related Exchange), in respect of the Put Option Constituent, is not quoted and not published for Index Calculation Day (t) by the Related Exchange, then Index Calculation Day (t) shall be a Disrupted Day.

"**DeltaCost$_t$**" means

If Index Calculation Day (t) is a Call Rebalancing Date or a Call Rebalancing Date has occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day:

$$DeltaCost_t = DeltaSpread \times Abs\left(Ind_{(t)prior} \times \Delta_{(t)prior} \times Index_{(k)prior} - Ind_t \times \Delta_t \times Index_{(t)prior}\right)$$

Otherwise:

$$DeltaCost_t = DeltaSpread \times Abs\left(Ind_{(t)prior} \times \Delta_{(t)prior} \times Index_{(k)prior} - Ind_t \times \Delta_t \times Index_{(k)prior}\right)$$

Where:

"**DeltaSpread**" means 0.03 percent;

"**Abs(x)**" means the absolute value of the value set forth in parentheses following "Abs", being the non-negative value of the value set forth in parentheses without regards to its sign, such that the absolute value of any negative value shall be a positive amount having the same numerical value as the negative amount (e.g., Abs (123) shall be equal to 123 and Abs (-123) shall be equal to 123);

"**Ind_t**" means the indicator number in respect of Index Calculation Day (t), being a number equal to or greater than 0 and less than or equal to 1):

$$Ind_t = Max\left(Min\left(1, Max\left(0, \frac{LongMovAvg_t - Vol_t}{0.2 \times LongMovAvg_t}\right)\right); Min\left(1, Max\left(0, \frac{ShortMovAvg_t - Vol_t}{0.2 \times ShortMovAvg_t}\right)\right)\right)$$

"**$Ind_{(t)prior}$**" means the indicator number in respect of the Index Calculation Day immediately preceding Index Calculation Day (t) that was not a Disrupted Day, being a number equal to or greater than 0 and less than or equal to 1):

$$Ind_{(t)prior} = Max\left(Min\left(1, Max\left(0, \frac{LongMovAvg_{t-1} - Vol_{t-1}}{0.2 \times LongMovAvg_{t-1}}\right)\right); Min\left(1, Max\left(0, \frac{ShortMovAvg_{t-1} - Vol_{t-1}}{0.2 \times ShortMovAvg_{t-1}}\right)\right)\right)$$

Where:

"**$LongMovAvg_t$**" means the arithmetic average of the Closing Level of the Volatility Index on each Volatility Index Business Day from, and including, the day that falls five years prior to Index Calculation Day (t) (or, if such day is not an Index Calculation Day, the next following Index Calculation Day) to, but excluding, Index Calculation Day (t).

"**$LongMovAvg_{t-1}$**" means the arithmetic average of the Closing Level of the Volatility Index on each Volatility Index Business Day from, and including, the Index Calculation Day immediately preceding the day that falls five years prior to Index Calculation Day (t) to, but excluding, the Index Calculation Day immediately preceding Index Calculation Day (t).

"**$ShortMovAvg_t$**" means the arithmetic average of the Closing Level of the Volatility Index on each Volatility Index Business Day from, and including, the day falling six months prior to Index Calculation Day (t) (or, if such day is not an Index Calculation Day, the next following Index Calculation Day) to, but excluding, Index Calculation Day (t).

"**$ShortMovAvg_{t-1}$**" means the arithmetic average of the Closing Level of the Volatility Index on each Volatility Index Business Day from, and including, the Index Calculation Day immediately prior to Index Calculation Day (t) that falls six months prior to the Index Calculation Day (t) to, but excluding, the Index Calculation Day immediately prior to the Index Calculation Day (t).

The determinations of the arithmetic averages of the Closing Levels of the Volatility Index will take into account the Closing Level published for a Volatility Index Business Day irrespective of whether such day is a Disrupted Day.

"**$Index_{(k)prior}$**" in respect of Index Calculation Day (t), has the meaning given to it in step 2 of Part B of the Index Rules, with the reference to Call Rebalancing Date (k) being a reference to the Call Rebalancing Date occurring immediately prior to Index Calculation Day (t).

"**$Index_{(t)prior}$**" means, in respect of Index Calculation Day (t), the Index Level in respect of the immediately preceding Index Calculation Day that was not a Disrupted Day.

"**Δ_t**"

(a) If either (x) Index Calculation Day (t) is a Call Rebalancing Date or (y) a Call Rebalancing Date has occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, an amount determined as follows:

$\Delta_t = N(d'_t)$

(b) If (x) Index Calculation Day (t) is not a Call Rebalancing Date and (y) a Call Rebalancing Date has not occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day:

$\Delta_t = N(d_t)$

Where:

"**N(x)**" means the standard Gaussian (normal) cumulative probability function of the value set forth in parentheses following "N"; and

"$\mathbf{d_t}$" means an amount calculated as follows:

$$d_t = \frac{\ln\left(\frac{S_t}{CallStrike_k}\right) + \frac{(0.01 \times Vol_t)^2}{2} \times \left(\frac{DayCount}{365}\right)}{(0.01 \times Vol_t) \times \sqrt{\frac{DayCount}{365}}}$$

Where:

"$\mathbf{S_t}$" means in respect of Index Calculation Day (t), the Closing Level of the Price Return Equity Index on Index Calculation Day (t).

"**ln**" means the natural logarithm function.

"**DayCount**" means the number of calendar days from, but excluding, Index Calculation Day (t) to, and including, the Call Rebalancing Date scheduled to occur immediately following Index Calculation Date (t) (irrespective of whether any such day, including the Call Rebalancing Date, is or becomes a Disrupted Day).

"$\mathbf{Vol_t}$" means the Closing Level of the Volatility Index on Index Calculation Day (t).

"$\mathbf{CallStrike_k}$" means, in respect of Index Calculation Day (t), the Call Strike determined in accordance with step 1 of Part B of the Index Rules in respect of the Call Option Constituent selected on the immediately preceding Call Rebalancing Date (k).

AND

"$\mathbf{d'_t}$" means an amount calculated as follows:

$$d'_t = \frac{\ln\left(\frac{S_t}{CallStrike_{k+1}}\right) + \frac{(0.01 \times Vol_t)^2}{2} \times \left(\frac{DayCount'}{365}\right)}{(0.01 \times Vol_t) \times \sqrt{\frac{DayCount'}{365}}}$$

Where:

"**ln**" means the natural logarithm function.

"$\mathbf{S_t}$" means in respect of Index Calculation Day (t), the Closing Level of the Price Return Equity Index on Index Calculation Day (t).

"**DayCount'**" means the number of calendar days from, but excluding, Index Calculation Day (t) to, and including, the Call Rebalancing Date scheduled to occur immediately following Index Calculation Date (t) (irrespective of whether any such day, including the Call Rebalancing Day, is or becomes a Disrupted Day).

"$\mathbf{CallStrike_{k+1}}$" means, if Index Calculation Day (t) is a Call Rebalancing Date or a Call Rebalancing Date has occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that is not a Disrupted Day, the Call Strike determined in accordance with step 1 of Part B of the Index Rules in respect of such Call Rebalancing Date (and to be applied to the Call Option Constituent with effect from the Index Calculation Day immediately following Index Calculation Day (t)).

"$\mathbf{\Delta_{(t)prior}}$" means an amount calculated as follows:

$\Delta_{(t)prior} = N(d_{(t)prior})$

Where:

"**N(x)**" means the standard Gaussian (normal) cumulative probability function of the value set forth in the parentheses following "N"; and

"$\mathbf{d_{(t)prior}}$" means an amount calculated as follows:

$$d_{(t)\,prior} = \frac{\ln\left(\frac{S_{(t)\,prior}}{CallStrike_k}\right) + \frac{\left(0.01 \times Vol_{(t)\,prior}\right)^2}{2} \times \left(\frac{DayCount_{(t)\,prior}}{365}\right)}{\left(0.01 \times Vol_{(t)\,prior}\right) \times \sqrt{\frac{DayCount_{(t)\,prior}}{365}}}$$

Where:

"**$S_{(t)prior}$**" means in respect of Index Calculation Day (t), the Closing Level of the Price Return Equity Index in respect of the immediately preceding Index Calculation Day that was not a Disrupted Equity Index Business Day.

"**ln**" means the natural logarithm function.

"**$DayCount_{(t)prior}$**" means in respect of Index Calculation Day (t), the value of "DayCount" on the immediately preceding Index Calculation Day that was not a Disrupted Day.

"**$Vol_{(t)prior}$**" means the Closing Level of the Volatility Index in respect of the Index Calculation Day immediately preceding Index Calculation Day (t) that was not a Disrupted Volatility Index Business Day.

"**$CallStrike_k$**" means, in respect of Index Calculation Day (t), the Call Strike determined in accordance with step 1 of Part B of the Index Rules in respect of the Call Option Constituent selected on the immediately preceding Call Rebalancing Date (k).

"**$Deltahedge_t$**" means:

(a) If (x) Index Calculation Day (t) is a Call Rebalancing Date or (y) a Call Rebalancing Date has occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, an amount calculated as follows:

$$Deltahedge_t = \Delta_{(t)prior} \times Ind_{(t)prior} \times NCalls_k \times \left(R_t - S_{(t)prior}\right)$$

(b) If (x) Index Calculation Day (t) is not a Call Rebalancing Date and (y) a Call Rebalancing Date has not occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, an amount calculated as follows:

$$Deltahedge_t = \Delta_{(t)prior} \times Ind_{(t)prior} \times NCalls_k \times \left(F_t - F_{(t)prior}\right)$$

Where:

"**F_t**" Means the Closing Level of the Futures Constituent that is specified as the "Earlier Expiry Futures Contract Index" in the Applicable Module in respect of Index Calculation Day (t).

"**$F_{(t)prior}$**" Means:

(a) if (i) the Index Calculation Day immediately preceding Index Calculation Day (t) is not a Futures Rebalancing Date or (ii) a Futures Rebalancing Date has not occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, the Closing Level of the Futures Constituent that is specified as the "Earlier Expiry Futures Contract Index" in the Applicable Module in respect of the Index Calculation Day immediately preceding Index Calculation Day (t) that was not a Disrupted Day; or

(b) if (i) the Index Calculation Day immediately preceding Index Calculation Day (t) is a Futures Rebalancing Date or (ii) a Futures Rebalancing Date has occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that is not a Disrupted Day, the Closing Level of the Futures Constituent that is specified as the "Later Expiry Futures Contract Index" in the Applicable Module in respect of the Index Calculation Day immediately preceding Index Calculation Day (t) that was not a Disrupted Day.

"**$\Delta_{(t)prior}$**" Has the meaning given to it in the definition of DeltaCost.

"**$Ind_{(t)prior}$**" Has the meaning given to it in the definition of DeltaCost.

"**$NCalls_k$**" means, in respect of Index Calculation Day (t), the Relevant Number of Call Options in respect of the Call Rebalancing Date immediately preceding Index Calculation Day (t).

"**$S_{(t)prior}$**" Means, in respect of Index Calculation Day (t), the Closing Level of the Price Return Equity Index on the immediately preceding Index Calculation Day that was not a Disrupted Day.

"**R_t**" means, in respect of Index Calculation Day (t), if either (x) Index Calculation Day (t) is a Call Rebalancing Date or (y) if Index Calculation Day (t) is not a Call Rebalancing Date, but a Call Rebalancing Date has occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, the Closing Level of the Settlement Index in respect of the Call Rebalancing Date.

"**$CallCost_t$**" means,

(i) if (x) Index Calculation Day (t) is a Call Rebalancing Date or (y) a Call Rebalancing Date has occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, an amount calculated as follows:

$$CallCost_t = Min(Max\left(FloorCost \times Index_{(t)prior,} NCalls_k \times VegaCall_k \times Volatility\ Spread_t\right), NCalls_k \times CallMTM_k)$$

(ii) if (x) Index Calculation Day (t) is not a Call Rebalancing Date and (y) a Call Rebalancing Date has not occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, $CallCost_t$ means 0.

"**$PutCost_t$**" means, if

(i) if (x) Index Calculation Day (t) is a Put Rebalancing Date or (y) a Put Rebalancing Date has occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, an amount calculated as follows:

$$PutCost_t = Max\left(FloorCost \times Index_{(t)prior}, NIncomingput_h \times VegaPutIn_h \times VolatilitySpread_t\right) + Min(Max\left(FloorCost \times Index_{(t)prior}, NOutgoingput_h \times VegaPutOut_h \times VolatilitySpread_t\right), NOutgoingput_h \times OutgoingputMTM_h)$$

(ii) if (x) Index Calculation Day (t) is not a Put Rebalancing Date and (y) a Put Rebalancing Date has not occurred between Index Calculation Day (t) and the immediately preceding Index Calculation Day that was not a Disrupted Day, $PutCost_t$ means 0.

Where:

"**$Index_{(t)prior}$**" means, in respect of Index Calculation Day (t), the Index Level in respect of the immediately preceding Index Calculation Day that was not a Disrupted day.

"**$NCall_k$**" in respect of Index Calculation Day (t), has the meaning given to it in step 2 above, in respect of the Call Rebalancing Date (k).

"**FloorCost**" means 0.05 percent

"**$CallMTM_k$**" means an amount equal to the Settlement Price as of the Call Rebalancing Date (k) of the Call Option selected, in respect of the Call Rebalancing Date (k), pursuant to the methodology described in step 1 above

"**$VegaCall_k$**" means an amount calculated as follows:

$$VegaCall_k = \frac{S_k}{\sqrt{2 \times \Pi}} \times \exp\left(-\frac{1}{2} \times d_{Call,k} \times d_{Call,k}\right)\sqrt{\frac{DayCount_{Call}}{365}}$$

Where:

"**$d_{Call,k}$**" means an amount calculated as follows:

$$d_{Call,k} = \frac{\ln\left(\frac{S_k}{CallStrike_k}\right) + \frac{(0.01 \times Vol_k)^2}{2} \times \left(\frac{DayCount_{Call}}{365}\right)}{(0.01 \times Vol_k) \times \sqrt{\frac{DayCount_{Call}}{365}}}$$

"**Π**" means 3.1415926535.

"**S_k**" means in respect of Call Rebalancing Date (k), the Closing Level of the Price Return Equity Index on Call Rebalancing Date (k).

"**exp(x)**" means the exponential function of the value set forth in parentheses following "exp".

Where:

"**ln**" means the natural logarithm function.

"**$DayCount_{Call}$**" means the number of calendar days from, but excluding, Call Rebalancing Date (k) to, and including, the Call Rebalancing Date scheduled to

occur immediately following Call Rebalancing Date (k) (irrespective of whether any such day, including the Call Rebalancing Day, is or becomes a Disrupted Day).

"**Vol_k**" means the Closing Level of the Volatility Index in respect of Call Rebalancing Date (k).

"**$CallStrike_k$**" means the Call Strike determined in accordance with step 2 of Part B in respect of the immediately preceding Call Rebalancing Date (k).

"**$NIncomingput_h$**" means, in respect of a Put Rebalancing Date (h), the Relevant Number of Put Options in respect of the Incoming Put Option Constituent, if any, in respect of Put Rebalancing Date (h).

"**$NOutgoingput_h$**" means, in respect of a Put Rebalancing Date (h), the Relevant Number of Put Options in respect of the Outgoing Put Option Constituent, if any.

"**exp(x)**" means the exponential function of the value set forth in parentheses following "exp".

"**$OutgoingputMTM_h$**" means, in respect of a Put Rebalancing Date (h), the Settlement Price as of such Put Rebalancing Date (h) of the Outgoing Put Option Constituent, if any.

"**$VegaPutIn_h$**" means an amount calculated as follows:

$$VegaPutIn_h = \frac{S_h}{\sqrt{2\times\Pi}} \times \exp\left(-\frac{1}{2}\times d_{Incomingput(h)} \times d_{Incomingput(h)}\right)\sqrt{\frac{DayCount_{Incomingpu}}{365}}$$

Where:

"**$d_{Incomingput(h)}$**" means an amount calculated as follows:

$$d_{Incomingput(h)} = \frac{\ln\left(\frac{S_h}{PutStrike}\right) + \frac{(0.01\times Vol_h)^2}{2}\times\left(\frac{DayCount_{Incomingput}}{365}\right)}{(0.01\times Vol_h)\times\sqrt{\frac{DayCount_{Incomingput}}{365}}}$$

"**Π**" means 3.1415926535.

"**S_h**" means in respect of Put Rebalancing Date (h), the Closing Level of the Price Return Equity Index on Put Rebalancing Date (h).

Where:

"**ln**" means the natural logarithm function.

"**PutStrike**" means the Strike Price of the Incoming Put Option Constituent, if any.

"**Vol_h**" means the Closing Level of the Volatility Index in respect of the Put Rebalancing Date (h);

"**$DayCount_{Incomingput}$**" means the number of calendar days from, but excluding, Index Calculation Day (t) to, and including, the scheduled expiry of the Incoming Put Option Constituent, if any, (irrespective of whether any such day is or becomes a Disrupted Day);

"**$VegaPutOut_h$**" means an amount calculated as follows:

$$VegaPutOut_h = \frac{S_h}{\sqrt{2\times\Pi}} \times \exp\left(-\frac{1}{2}\times d_{Outgoingput(h)} \times d_{Outgoingput(h)}\right)\sqrt{\frac{DayCount_{Outgoingput}}{365}}$$

Where:

"**$d_{Outgoingput(h)}$**" means an amount calculated as follows:

$$d_{Outgoingput(h)} = \frac{\ln\left(\frac{S_h}{OutgoingPutStrike_h}\right) + \frac{(0.01 \times Vol_h)^2}{2} \times \left(\frac{DayCount_{Outgoingput}}{365}\right)}{(0.01 \times Vol_h) \times \sqrt{\frac{DayCount_{Outgoingput}}{365}}}$$

"**Π**" means 3.1415926535.

"**S_h**" means in respect of Put Rebalancing Date (h), the Closing Level of the Price Return Equity Index on Put Rebalancing Date (h).

Where:

"**ln**" means the natural logarithm function.

"Outgoing**PutStrike$_h$**" means the Strike Price of the Outgoing Put Option Constituent, if any.

"**Vol_h**" means the Closing Level of the Volatility Index in respect of Put Rebalancing Date (h).

"**$DayCount_{Outgoingput}$**" means the number of calendar days from, but excluding, Index Calculation Day (t) to, and including, the scheduled expiry of the Outgoing Put Option Constituent, if any (irrespective of whether any such day is or becomes a Disrupted Day).

"**$VolatilitySpread_t$**" means:

(a) 0.30% if, in respect of Index Calculation Day (t), the Closing Level of the Volatility Index is less than or equal to 20;

(b) 0.50% if, in respect of Index Calculation Day (t), the Closing Level of the Volatility Index is greater than 20 but less than or equal to 25;

(c) 0.75% if, in respect of Index Calculation Day (t), the Closing Level of the Volatility Index is greater than 25 but less than or equal to 30;

(d) 1.00% if, in respect of Index Calculation Day (t), the Closing Level of the Volatility Index is greater than 30 but less than or equal to 35;

(e) 1.50% if, in respect of Index Calculation Day (t), the Closing Level of the Volatility Index is greater than 35 but less than or equal to 60; or

(f) 3.00% if, in respect of Index Calculation Day (t), the Closing Level of the Volatility Index is greater than 60.

Module B 1.0

J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1)

Name of Index	J.P. Morgan U.S. Long Equity Dynamic Overlay 80 Index (Series 1)
Bloomberg ticker	JPUSLEDO <Index>
Currency of the Index	USD
Base Date	January 2, 2002
Base Level	100.00
Index Live Date	September 17, 2013
Call Rebalancing Date	For each calendar month, the scheduled monthly final settlement date (however described under the rules of the Related Exchange) for each Call Option Contract expiring in such calendar month. The Call Rebalancing Dates occur on a monthly basis and are expected to occur on the first business day following the 3rd Friday of each month (e.g., August 19, 2013, September 23, 2013, October 21, 2013, November 18, 2013, etc). The Call Rebalancing Date immediately preceding the Base Date was December 24, 2001.
Put Rebalancing Date	For each calendar quarter, the scheduled quarterly final settlement date (however described under the rules of the Related Exchange) for any Put Option Contract expiring in one of the following months: January, April, July or October. The Put Rebalancing Dates occur on a quarterly basis and are expected to occur on the first business day following the 3rd Friday of January, April, July and October (e.g., October 21, 2013, January 21, 2014, etc). The Put Rebalancing Date immediately preceding the Base Date was October 22, 2001.
Futures Rebalancing Date	For each calendar quarter, the scheduled quarterly final settlement date (however described in the rules of the Related Exchange) of the futures contract referenced in the Futures Constituent that is specified as the "Earlier Expiry Futures Contract Index" in this Module B1.0 or in the Futures Constituent that is specified as the "Later Expiry Futures Contract Index" in this Module B1.0, expiring in one of the following months: March, June, September or December. The Futures Rebalancing Dates occur on a quarterly basis and are expected to occur on the 3rd Friday of March, June, September and December (e.g., September 23, 2013, December 23, 2013, etc). The Futures Rebalancing Date immediately preceding the Base Date was December 21, 2001.
Target Put Strike Percentage	80 percent
Adjustment Factor	0.75 percent per annum.

The Constituents of the Index are the Price Return Equity Index, the Total Return Equity Index, the Call Option Constituent, the Put Option Constituents, the Earlier Expiry Futures Contract, the Later Expiry Futures Contract, the Settlement Index and the Volatility Index. Information relating to these Constituents is set forth below:

Table A: Equity Indices

The Price Return Equity Index	**Exchange**	**Related Exchange**	**Multiple Exchange**	**Equity Index Sponsor**	**Bloomberg Ticker**
S&P 500 Index	New York Stock Exchange and the NASDAQ Global Select Market	The Chicago Mercantile Exchange (also known as CME)	Not Applicable	Standard & Poor's Financial Services LLC, a subsidiary of The McGraw-Hill Companies, Inc.	SPX Index

The Total Return Equity Index	Exchange	Related Exchange	Multiple Exchange	Equity Index Sponsor	Bloomberg Ticker
S&P 500 Total Return Index	New York Stock Exchange and the NASDAQ Global Select Market	The Chicago Mercantile Exchange (also known as CME)	Not Applicable	Standard & Poor's Financial Services LLC, a subsidiary of The McGraw-Hill Companies, Inc.	SPTR Index

Table B: Call Option Contract

The Price Return Equity Index	Expiry date	Related Exchange
S&P 500 Index	The Saturday following the third Friday of each calendar month	The Chicago Board Options Exchange, Incorporated (also known as CBOE)

Table C: Put Option Contracts

The Price Return Equity Index	Expiry date	Related Exchange
S&P 500 Index	The Saturday following the third Friday of each calendar month	The Chicago Board Options Exchange, Incorporated (also known as CBOE)

Table D: Volatility Index

Volatility Index	Volatility Index Sponsor	Exchange	Bloomberg Ticker
The CBOE Volatility Index	The Chicago Board Options Exchange, Incorporated (also known as CBOE)	The Chicago Board Options Exchange, Incorporated (also known as CBOE)	VIX Index

Table E: Futures Constituents

Futures Contracts	Futures Contract Details	Related Exchange	Bloomberg Ticker
Earlier Expiry Futures Contract	The front expiry E-mini futures contract on the S&P 500 Index (being the E-mini futures contract on the S&P 500 whose actual expiry day is expected to be the next expiry day to occur for an E-mini futures contract on the S&P 500)	The Chicago Mercantile Exchange (also known as CME)	ES1 Index
Later Expiry Futures Contract	The second expiry E-mini futures contract on the S&P 500 Index (being the E-mini futures contract on the S&P 500 whose scheduled expiry day is scheduled to be the next expiry day to occur following the actual expiry day of the front expiry E-mini futures contract on the S&P 500 Index)	The Chicago Mercantile Exchange (also known as CME)	ES2 Index

Table F: Settlement Index

Settlement Index	Settlement Index Sponsor	Exchange	Bloomberg Ticker
S&P 500 Index Opening Settlement Value	The Chicago Board Options Exchange, Incorporated (also know as CBOE)	The Chicago Board Options Exchange, Incorporated (also known as CBOE)	SPXSET Index

ANNEX A: AMENDMENTS

Any amendment to the Index Rules for the J.P. Morgan U.S. Long Equity Dynamic Overlay Index Series and the effective date of any such amendment shall be described and stated below. Copies of the latest issue of the Index Rules may be obtained by prospective purchasers or holders of investments linked to the Index free of charge on request to the Index Sponsor.

Issue	Date	Amendment
1.0	September 17, 2013 (being the inception date of the Index)	Not Applicable (First Release)
2.0	February 25, 2014	Amended and Restated
3.0	March 24, 2014	Amended and Restated

DISCLAIMERS

S&P 500 Index

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The CBOE Volatility Index (the VIX Index)

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