



DB Tail Option Ratio Calendar Hedge Bias

INDEX DESCRIPTION

DISCLAIMER

In the event of any inconsistency between the English language version of the text below and that which may be translated into any other language, the English language version shall prevail. Terms used herein have the meaning given to them in Part 5 (*Definitions*).

All determinations of the Index Administrator described herein shall be made according to the terms set out herein and, save for manifest error, shall be final and binding on all parties.

The Index is a Deutsche Bank AG proprietary index. No use or publication may be made of the Index, or any of its provisions or values, without the prior written consent of Deutsche Bank AG.

Deutsche Bank AG, London Branch acts as Index Sponsor and is not obliged to enter into, or promote transactions or investments, that are linked to the Index, the Underlying Index or constituents thereof.

The Index Administrator is under no obligation to maintain or calculate the Index and may cancel or cease to calculate the Index at any time without notice. Neither the Index Sponsor nor the Index Administrator assumes any obligation or duty to any party and under no circumstances does the Index Sponsor or Index Administrator assume any relationship of agency or trust or of a fiduciary nature for or with any party. Any calculations or determinations in respect of the Index or any part thereof shall be made by the Index Administrator acting in good faith and in a commercially reasonable manner and shall (save in the case of manifest error) be final, conclusive and binding. The term "manifest error" as used herein shall mean an error that is plain and obvious and can be identified from the results of the calculation or determination itself without: (i) recourse to any underlying data; or (ii) any application or re-application of any formulae.

Each of the Index Sponsor and the Index Administrator may delegate and/or transfer any of its obligations and/or functions to one or more third parties as it deems appropriate from time to time, but shall (a) ensure that appropriate legal documentation in relation to such delegation and/or transfer is put in place and (b) shall remain responsible for the actions and omissions of its delegates and transferees as if such actions and omissions were their own.

Neither the Index Sponsor nor the Index Administrator makes any express or implied representations or warranties as to (a) the advisability of purchasing or assuming any risk in connection with any transaction or investment linked to the Index, (b) the levels at which the Index stands at any particular time on any particular date, (c) the results to be obtained by any party from the use of the Index or any data included in it for the purposes of issuing securities or carrying out any financial transaction linked to the Index or (d) any other matter. Calculations may be based on information obtained from various publicly available sources. The Index Sponsor and the Index Administrator have relied on these sources and have not independently verified the information

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Without prejudice to either the Index Sponsor or the Index Administrator's obligations under any regulatory system, and without limiting any of the foregoing, in no event shall the Index Sponsor or the Index Administrator have any liability for any indirect, special, punitive or consequential damages (provided that any such damage is not reasonably foreseeable) even if notified of the possibility of such damages.

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The sponsor of the Underlying Index and any Related Exchange on which listed options or futures related to the Underlying Index are traded shall not be liable (whether in negligence or otherwise) to any person for any error in the Underlying Index or any such option and such sponsor and exchange is under no obligation to advise any person of any error therein or to correct any such error. The sponsor of the Underlying Index and the exchange on which options related to the Underlying Index are traded do not make any representation whatsoever, whether express or implied, as to the advisability of purchasing or assuming any risk in connection with entering into any transaction in relation to the Index.

The sponsor of the Underlying Index referenced by the Index and the exchange on which options related to the Underlying Index are traded will not have any liability in connection with the Index or any product related thereto.

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INTRODUCTION

This description (the "**Index Description**") sets out the rules (the "**Index Rules**") applicable to the DB Tail Option Ratio Calendar Hedge Bias (the "**Index**") and the basis on which it will be calculated.

The Index Rules may be amended from time to time as provided in Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*). The Index Rules described in this Index Description are subject to change at any time and will be superseded by any subsequent Index Rules. A copy of the current version of the Index Rules can be obtained as further described in Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

Terms used in this Index Description and not otherwise defined will have the meanings given to them in Part 5 (*Definitions*).

Summary Description

Index Sponsor: Deutsche Bank AG, London Branch, or any successor duly appointed by Deutsche Bank AG in its capacity as sponsor of the Index.

Index Administrator: Solactive AG.

Index Calculation Agent: Solactive AG.

Brief description: The Index is a proprietary index of Deutsche Bank AG intended to track the performance of a rules-based delta-hedged option selling and buying strategy.

The Index is "notional" in nature. All transactions notionally entered into by the Index and the notional investment portfolio are hypothetical and none of the Index Calculation Agent, the Index Administrator or the Index Sponsor will be obliged to enter into or be a party to actual transactions. The Index Sponsor may (but is not obliged to) enter into transactions to hedge any position in respect of the Index or to determine or calculate any value in respect of the Index but such transactions do not form part of the Index.

Underlying Index: S&P 500 Index (*Bloomberg Code: SPX Index*).

Index Calculation and Publication: The Index Level is calculated on each Index Calculation Date following the Index Commencement Date (subject to paragraph 1 (*Disruptions and Consequences*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*) and published no later than the Index Publication Time on the immediately following Index Calculation Date in accordance with paragraph 5 (*Availability and Publication of Index Levels and*

Adjustments) of Part 4 (Disruptions, Corrections, Change in Methodology and Publication).

Index Commencement Date: [●]

Index Live Date: [●]

Index Currency: United States Dollars ("**USD**").

Further Information: See the remainder of this document, which qualifies and expands on the Summary Description. Further additional information concerning the Index is available from the Index Administrator. Information on the Underlying Index is available at <http://us.spindices.com/indices/equity/sp-500>.

Bloomberg code: [] Index.

This section refers to a number of features of the Index. There are aspects of the Index to which this section does not refer. This section is therefore no substitute for reviewing the Index Description in full.

Part 1

General Description and Overview

Need a new overview and description to reflect the intent of the index as a tail hedge.

The DB Tail Option Ratio Calendar Hedge Bias of Deutsche Bank AG intended to track the performance of a rules-based volatility-selling strategy. The volatility-selling strategy aims to capture the difference between the implied volatility and the subsequently realised volatility on the S&P 500 Index.

The Index will implement the volatility-selling strategy by making notional investments in different options on the Underlying Index on a daily basis as follows: (i) a sale of a two-month at-the-money listed call option and a two-month at-the-money listed put option, (ii) a sale of a three-month at-the-money listed call option and a three-month at-the-money listed put option, and (iii) a purchase of a less than six-month out-of-the-money listed put option and a more than six-month out-of-the-money listed put option (with the aim to obtain a weighted maturity of six-months), in each case, with a strike price that is: (a) an integral multiple of 25 Underlying Index points, and (b) the lowest strike price of a listed less than six-month put option (in the case of the less than six-month out-of-the-money listed put option) or more than six-month put option (in the case of the more than six-month out-of-the-money listed put option) with a delta of less than or equal to minus five per cent. (-5%) but greater than or equal to minus 15 per cent. (-15%), unless there is no such less than six-month put option or more than six-month put option, as applicable, in which case no such out-of-the-money put option will be purchased with such expiry. The Index will attempt to hedge the directional market exposure of this notional investment portfolio by notionally delta-hedging the portfolio (taking a long or short exposure to futures on the Underlying Index) each day. On the expiry date of each option, which as of the Index Commencement Date is the third Friday of the relevant month of expiry of the option, the notional position in the option will expire and settle. The Index will receive or pay a notional premium for each notional investment in the relevant options.

The performance of the Index will depend on (i) the difference between (a) the premiums received and paid from the options comprising the notional option portfolio and (b) the subsequent payout on the options at expiry of the option contracts, and (ii) the cumulative profits or losses derived from the notional daily delta hedging strategy. The level of the Index will rise if the sum of the premiums received from the notional option portfolio, the settlement value for the options notionally purchased by the Index which have expired and the cumulative profits or losses derived from the notional daily delta hedging strategy is greater than the sum of the premiums paid by the Index and the settlement value for the options notional sold by the Index which have expired, but will otherwise fall.

The Index is "notional" in nature. All transactions notionally entered into by the Index and the notional investment portfolio are hypothetical and none of the Index, the Index Calculation Agent, the Index Administrator or the Index Sponsor will be a party to actual transactions. The Index Sponsor may (but is not obliged to) enter into transactions to hedge any position in respect of the Index or to determine or calculate or determine values in respect of the Index but such transactions do not form part of the Index.

The Index is denominated in United States Dollars ("**USD**").

Volatility, Realised Volatility and Implied Volatility

Volatility is a statistical measure of how much an asset's return varies from the mean of such returns; the more variable the asset's returns, the higher its volatility, and the higher the perceived risk of such asset (all other things being equal). Volatility is one of the market standards for assessing risk. There are two approaches to measuring volatility: (i) realised volatility and (ii) implied volatility.

The realised volatility of an underlying asset is a statistical measure of the fluctuation in the level of the actual prices of such underlying asset observed in the market over a period of time. Typically the realised volatility of an underlying asset is calculated as being the standard deviation of the daily log-returns of the official closing level of the underlying asset on each trading day in the relevant period (where the standard deviation is calculated assuming a mean log-return of zero). Realised volatility of an underlying asset is calculated by reference to such underlying asset's historical performance.

The implied volatility of an underlying asset is the anticipated volatility of such asset over a future period determined by reference to the market price of listed options on such underlying asset using a version of the Black-Scholes option pricing model (as further described in Annex 2).

Options

Options on the Underlying Index are traded on the Chicago Board Options Exchange (the "**CBOE**"). These options are cash-settled and are "European style", which means that they may only be exercised on the relevant expiry date. An option may be either a call option or a put option. A call option will entitle the purchaser of such option to receive a payout based on the excess (if any) of the level of the Underlying Index on the expiry date over the strike (and the seller is obliged to make such payment). A put option will entitle the purchaser to receive a payout based on the excess (if any) of the strike over the level of the Underlying Index on the option expiry date (and the seller is obliged to make such payment). The amount payable upon expiry of the option (if it is in-the-money) will be, for one option contract, a positive amount equal to the product of (i) USD 100 and (ii) in respect of a call option the level of the Underlying Index minus the strike or in respect of a put option the strike minus the level of the Underlying. The expiry date for options on the Underlying Index is currently the Friday of the relevant expiry week for weekly options or the third Friday of the relevant expiry month for monthly options, subject to adjustment if such day is not a business day.

Both put and call options on the Underlying Index are generally quoted on the CBOE for a range of strikes around the current level of the Underlying Index, with options being quoted having expiry dates in each of the next five weeks and next three months and in three subsequent quarter-end months. For each strike, both "bid" and "ask" prices are quoted for both put and call options, with a bid representing the price which market participants are offering to buy the option, and an ask representing the price at which market participants are offering to sell the option. Premium quotes for an option contract are stated in decimals, with each point equalling USD 100. In describing the price of an option, the "mid" price is also often

referred to, which is the arithmetic mean of the bid and the ask prices for such option. For the range of options with different strikes but the same expiry date, the strike which is closest to the current Underlying Index level is referred to as the "at-the-money" (or "**ATM**") strike. A call is referred to as "out of the money" (or "**OTM**") if its strike is greater than the current Underlying Index level, and a put is out of the money if its strike is less than the current Underlying Index level.

Index Calculation

The Index has been calculated on a live basis from [●]. The Index has been retrospectively calculated by the Index Calculation Agent with effect from the Index Commencement Date.

The Index Calculation Agent will calculate the Index Level in respect of each Index Calculation Date from, and including, the Index Commencement Date, subject as provided in the Index Rules.

Past performance is not indicative of future performance.

All determinations of the Index Administrator described herein shall be made in accordance with the terms set out herein and, save for manifest error, shall be final and binding on all parties.

The Index Administrator has the right to make determinations, calculations and adjustments in relation to the Index which involve, in certain circumstances, a degree of discretion in order to ensure that the Index can, where reasonably practicable, continue to be calculated and determined notwithstanding the relevant circumstances or to allow a delay or a cancellation of the Index. The Index Administrator will exercise any such discretion with the aim of preserving the overall methodology and objective of the Index. In exercising its discretion in connection with the Index, the Index Administrator shall act in good faith and in a commercially reasonable manner.

The Index Administrator confirms that the Index is administered in compliance with the 'Principles for Financial Benchmarks' as published by the International Organization of Securities Commissions on July 17, 2013 (the "**IOSCO Principles**"), and other relevant standards.

The Index Administrator may at any time appoint a new entity to act as Index Calculation Agent.

If the Index Calculation Agent and the Index Administrator are not the same entity, the Index Calculation Agent shall be appointed by the Index Administrator to carry out the calculations and other related services as set out in the Index Rules provided that, in such case, any determination, calculation and/or adjustment made and/or any exercise of discretion by the Index Calculation Agent for the purposes of the Index shall, in each case, be subject to the prior consent of the Index Administrator (irrespective of whether or not it is expressly stated to be subject to such consent in the Index Rules) and, in the event such consent is withheld, the Index Administrator shall make such determination, calculation, adjustment and/or exercise of discretion in place of the Index Calculation Agent and in the event of any conflict the determination, calculation, adjustment and/or exercise of discretion of the Index Administrator

shall prevail.

The Index is a Deutsche Bank AG proprietary index. No use or publication may be made of the Index or its name without the prior written approval of Deutsche Bank AG.

Part 2

Risk Considerations and Conflicts of Interest

Prior to making an investment decision in respect of any financial product the return on which is linked in whole or in part to the performance of the Index (each a "**Financial Product**"), prospective investors should carefully consider all of the information set out in this document, including these risk factors. This Part 2 (*Risk Considerations and Conflicts of Interest*) is intended to describe various risk factors which the Index Sponsor believes represent the principal risks associated with a Financial Product. There may be other risks that a prospective investor should consider that are relevant to its particular circumstances or generally, whether arising from market factors or otherwise.

General

When considering any Financial Product, prospective investors should be aware that the Index Level can go down as well as up and that the performance of the Index in any future period may not mirror its past performance.

The Index is a rules-based trading strategy which makes notional investments in exchange traded put and call options on the Underlying Index. Investors have no proprietary interest in such put and call options. Any investment linked or related to the Index will not be the same as an investment in the put and call options on the Underlying Index or in any other options or derivatives (whether listed on an exchange or over-the-counter) on the Underlying Index nor will it be the same as a direct investment in the Underlying Index or the constituents of the Underlying Index at any time.

Investors considering the performance of the Index must carefully consider the methodology for calculation of relevant values for each put and call option and the calculation of the Index Level.

Calculations and Determinations by the Index Calculation Agent and/or Index Administrator

Prospective investors in Financial Products should note that the Index Calculation Agent's and/or the Index Administrator's calculations and determinations in relation to the Index will be final and binding on all parties in the absence of manifest error. The term "manifest error" as used herein shall mean an error that is plain and obvious and can be identified from results of the calculation or determination itself without (i) recourse to the underlying data, or (ii) any application or re-application of any formulae.

Discretion

The terms of the Index confer on the Index Administrator the right to make determinations, calculations, adjustments and modifications in relation to the Index and related matters, which involve, in certain circumstances as set out in this document, a degree of discretion in order to ensure that the Index can, where reasonably practicable, continue to be calculated and determined notwithstanding the relevant circumstances or, to allow a delay or a cancellation of the Index. The Index Administrator will exercise any such discretion with the aim of

preserving the overall methodology and objective of the Index. The Index Administrator is required to act in good faith and in a commercially reasonable manner in exercising its discretion, however, there can be no assurance that the exercise of any such discretion (or the absence of exercise, as the case may be) will not increase or decrease the Index Level and/or alter the volatility of the Index.

Reliance on publicly available sources

For so long as the Index Calculation Agent calculates the Index Level, calculations and determinations by the Index Calculation Agent and/or the Index Administrator in connection with the Index will be made in reliance upon the information of various publicly available sources that neither the Index Sponsor nor the Index Administrator has independently verified. Neither the Index Administrator nor the Index Sponsor accepts any liability for loss or damage of any kind arising from the use of such information in any such calculation or determination.

Past Performance

Past performance is not indicative of future returns.

The Index has been retrospectively calculated by the Index Calculation Agent on a hypothetical basis, using the methodology described in Part 3 (*Calculation of the Index*). The Index has been calculated on a live basis from the Index Live Date. All prospective investors should be aware that a retrospective calculation means that no actual investment which allowed a tracking of the performance of the Index was possible at any time during the period of the retrospective calculation and that as a result any comparison is purely hypothetical. The methodology and the model used for the calculation and retrospective calculation of the Index were developed with the advantage of hindsight. In reality it is not possible to invest with the advantage of hindsight and therefore this performance comparison is purely theoretical.

Disruption Events, Changes to the Index and Index Cancellation

Investors should note carefully the provisions under Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*). If a Disruption Event occurs or is subsisting on an Index Calculation Date, the Index Administrator may pursuant to these provisions, (i) determine any relevant price, value, amount, rate or level required in order to calculate the Index Level, (ii) suspend the notional trading of Options and/or defer the determination and publication of the Index Level, (iii) make such determinations and/or adjustments in relation to the terms of the Index as it considers appropriate, (iv) (in the case of an Underlying Index Event) replace the Underlying Index and/or any Related Exchange and make adjustments to the Index to reflect this replacement or (v) permanently cease to determine, calculate and make available the Index Level and/or cancel the Index.

In addition, the Index Administrator may, at any time and without notice, terminate the calculation and publication of the Index.

In certain circumstances, following a correction to the price or level published by the Underlying Index Sponsor for the Underlying Index or the Related Index which is used for any calculation or determination in respect of the Index, the Index Administrator may (but is not obliged to do so) adjust or correct the terms or levels of the Index to account for such

corrections.

In certain circumstances, the Underlying Index Sponsor may be replaced by a successor sponsor and the Underlying Index may be replaced by a successor index.

Change in Methodology

If any market, regulatory, juridical, financial, fiscal or other circumstances arise that would, in the view of the Index Administrator, necessitate a modification or change of the Index calculation methodology, the Index Administrator shall be entitled to make such modification or change in its sole discretion. The Index Administrator may also make modifications and/or changes to the terms of the Index as it in its sole discretion deems necessary or desirable including, without limitation, to correct any manifest error or proven error or to cure, correct or supplement any defective or ambiguous provision contained herein, to preserve the intended commercial purpose of the Index (where such modification or change is of a formal, minor or technical nature) and/or to take into account any change in the terms on which the relevant options contracts are traded. The Index Administrator will ensure that any such modifications or changes will result in a methodology that, in the Index Administrator's sole determination, is consistent with the overall methodology and objective of the Index.

Fiduciary Duties

Subject always to the regulatory obligations of Deutsche Bank AG in performing each of any of the roles of issuer, obligor, dealer, sponsor of an index or calculation agent of a Financial Product, Deutsche Bank entities do not act on behalf of, or accept any duty of care or any fiduciary duty to any investors in any Financial Product or any other person.

Conflicts of Interest

Deutsche Bank AG, London Branch acts as Index Sponsor. Conflicts of interest may exist or arise between the Index Sponsor and/or Deutsche Bank entities acting in other capacities, including as issuer, obligor, or dealer for one or more of the instruments linked to or underlying the Index, or counterparty to a transaction linked to the Index, or by engaging in direct or indirect hedging activities which may impact the Index Level. Subject always to its regulatory obligations, each relevant Deutsche Bank entity will pursue actions and take steps that it deems appropriate to manage its risks and protect its interests, and this may have adverse consequences for investors in any Financial Products. Deutsche Bank entities may be in possession at any time of information in relation to the Index or any futures, options or other financial instruments related thereto which may not be available to investors in any Financial Product. There is no obligation on any Deutsche Bank entity to disclose to any investor in any Financial Product any such information.

Deutsche Bank entities may be entitled to receive fees or other payments pursuant to Financial Products or otherwise and to exercise all rights, including rights of termination or resignation, which they may have, even though so doing may have a detrimental effect on investors in any Financial Product.

The Index Sponsor and/or other Deutsche Bank entities may, in relation to the hedging of financial products linked to the Index, engage in hedging activities in the financial instruments

underlying the Index or related financial instruments. In addition, as a global bank, Deutsche Bank entities engage in hedging, client order execution, and other trading activities in most financial markets. Further, hedging activities in relation to financial products linked to the Index are likely to involve the receipt of data that is to be used in relation to the selection of notional investments by the Index Sponsor and/or Deutsche Bank entities from the Index Administrator or Index Calculation Agent in relation to an Index Calculation Date, or the computation of such data in relation to an Index Calculation Date, in each case, in advance of the time (each such time a “**Relevant Time**”) that any relevant reference prices are obtained pursuant to this Index Description. Such hedging activities may commence on or in advance of any such Relevant Time.

These activities may affect the prices of the financial instruments underlying the Index, and may have a negative impact on the Index Level in respect of an Index Calculation Date. Investors in Financial Products should note that the performance of an index prior to its live date does not account for the market impact (if any) caused by hedging activities, which may have an adverse effect on the performance of an index. With respect to any of these activities, neither Deutsche Bank AG nor any of its Affiliates has any obligation to take the level of the Index and/or an Underlying Index into consideration at any time.

Risks pertaining to the Underlying Index

The sponsor of the Underlying Index can add, delete or substitute the components of such Underlying Index or make methodological changes that could change the level of one or more constituents of the Underlying Index. The change of constituents of the Underlying Index may affect the level of such Underlying Index as a newly added constituent may perform significantly worse or better than the constituent it replaces, which may in turn affect the level of such Underlying Index. The sponsor of the Underlying Index can also alter, discontinue or suspend calculation or dissemination of the Underlying Index. Such changes could have an impact on the prices of the listed option contracts traded on CBOE and also therefore the Index Level.

Volatility and Strategy Risk

The investment strategy reflected in the Index aims to achieve performance in the Index when, in the case of selling options, the sum of the premiums received from the notional option portfolio is greater than the subsequent settlement value for the options comprising the notional option portfolio which have expired. Conversely in the case of buying options, the Index aims to achieve performance in the Index when the settlement value exceeds the sum of the premiums paid for the notional option portfolio. No assurance or representation (express or implied) is given by the Index Sponsor or the Index Administrator that the Index will achieve its aim.

Furthermore, there is more than one way to implement a given investment strategy. The methodology of the Index to determine the strikes, expiry date and option prices may not be optimal, and it is possible that an alternative methodology to implement the same investment strategy could perform better.

Trading and other transactions by Deutsche Bank AG or its Affiliates

Deutsche Bank AG and/or its Affiliates may hedge its obligations under any Financial Product by purchasing or selling equity securities underlying the Underlying Index or listed or over-the-counter options, futures, swaps or other derivative financial instruments linked to the Index, the Underlying Index (including the put and call options on the Underlying Index) and the equity securities underlying the Underlying Index, and they may adjust these hedges by, *inter alia*, purchasing or selling any of the foregoing. Although they are not expected to, any of these hedging activities may adversely affect the market price of those items and, therefore, the level of the Index or the value of any Financial Product. It is possible that Deutsche Bank AG and/or its Affiliates could receive substantial returns from these hedging activities while the Index Level declines.

Deutsche Bank AG and/or its Affiliates may also engage in trading in equity securities underlying the Underlying Index or listed or over-the-counter options, futures, swaps or other derivative financial instruments linked to the Index, the Underlying Index (including the put and call options on the Underlying Index) and the equity securities underlying the Underlying Index on a regular basis as part of their general broker-dealer and other businesses, for proprietary accounts, for other accounts under management or to facilitate transactions for customers. Any of these activities could adversely affect the market price of those items and, therefore, the level of the Index or the value of any Financial Products. Deutsche Bank AG and/or its Affiliates may also issue or underwrite other securities or financial or derivative instruments with returns linked or related to changes in the performance of any of the foregoing. By introducing competing products into the marketplace in this manner, Deutsche Bank AG and/or its Affiliates could adversely affect the level of the Index. With respect to any of the activities described above, neither Deutsche Bank AG nor any of its Affiliates has any obligation to take the Index Level into consideration. As at the Index Live Date, Deutsche Bank AG acts as a market maker in respect of options and futures traded on any Related Exchange. Conflicts of interest may exist or arise between Deutsche Bank AG acting as a market maker in so far as Deutsche Bank AG may directly affect the value of the relevant put and call options.

Each potential investor in any Financial Product should make their own investigations and form their own views as to the appropriateness or otherwise of the Index taking into account their own circumstances.

Part 3

Calculation of the Index

1 IMPORTANT INFORMATION

Calculation of Index

These Index Rules confer on the Index Calculation Agent a degree of discretion in making certain determinations, calculations and adjustments in relation to the Index in particular circumstances, provided that the Index Calculation Agent will act in good faith and in a commercially reasonable manner in exercising such discretion.

The Index Administrator may, in its sole discretion, at any time and without notice, terminate the calculation and publication of the Index.

Although the Index Calculation Agent will obtain information for inclusion in or for use in the calculation of the Index from sources which the Index Calculation Agent considers reliable, the Index Calculation Agent will not independently verify such information and does not guarantee the accuracy and/or the completeness of the Index or any data included therein.

Transactions linked to the Index

None of the Index Calculation Agent, the Index Administrator or the Index Sponsor is obliged to enter into or promote transactions or investments that are linked to the Index or any constituent of the Index and none of the Index Calculation Agent, the Index Administrator or the Index Sponsor makes any express or implied representations or warranties as to (i) the advisability of purchasing or assuming any risk in connection with any such transaction or investment, (ii) the levels at which the Index stands at any particular time on any particular date, (iii) the results to be obtained by the issuer of any securities or any counterparty or any such issuer's security holders or customers or any such counterparty's counterparties or customers or any other person or entity from the use of the Index or any data used or published in connection with the Index in connection with any licensed rights or for any other use, or (iv) any other matter. None of the Index Calculation Agent, the Index Administrator or the Index Sponsor makes any express or implied representations or warranties of merchantability or fitness for a particular purpose with respect to the Index or any data used or published in connection with the Index.

General

Without limiting any of the foregoing, in no event shall the Index Calculation Agent, Index Administrator or Index Sponsor be liable (whether directly or indirectly, in contract, in tort or otherwise) for any loss incurred by any person that arises out of or in connection with the Index, including in relation to the performance by the Index Calculation Agent of any part of its role as Index Calculation Agent under the Index Rules, provided that nothing shall relieve any of the Index Administrator or the Index Calculation Agent from any liability arising by reason of acts or omissions constituting bad faith, fraud or any breach of regulation or other law applicable to it acting in its role as Index Administrator or Index Calculation Agent under the Index Rules.

Deutsche Bank AG, owns intellectual property rights in the Index, the Index Rules and this Index Description. Any use of any such intellectual property rights must be with the prior written consent of Deutsche Bank AG.

2 DESCRIPTION OF THE INDEX CALCULATION

2.1 Calculation of Index Level

The level of the Index (the "**Index Level**") will be calculated in units of USD and will be calculated as provided in this Section 2 (*Description of the Index Calculation*) and published for each Index Calculation Date as provided in Section 5 (*Availability and Publication of Index Levels and Adjustments*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*). For the purposes of publication, the Index Level shall be rounded to the nearest four decimal places with 0.00005 being rounded upwards. The methodology described in this Part 3 (*Calculation of the Index*) is subject to the provisions set out in Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

The Index Level in respect of the Index Commencement Date shall be 100.

The Index Level in respect of each Index Calculation Date after the Index Commencement Date ("**Index Calculation Date_t**") shall be determined by the Index Calculation Agent in accordance with the following formula:

$$IL_t = IL_0 + \text{Cash PnL}_t - \text{Portfolio MtM}_t$$

Where:

"**IL_t**" means the Index Level in respect of Index Calculation Date_t;

"**IL₀**" means the Index Level in respect of the Index Commencement Date;

"**Cash PnL_t**" means the Cash PnL in respect of Index Calculation Date_t, as determined in accordance with Section 2.5 (*Determination of Cash PnL*); and

"**Portfolio MtM_t**" means the Portfolio Mark-to-Market in respect of Index Calculation Date_t, as determined in accordance with Section 2.6 (*Determination of Portfolio Mark-to-Market*).

2.2 Notional trading of Options

The Index notionally invests in Options.

In respect of the Index Commencement Date, the Index shall have no notional investments.

In respect of each Index Calculation Date after the Index Commencement Date ("**Index Calculation Date_t**"), the Index shall make the following notional investments:

- (i) a notional sale of a number of contracts equal to $NC_{ATM,t}$ of a Put Option expiring on the third Option Expiry Date following Index Calculation Date_t and with strike price equal to $K_{Put,3m,t}$;
- (ii) a notional purchase of a number of contracts equal to the absolute value of $NC_{OTM,t}$ of a Put Option expiring on the Put Option Expiry Date that is closest the Purchased Put

Option Target Expiry Date and is not less than ten calendar months away in respect of Index Calculation Date_t and with strike price equal to $K_{OTMPut, t}$;

Where $NC_{ATM, t}$, $NC_{OTM, t}$ shall each be determined in accordance with Section 2.3 (*Determination of number of contracts traded*) and $K_{Put, 3m, t}$ and $K_{OTMPut, t, t}$ shall each be determined in accordance with Section 2.4 (*Determination of strike prices*)

2.3 Determination of number of contracts traded

In respect of each Index Calculation Date after the Index Commencement Date ("**Index Calculation Date**"), the number of contracts notionally traded by the Index of each relevant Option shall be determined by the Index Calculation Agent in accordance with the following formulas:

$$NC_{ATM, t} = \frac{\text{Scaling}_{ATM}}{\text{Option Spot Ref}_t} \times \frac{\text{Abs}(IL_{R-1})}{60} \times \frac{1}{\text{Contract Size}}$$

$$NC_{OTM, t} = \frac{-\text{Scaling}_{OTM}}{\text{Option Spot Ref}_t} \times \frac{\text{Abs}(IL_{R-1})}{60} \times \frac{1}{\text{Contract Size}}$$

Provided that if any Option is not listed on the Options Exchange on the Index Calculation Date immediately preceding Index Calculation Date_t, $NC_{ATM, t}$, and $NC_{OTM, t}$ (as applicable) in respect of such Option in respect of Index Calculation Date_t shall be zero.

Where:

"**Scaling_{ATM}**" means the At-the-Money Options Scaling Factor;

"**Scaling_{OTM}**" means the Out-of-the-Money Options Scaling Factor;

"**Option Spot Ref_t**" means the Cash Snap in respect of Index Calculation Date_t;

"**IL_{R-1}**" means the Index Level in respect of the Index calculation Date immediately preceding the Option Expiry Date falling on (or, if none, immediately preceding) Index Calculation Date_t or, if such day falls before the Index Commencement Date, the Index Level in respect of the Index Commencement Date;

"**Contract Size**" means the Contract Size;

"**Abs**" followed by an amount (or value) inside brackets, means the absolute value of the amount (or value) inside those brackets.

2.4 Determination of strike prices

In respect of each Index Calculation Date after the Index Commencement Date ("**Index Calculation Date**"), the strike price of each Option notionally traded by the Index shall be determined by the Index Calculation Agent as follows:

- (i) $K_{Put, 3m, t}$ shall be determined by applying the Delta Strike Selection Method (as defined in Annex 1 (*Strike Selection Methods*)) with (i) Delta Strike Selection Date equal to Index Calculation Date, (ii) Target Expiry Date equal to the Option Expiry Date

Put Option Expiry Date in respect of Index Calculation Date_t, (iii) Option Type equal to Put Option, (iv) Strike Interval equal to 25, (v) Target Delta equal to minus thirty percent (-30%), (vi) Low Delta Threshold equal to minus forty percent (-40%) and (vii) High Delta Threshold equal to minus twenty per cent (-20%).

- (ii) $K_{OTMPut,t}$ shall be determined by applying the Delta Strike Selection Method (as defined in Annex 1 (*Strike Selection Methods*)) with (i) Delta Strike Selection Date equal to Index Calculation Date_t, (ii) Target Expiry Date equal to the Put Option Expiry Date closest to the Purchased Put Option Target Expiry Date in respect of Index Calculation Date_t, (iii) Option Type equal to Put Option, (iv) Strike Interval equal to 25, (v) Target Delta equal to minus ten per cent. (-10%), (vi) Low Delta Threshold equal to minus twenty per cent. (-20%) and (vii) High Delta Threshold equal to minus five per cent. (-5%).

2.5 Determination of Cash PnL

The Cash PnL in respect of the Index Commencement Date shall be equal to zero.

The Cash PnL in respect of each Index Calculation Date ("**Index Calculation Date_t**") after the Index Commencement Date shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Cash PnL}_t = \text{Cash Balance}_t + \text{Delta Hedge PnL}_t + \text{Accrued Interest}_t$$

Where:

"**Cash PnL_t**" means the Cash PnL in respect of Index Calculation Date_t;

"**Cash Balance_t**" means the Cash Balance in respect of Index Calculation Date_t, as determined in accordance with Section 2.7 (*Determination of Cash Balance*);

"**Delta Hedge PnL_t**" means the Delta Hedge PnL in respect of Index Calculation Date_t, as determined in accordance with Section 2.8 (*Determination of Delta Hedge PnL*); and

"**Accrued Interest_t**" means the Accrued Interest in respect of Index Calculation Date_t, as determined in accordance with Section 2.9 (*Determination of Accrued Interest*).

2.6 Determination of Portfolio Mark-to-Market

2.6.1 Portfolio Mark-to-Market

The Portfolio Mark-to-Market in respect of the Index Commencement Date shall be equal to zero.

The Portfolio Mark-to-Market in respect of each Index Calculation Date ("**Index Calculation Date_t**") after the Index Commencement Date shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Portfolio MtM}_t = \sum UE_{i,t} \times \text{Option Price}_{i,t}$$

Where:

"**Portfolio MtM_t**" means the Portfolio Mark-to-Market in respect of Index Calculation Date_t;

"**UE_{i,t}**" means the Unit Exposure in respect of Index Calculation Date_t in respect of each Option in the Option Portfolio on Index Calculation Date_t;

"**Option Price_{i,t}**" means the Option Price on Index Calculation Date_t in respect of each Option in the Option Portfolio on Index Calculation Date_t; and

"**i**" is an integer 'counter' with a value from and including one to and including the number of Options in the Option Portfolio on Index Calculation Date_t, representing each Option in the Option Portfolio on Index Calculation Date_t.

2.6.2 Option Price

The Option Price in respect of an Option ("**Option_i**") and an Index Calculation Date ("**Index Calculation Date_t**") shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Option Price}_{i,t} = \text{Option TWAP}_{i,t} + \text{Intraday Delta}_{i,t} \times (\text{Cash Close}_t - \text{Cash TWAP}_t)$$

Where:

"**Option Price_{i,t}**" means the Option Price in respect of Option_i and Index Calculation Date_t;

"**Option TWAP_{i,t}**" means the Option TWAP in respect of Option_i and Index Calculation Date_t;

"**Intraday Delta_{i,t}**" means the Intraday Delta in respect of Option_i and Index Calculation Date_t;

"**Cash Close_t**" means the Cash Close in respect of Index Calculation Date_t; and

"**Cash TWAP_t**" means the Cash TWAP in respect of Index Calculation Date_t.

2.7 Determination of Cash Balance

2.7.1 Cash Balance

The Cash Balance in respect of the Index Commencement Date shall be equal to zero.

The Cash Balance in respect of each Index Calculation Date ("**Index Calculation Date_t**") after the Index Commencement Date shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Cash Balance}_t = \text{Cash Balance}_{t-1} + \sum \text{TU}_{j,t} \times \text{Option Premium}_{j,t} - \sum \text{UE}_{k,t} \times \text{Settlement Value}_k$$

Where:

"**Cash Balance_t**" means the Cash Balance in respect of Index Calculation Date_t;

"**Cash Balance_{t-1}**" means the Cash Balance in respect of the Index Calculation Date immediately preceding Index Calculation Date_t;

"**TU_{j,t}**" means the Traded Units in respect of Index Calculation Date_t and each Option notionally

traded by the Index in respect of Index Calculation Date_i;

"**Option Premium_{j,t}**" means the Option Premium in respect of Index Calculation Date_i and each Option notionally traded by the Index in respect of Index Calculation Date_i;

"**UE_{k,t}**" means the Unit Exposure in respect of Index Calculation Date_i and each Option that was in the Option Portfolio on the Index Calculation Date immediately preceding Index calculation Date_i expiring on Index Calculation Date_i;

"**Settlement Value_k**" means the Settlement Value in respect of each Option that was in the Option Portfolio on the Index Calculation Date immediately preceding Index calculation Date_i expiring on Index Calculation Date_i;

"**j**" is an integer 'counter' with a value from and including one to and including the number of Options notionally traded by the Index in respect of Index Calculation Date_i, representing each Option notionally traded by the Index in respect of Index Calculation Date_i; and

"**k**" is an integer 'counter' with a value from and including one to and including the number of Options in the Option Portfolio on the Index Calculation Date immediately preceding Index Calculation Date_i expiring on Index Calculation Date_i, representing each Option in the Option Portfolio on the Index Calculation Date immediately preceding Index Calculation Date_i expiring on Index Calculation Date_i.

2.7.2 Option Premium

The Option Premium in respect of an Option ("**Option_i**") and an Index Calculation Date ("**Index Calculation Date_i**") shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Option Premium}_{i,t} = \text{Option TWAP}_{i,t} - \text{SIGN}(U_{i,t}) \times \text{Premium Spread}_{i,t}$$

Where:

"**Option Premium_{i,t}**" means the Option Premium in respect of Option_i and Index Calculation Date_i;

"**Option TWAP_{i,t}**" means the Option TWAP in respect of Option_i and Index Calculation Date_i;

"**SIGN(U_{i,t})**" means an amount equal to (i) +1 if the Traded Units in respect of Option_i and Index Calculation Date_i is greater than zero, (ii) -1 if the Traded Units in respect of Option_i and Index Calculation Date_i is less than zero or (iii) otherwise zero; and

"**Premium Spread_{i,t}**" means an amount determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Premium Spread}_{i,t} = \text{Vega}_{i,t} \times \text{Max}\left(\text{Floor}; \text{Spread} \times \frac{\sigma_{i,t}}{\text{Base}}\right)$$

Where:

"**Floor**" means 0.20;

"**Spread**" means 0.20;

"**Base**" means 0.25;

"**Vega**_{i,t}" means the Vega in respect of Option_i and Index Calculation Date_t;

"**σ**_{i,t}" means the Implied Volatility in respect of Option_i and Index Calculation Date_t; and

"**Max**" followed by a series of amounts (or values) inside brackets, means the greater of the amounts (or values) separated by a semi-colon inside those brackets.

2.8 Determination of Delta Hedge PnL

The Delta Hedge PnL in respect of the Index Commencement Date shall be equal to zero.

The Delta Hedge PnL in respect of any Index Calculation Date ("**Index Calculation Date**_t") after the Index Commencement Date shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Delta Hedge PnL}_t = \text{Delta Hedge PnL}_{t-1} + \text{Delta Hedge Return}_t + \text{Delta Hedge MtM}_t - \text{Delta Hedge Cost}_t$$

Where:

"**Delta Hedge PnL**_t" means the Delta Hedge PnL in respect of Index Calculation Date_t;

"**Delta Hedge PnL**_{t-1}" means the Delta Hedge PnL in respect of the Index Calculation Date immediately preceding Index Calculation Date_t;

"**Delta Hedge Return**_t" means the Delta Hedge Return in respect of Index Calculation Date_t;

"**Delta Hedge MtM**_t" means the Delta Mark-to-Market in respect of Index Calculation Date_t; and

"**Delta Hedge Cost**_t" means the Delta Hedge Cost in respect of Index Calculation Date_t.

2.8.1 Delta Hedge Return

The Delta Hedge Return in respect of the Index Commencement Date shall be equal to zero.

The Delta Hedge Return in respect of any Index Calculation Date ("**Index Calculation Date**_t") after the Index Commencement Date shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\begin{aligned} \text{Delta Hedge Return}_t = & \\ & \text{Delta Exp}_{t-1} \times (\text{Exp Level}_t - \text{Exp Futures Close}_{t-1}) \\ & + \text{Delta Cont}_{t-1} \times (\text{Futures TWAP}_t - \text{Futures Close}_{t-1}) \end{aligned}$$

Where:

"**Delta Hedge Return**_t" means the Delta Hedge Return in respect of Index Calculation Date_t;

"**Delta Exp**_{t-1}" means the aggregate in respect of each Option in the Option Portfolio in respect

of the Index Calculation Date immediately preceding Index Calculation Date_t ("**Index Calculation Date_{t-1}**") expiring on Index Calculation Date_t of the Option Delta in respect of each such Option and Index Calculation Date_{t-1};

"**Exp Level_t**" means, if (i) Index Calculation Date_t is a Futures Expiry Date, the Cash EDSP in respect of Index Calculation Date_t, otherwise (ii) the Futures EDSP in respect of Index Calculation Date_t;

"**Exp Futures Close_{t-1}**" means, if (i) Index Calculation Date_t is a Futures Expiry Date, the Futures Close in respect of the Futures expiring on Index Calculation Date_t and Index Calculation Date_{t-1}, otherwise (ii) the Futures Close in respect of the Futures expiring on the Futures Expiry Date immediately following Index Calculation Date_t and Index Calculation Date_{t-1};

"**Delta Cont_{t-1}**" means the aggregate, in respect of each Option in the Option Portfolio in respect of Index Calculation Date_{t-1} expiring after Index Calculation Date_t, of the Option Delta in respect of each such Option and Index Calculation Date_{t-1};

"**Futures TWAP_t**" means, in respect of Index Calculation Date_t, the Futures TWAP in respect of the Futures expiring on the Futures Expiry Date immediately following Index Calculation Date_t; and

"**Futures Close_{t-1}**" means, in respect of Index Calculation Date_{t-1}, the Futures Close in respect of the Futures expiring on the Futures Expiry Date immediately following Index Calculation Date_t.

2.8.2 Delta Hedge MtM

The Delta Hedge MtM in respect of the Index Commencement Date shall be equal to zero.

The Delta Hedge MtM in respect of any Index Calculation Date ("**Index Calculation Date_t**") after the Index Commencement Date shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\begin{aligned} \text{Delta Hedge MtM}_t = & \\ & \text{Intraday Delta Front}_t \times (\text{Front Futures Close}_t - \text{Front Futures TWAP}_t) \\ & + \text{Intraday Delta Back}_t \times (\text{Back Futures Close}_t - \text{Back Futures TWAP}_t) \end{aligned}$$

Where:

"**Delta Hedge MtM_t**" means the Delta Hedge MtM in respect of Index Calculation Date_t;

"**Intraday Delta Front_t**" means the aggregate, in respect of each Option in the Option Portfolio in respect of Index Calculation Date_t expiring on or prior to the expiry date of the Front Futures in respect of Index Calculation Date_t, of the Option Intraday Delta in respect of each such Option and Index Calculation Date_t;

"**Front Futures Close_t**" means, in respect of Index Calculation Date_t, the Futures Close in respect of the Front Futures in respect of Index Calculation Date_t;

"**Front Futures TWAP_t**" means, in respect of Index calculation Date_t, the Futures TWAP in respect of the Front Futures in respect of Index Calculation Date_t;

"**Intraday Delta Back_t**" means the aggregate in respect of each Option in the Option Portfolio in respect of Index Calculation Date_t expiring after the Front Futures in respect of Index Calculation Date_t of the Option Intraday Delta in respect of each such Option and Index Calculation Date_t;

"**Back Futures Close_t**" means, in respect of Index Calculation Date_t, the Futures Close in respect of the Back Futures in respect of Index Calculation Date_t; and

"**Back Futures TWAP_t**" means, in respect of Index Calculation Date_t, the Futures TWAP in respect of the Back Futures in respect of Index Calculation Date_t.

2.8.3 Delta Hedge Cost

The Delta Hedge Cost in respect of the Index Commencement Date shall be equal to zero.

The Delta Hedge Cost in respect of any Index Calculation Date ("**Index Calculation Date_t**") after the Index Commencement Date shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\begin{aligned} \text{Delta Hedge Cost}_t = & \\ & \text{Abs}(\text{Delta New}_t) \times \text{Back Futures Close}_t \times \text{TC} \\ & + \text{Abs}(\text{Delta Exp}_{t-1}) \times \text{Futures EDSP}_t \times \text{TC} \\ & + \text{Delta Change Continue}_t \times \text{Futures TWAP}_t \times \text{TC} \end{aligned}$$

Where:

"**Delta Hedge Cost_t**" means the Delta Hedge Cost in respect of Index Calculation Date_t;

"**Delta New_t**" means the aggregate in respect of each Option in the Option Portfolio in respect of Index Calculation Date_t of the Option Close Delta in respect of each such Option and Index Calculation Date_t;

"**Back Futures Close_t**" means, in respect of Index Calculation Date_t, the Futures Close in respect of the Back Futures in respect of Index Calculation Date_t;

"**TC**" (or "**Transaction Cost**") means [0.02] per cent.;

"**Delta Exp_{t-1}**" means the aggregate in respect of each Option in the Option Portfolio in respect of the Index Calculation Date immediately preceding Index Calculation Date_t ("**Index Calculation Date_{t-1}**") expiring on Index Calculation Date_t of the Option Delta in respect of each such Option and Index Calculation Date_{t-1};

"**Futures EDSP_t**" means Index Calculation Date_t is (i) a Futures Expiry Date, zero, otherwise (ii) otherwise the Futures EDSP in respect of Index Calculation Date_t;

"**Futures TWAP_t**" means, in respect of Index Calculation Date_t, the Futures TWAP in respect of the Futures expiring on the Futures Expiry Date immediately following Index calculation

Date_t;

"Abs" followed by an amount (or value) inside brackets, means the absolute value of the amount (or value) inside those brackets; and

"Delta Change Continue_t" means an amount determined by the Index Calculation Agent as follows:

(i) if Index Calculation Date_t is not a Futures Roll Date:

$$\text{Delta Change Continue}_t = \text{Abs}(\text{Intraday Delta Total}_t - \text{Delta Cont}_{t-1})$$

(ii) if Index Calculation Date_t is a Futures Roll Date:

$$\begin{aligned} \text{Delta Change Continue}_t = & \text{Abs}(\text{Intraday Delta Front}_t - \text{Delta Front}_{t-1}) \\ & + \text{Max} \left(\begin{array}{c} \text{Abs}(\text{Intraday Delta Back}_t); \\ \text{Abs}(\text{Delta Back}_{t-1}); \\ \text{Abs}(\text{Intraday Delta Back}_t - \text{Delta Back}_{t-1}) \end{array} \right) \end{aligned}$$

Where:

"Intraday Delta Total_t" means the aggregate, in respect of each Option in the Option Portfolio in respect of Index Calculation Date_t, of the Option Intraday Delta in respect of each such Option and Index Calculation Date_t;

"Delta Cont_{t-1}" means the aggregate, in respect of each Option in the Option Portfolio in respect of Index Calculation Date_{t-1} expiring after Index Calculation Date_t, of the Option Delta in respect of each such Option and Index Calculation Date_{t-1};

"Intraday Delta Front_t" means the aggregate, in respect of each Option in the Option Portfolio in respect of Index Calculation Date_t expiring on or prior to the expiry date of the Front Futures in respect of Index Calculation Date_t of the Option Intraday Delta in respect of each such Option and Index Calculation Date_t;

"Delta Front_{t-1}" means the aggregate in respect of each Option in the Option Portfolio in respect of Index Calculation Date_{t-1} expiring on or prior to the expiry date of the Front Futures in respect of Index Calculation Date_{t-1} of the Option Delta in respect of each such Option and Index Calculation Date_{t-1};

"Intraday Delta Back_t" means the aggregate in respect of each Option in the Option Portfolio in respect of Index Calculation Date_t expiring after the Front Futures in respect of Index Calculation Date_t of the Option Intraday Delta in respect of each such Option and Index Calculation Date_t;

"Delta Back_{t-1}" means the aggregate in respect of each Option in the Option Portfolio in respect of Index Calculation Date_{t-1} expiring after the Front Futures in respect of Index Calculation Date_{t-1} of the Option Delta in respect of each such Option and Index Calculation Date_{t-1}; and

"**Max**" followed by a series of amounts (or values) inside brackets, means the greater of the amounts (or values) separated by a semi-colon inside those brackets.

2.9 Determination of Accrued Interest

The Accrued Interest in respect of the Index Commencement Date shall be equal to zero.

The Accrued Interest in respect of any Index Calculation Date ("**Index Calculation Date_t**") after the Index Commencement Date shall be determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Accrued Interest}_t = \text{Accrued Interest}_{t-1} + [\text{Cash PnL}_{t-1} - (\text{IL}_s - \text{IL}_0)] \times \left(\frac{\text{Cash}_t}{\text{Cash}_{t-1}} - 1 \right)$$

Where:

"**Accrued Interest_t**" means the Accrued Interest in respect of Index Calculation Date_t;

"**Accrued Interest_{t-1}**" means the Accrued Interest in respect of the Index Calculation Date immediately preceding Index Calculation Date_t;

"**Cash PnL_{t-1}**" means the Cash PnL in respect of the Index Calculation Date immediately preceding Index Calculation Date_t;

"**IL_s**" means the Index Level in respect of the Notional Index Settlement Date immediately preceding Index Calculation Date_t;

"**IL₀**" means the Index Level in respect of Index Commencement Date_t;

"**Cash_t**" means the Cash Index Level in respect of Index Calculation Date_t; and

"**Cash_{t-1}**" means the Cash Index Level in respect of the Index Calculation Date immediately preceding Index Calculation Date_t.

2.10 Index Calculation Agent

All determinations and calculations made by the Index Calculation Agent will be made in good faith and in a commercially reasonable manner by reference to such factors as the Index Calculation Agent deems appropriate and will be final, conclusive and binding in the absence of manifest error.

The Index Administrator may at any time appoint a new entity to act as Index Calculation Agent.

If the Index Calculation Agent and the Index Administrator are not the same entity, the Index Calculation Agent shall be appointed by the Index Administrator to carry out the calculations and other related services as set out in these Index Rules provided that, in such case, any determination, calculation and/or adjustment made and/or any exercise of discretion by the Index Calculation Agent for the purposes of the Index shall, in each case, be subject to the prior consent of the Index Administrator (irrespective of whether or not it is expressly stated to be subject to such consent in the Index Rules) and, in the event such consent is withheld, the

Index Administrator shall make such determination, calculation, adjustment and/or exercise of discretion in place of the Index Calculation Agent and in the event of any conflict the determination, calculation, adjustment and/or exercise of discretion of the Index Administrator shall prevail.

2.11 Index Administrator

All determinations made by the Index Administrator will be made in good faith and in a commercially reasonable manner by reference to such factors as the Index Administrator deems appropriate and will be final, conclusive and binding in the absence of manifest error.

The Index Administrator has the right to make determinations, calculations and adjustments in relation to the Index which involve, in certain circumstances as set out in this document, a degree of discretion in order to ensure that the Index can, where reasonably practicable, continue to be calculated and determined notwithstanding the relevant circumstances or, to allow a delay or a cancellation of the Index. The Index Administrator will exercise any such discretion with the aim of preserving the overall methodology and objective of the Index. In exercising its discretion in connection with the Index, the Index Administrator shall act in good faith and in a commercially reasonable manner.

The Index Administrator may delegate and/or transfer any of its obligations or functions under the Index Rules to one or more third parties as it deems appropriate from time to time but shall (a) ensure that appropriate legal documentation in relation to such delegation and/or transfer is put in place and (b) shall remain responsible for the actions and omissions of its delegates and transferees as if such actions and omissions were its own.

Part 4

Disruptions, Corrections, Change in Methodology and Publication

1 DISRUPTIONS AND CONSEQUENCES

Terms used in this Section 1 (*Disruptions and Consequences*) have the meanings given to them in Section 1.3 (*Definitions*).

1.1 Option TWAP Disruption Event

If an Option TWAP Disruption Event the Index Administrator determines is material occurs or is subsisting on any relevant day, the Index Administrator, acting in good faith and a commercially reasonable manner, will determine the relevant Option TWAP using the Black-Scholes Formula and an implied volatility equal to:

- (i) if the Implied Volatility for such Option on such day can be determined in accordance with Part 1 (*Implied Volatility*) of Annex 2 (*Determination of Implied Volatility, Delta and Vega*), such Implied Volatility; or
- (ii) if the Implied Volatility for such Option cannot be determined in accordance with Part 1 (*Implied Volatility*) of Annex 2 (*Determination of Implied Volatility, Delta and Vega*), due to such Option being an Out-of-the-Money Option or if such Option is not an Out-of-the-Money Option and there is an Option TWAP Disruption Event occurring with respect to the Matching Option, a linear interpolation (or extrapolation) across the strike price of Implied Volatilities that can be determined in accordance with Part 1 (*Implied Volatility*) of Annex 2 (*Determination of Implied Volatility, Delta and Vega*).

Provided that an "**Unresolved Option TWAP Disruption Event**" shall occur if the application of both (i) and (ii) above does not allow the Index Administrator to determine the relevant Option TWAP.

1.2 Disruption Event

If a Disruption Event which the Index Administrator determines is material occurs or is subsisting in respect of any Index Calculation Date the Index Administrator may:

- (i) determine any relevant price, value, amount, rate or level required in order to calculate the Index Level in respect of such Index Calculation Date; and/or
- (ii) suspend the notional trading of Options pursuant to this Index Description and/or defer the determination and publication of the Index Level until the next Index Calculation Date on which it determines that no Disruption Event exists, provided that where any such suspension of the notional trading of Options and/or deferral of determination and publication continues for a period of 10 consecutive Index Calculation Dates, then the Index Administrator will:
 - (a) determine and (as applicable) publish the Index Level in respect of each Index Calculation Date falling in such period in its sole discretion having regard to the then prevailing market conditions, the last reported price, value, rate, spread or

level and such other factor(s) and condition(s) as the Index Administrator considers relevant for the purpose of determining such Index Level; and/or

- (b) permanently cease determining and publishing the Index as of the later of (x) the date when such Disruption Event commenced or (y) the Index Calculation Date following the last Index Calculation Date for which the Index Administrator calculated and (if applicable) published the relevant Index Level in accordance with paragraph (a) above (if any); and/or
- (iii) make such determinations and/or adjustments in relation to the Index Rules as it considers appropriate; and/or
- (iv) in the case of an Underlying Index Event (a) select a successor exchange to replace any Related Exchange and/or a successor index to replace the Underlying Index, such successor exchange and/or successor index to be selected by the Index Administrator with regard to preserving the economic intention of the methodology of the Index and (b) in each case, make such adjustments to the Index to reflect such selection as it determines appropriate; and/or
- (v) permanently cease to determine, calculate and make available the Index Level and/or cancel the Index.

1.3 Definitions

"Cash Index Event" means (i) the failure of the relevant entity to publish the level of the Cash Index for any day on the day on which the level for such day is scheduled to be published (without taking into account any right of the relevant entity to defer publication) or (ii) the relevant entity permanently ceases to calculate and make available the level of the Cash Index.

"Change of Law or Rules" means there is a change in, or amendment to, the laws, rules or regulations relating to any Option, Futures or any other contract relating to the Underlying Index, and/or a change in any application or interpretation of such laws, rules or regulations.

"De Minimis Trading" means the number of any relevant Option, Futures or any other contract relating to the Underlying Index traded on any Related Exchange on any relevant trading day is materially reduced or the liquidity in any relevant Option, Futures or any other contract relating to the Underlying Index is otherwise reduced for any reason.

"Disappearance of an Option or Futures Price" means the failure of trading to commence, or the permanent discontinuation of trading in, a relevant Option, Futures or any other contract relating to the Underlying Index on any Related Exchange.

"Disruption Event" means a Market Disruption Event, a Force Majeure Event, an Option Market Disruption Event, an Underlying Index Event, a TWAP Disruption Event which is not an Option TWAP Disruption Event, an Unresolved Option TWAP Disruption Event or a Cash Index Event.

"Force Majeure Event" means an event or circumstance other than an Underlying Index

Event (including, without limitation, a systems failure, fire, building evacuation, natural or man-made disaster, act of God, act of state, armed conflict, act of terrorism, riot or labour disruption or any similar intervening circumstance) that the Index Administrator determines affects the calculations or determinations in respect of the Index.

"Hedging Disruption" means the Index Administrator determines that Deutsche Bank AG and/or any of its Affiliates would be unable, after using reasonable efforts, to: (i) acquire, establish, re-establish, substitute, maintain, unwind or dispose of any transaction(s) or asset(s) it deems necessary to hedge its or any Affiliate's position in relation to the Index, or (ii) realise, recover or remit the proceeds of any such transaction(s) or asset(s).

"Market Disruption Event" means an event (other than a Force Majeure Event or an Underlying Index Event) that would require the Index Administrator to make any determination in respect of the Index on an alternative basis all as determined by the Index Administrator. Without limitation to the foregoing, each of the following events shall be a Market Disruption Event:

- (i) a Trading Suspension;
- (ii) a Disappearance of an Option or Futures Price;
- (iii) a Material Change in Formula or Determination;
- (iv) a Material Change in Content;
- (v) a Tax Disruption;
- (vi) a Trading Limitation;
- (vii) De Minimis Trading;
- (viii) a Change of Law or Rules;
- (ix) a Hedging Disruption;
- (x) a Material Change in Circumstances; or
- (xi) a Relevant Exchange Event.

"Material Change in Circumstance" means the occurrence of any event which would make it impossible or not reasonably practicable, for a market counterparty to enter into or maintain or fulfil its obligations under any relevant Option, Futures or any other contract relating to the Underlying Index on any Related Exchange or any other relevant trading market, as determined by the Index Administrator.

"Material Change in Content" means the occurrence of a material change in the content, composition or constitution of the Underlying Index to which a relevant Option or Futures relates.

"Material Change in Formula or Determination" means the occurrence of a material change in the formula for or the method of calculating the price of a relevant Option, Futures or a

relevant price of any other contract relating to the Underlying Index by any Related Exchange or any other relevant party, or a material modification of any Related Exchange's method for dissemination of the price of any Option, Futures or any relevant price of any other contract relating to the Underlying Index.

"Option Market Disruption Event" means (and an Option Market Disruption Event shall be deemed to have occurred if) it is not possible or practicable to calculate any Implied Volatility following the methodology described in Annex 2, Section 1 (*Implied Volatility*).

"Option TWAP Disruption Event" means a TWAP Disruption Event with respect to a TWAP Option Process.

"TWAP Disruption Event" means, in respect of any relevant day, an event or circumstance that makes it impossible or not practicable, in the determination of the Index Administrator, for any reason to carry out a TWAP Process for such day, or the TWAP Process does not return a price for such day including, without limitation, owing to the relevant bid or ask prices not being available or published.

"Relevant Exchange Event" means (and a Relevant Exchange Event shall be deemed to have occurred if) on any Index Calculation Date on which a Relevant Exchange is scheduled to be open for trading for its regular full day trading session, such Relevant Exchange does not so open.

"Tax Disruption" means the imposition of, change in or removal of any tax (including, without limitation, any excise, severance, sales, use, value-added, transfer, stamp, documentary, recording, financial transaction or similar tax) on, or in relation to, any relevant Option, Futures or any other contract relating to the Underlying Index or any constituents of the Underlying Index, by any government or taxation authority, (i) if the direct effect of such imposition, change or removal is to raise or lower the price of an Option on any relevant day from what it would have been without that imposition, change or removal; or (ii) if the Index Administrator determines that Index Sponsor and/or any of its Affiliates would incur a materially increased cost (as compared with circumstances existing on the Index Commencement Date) due to the imposition, change or removal of such tax to (a) acquire, establish, re-establish, substitute, maintain, unwind, or dispose of any transaction(s) or asset(s) it deems necessary to hedge the price risk of entering into and performing its obligations with respect to any Financial Product; or (b) realise, recover or remit the proceeds of any such transaction(s) or asset(s).

"Trading Limitation" means a limitation is imposed on trading in any relevant Option, Futures or any other contract relating to the Underlying Index on any Related Exchange or any other relevant trading market.

"Trading Suspension" means the suspension of trading in any relevant Option, Futures or any other contract relating to the Underlying Index on any Related Exchange or any other relevant trading market.

"Underlying Index Event" means any of the following:

(a) the Underlying Index Sponsor:

- (I) makes or announces that it will make a material change in the formula for or the method of calculating the Underlying Index or in any other way materially modifies the Underlying Index;
 - (II) permanently cancels the Underlying Index and no Successor Underlying Index exists; and/or
 - (III) on any relevant day, fails to calculate and announce any relevant level of the Underlying Index;
- (b) the failure of any Related Exchange to announce or publish any information necessary for determining the price of an Option, Futures or the price of any other contract relating to the Underlying Index;
 - (c) any announcement or publication by any Related Exchange of information necessary for determining a price of an Option, Futures or the price of any other contract relating to the Underlying Index that the Index Administrator and/or Index Calculation Agent determines is erroneous or insufficient for the determination of the price of such Option, Futures or the price of any additional contract relating to the Underlying Index; or
 - (d) the temporary or permanent discontinuance or unavailability of any Related Exchange.

2 CORRECTIONS

In the event that any price or level published by the Underlying Index Sponsor for the Underlying Index or any Related Exchange or the Cash Index Level on any date which is utilised for any calculation or determination in respect of the Index is subsequently corrected and the correction is published after the date of original publication, the Index Administrator may, in its sole discretion adjust or correct any of the terms or levels of the Index to account for such correction(s) but is not obliged to do so. Details of any such adjustment or correction will be made available in the same manner as the Index Level is made available (as set out in Section 5 (*Availability and Publication of Index Levels and Adjustments*) of this Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*)).

3 CHANGE IN METHODOLOGY OF THE INDEX

In calculating and determining the value of the Index, the Index Administrator will, subject as provided below, employ the methodology described in this Index Description and its application of such methodology shall be conclusive and binding. While the Index Administrator currently employs the above described methodology to calculate the Index, no assurance can be given that market, regulatory, juridical, financial, fiscal or other circumstances (including, but not limited to, any changes to or any suspension or termination of any constituent of the Index or any other events affecting transactions on the same or similar terms to any constituent of the Index) will not arise that would, in the view of the Index Administrator, necessitate or make desirable a modification of or change to such methodology (including, but without limitation, a change in the frequency of calculation of any Index Level) in order for the Index to continue being calculated and determined notwithstanding the relevant circumstances and the Index Administrator shall be entitled to make any such modification or change in its sole discretion.

The Index Administrator shall be entitled to make such modifications and/or changes to the Index Rules as it in its sole discretion deems necessary or desirable, including (without limitation):

- (i) to correct any manifest error or proven error or to cure, correct or supplement any ambiguity or defective provision contained in this Index Description; and/or
- (ii) to preserve the overall methodology and objective of the Index, where such modification and/or change is of a formal, minor or technical nature; and/or
- (iii) to take into account any change in the terms (whether in relation to settlement mechanics or otherwise) on which Options are traded.

In deciding what is necessary or desirable the Index Administrator will consider and/or take into account (i) the overall methodology and objective of the Index and/or

In making any such modifications, however, the Index Administrator will (x) ensure that such modifications or changes pursuant to this Section 3 (*Change in Methodology of the Index*) will result in a methodology that, in the Index Administrator's determination, is consistent with the overall methodology and objective of the Index as set out in this description and (y) limit as far as possible any such modification or change to the Index Rules and/or method of calculating any Index Level(s).

The Index Administrator may, in its sole discretion, at any time and without notice, terminate the calculation and publication of the Index.

Subject to any applicable regulations and any contract between the Index Sponsor and the Index Administrator, the Index Administrator has no obligation to inform any person about such modification, change or termination. The Index Administrator will, however, following any modification or change, make a new set of Index Rules (and the effective date thereof) available in the same manner as the Index Level is made available (as set out in Section 5 (*Availability and Publication of Index Levels and Adjustments*) of this Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*)).

4 SUCCESSOR SPONSOR AND SUCCESSOR UNDERLYING INDEX

If at any relevant time, the Underlying Index is:

- (i) not calculated or announced by the Underlying Index Sponsor but is calculated and announced by a successor sponsor (the "**Successor Sponsor**") acceptable to the Index Administrator; or
- (ii) is replaced by a successor index (a "**Successor Underlying Index**") which, in the determination of the Index Administrator, uses the same or substantially similar formula for and method of calculation as used in the calculation of the Underlying Index,

then the Underlying Index will be deemed to be (a) such Underlying Index so calculated and (as applicable) published by that Successor Sponsor or (b) that Successor Underlying Index, as the case may be, following adjustments (if any) to any requisite value or level, relating to the Successor Underlying Index, that the Index Administrator determines to be appropriate to

preserve the economic intention of the methodology of the Index.

5 AVAILABILITY AND PUBLICATION OF INDEX LEVELS AND ADJUSTMENTS

5.1 General

Subject to the occurrence of a Disruption Event, the Index Calculation Agent will make available the Index Level in respect of each Index Calculation Date no later than 4:00 p.m. London time on the immediately following Index Calculation Date (the "**Index Publication Time**"). Details of any adjustments made to the Index shall be made available by the Index Administrator at the Index Administrator's principal office, for the time being at Guillolettstr. 54, 60325 Frankfurt am Main, Germany ("**Principal Office**").

5.2 Index Level

The Index Level shall be published at the following locations:

- (i) at the Index Administrator's Principal Office;
- (ii) on Bloomberg under the following code ("**Index Bloomberg Code**"): DBGLBIUU Index;

In addition, the Index Level may be published at the following locations:

- (i) on the relevant page of the website of the Index Calculation Agent: [●] relating to the Index ("**Index Publication Heading**");
- (ii) on such other information sources as the Index Administrator may select from time to time at its sole discretion.

5.3 Miscellaneous

Any publication described in this Section 5 (*Availability and Publication of Index Levels and Adjustments*) may be restricted by means determined as appropriate for such purpose by the Index Administrator in its sole discretion including, but not limited to, password protection on the website of the Index Calculation Agent, restricting access to a limited set of persons in accordance with arrangements agreed between the Index Administrator and such persons.

The Index Administrator may, at any time, change with respect to the Index (i) the Index Bloomberg Code, (ii) the Index Publication Heading and/or (iii) the place of publication of any Index Closing Level, as the case may be, with adequate notice to the Index Sponsor.

The Index Administrator may, at any time, change the frequency of publication of any Index Level, with adequate notice to the Index Sponsor.

This Index Description is written and (as applicable) published by the Index Sponsor and Index Administrator. The Index Administrator is exclusively entitled to construe its provisions and determine or clarify their meaning. If there is any ambiguity in, or uncertainty or dispute about the meaning of, any of the provisions of this Index Description, the Index Administrator will, in its sole discretion but acting in good faith and in a commercially reasonable manner, construe the relevant provision(s) in order to determine the correct interpretation, and the decision of the Index Administrator shall be final.

Part 5

Definitions

"**Accrued Interest**" has the meaning given in Section 2.9 (*Determination of Accrued Interest*) of Part 3 (*Calculation of the Index*).

"**Affiliate**" means in relation to any entity (the "**First Entity**"), any entity controlled, directly or indirectly, by the First Entity, and entity that controls, directly or indirectly, the First Entity or any entity directly or indirectly under common control with the First Entity. For these purposes, "control" means ownership of a majority of the voting power of an entity.

"**At-the-Money Options Scaling Factor**" means [4].

"**ATM**" has the meaning given in Part 1 (*Description and Overview*).

"**Back Futures**" means, in respect an Index Calculation Date, the Futures expiring on the Futures Expiry Date immediately following the Futures Roll Date immediately following such Index Calculation Date.

"**Basis TWAP**" means, in respect of a Futures and an Index Calculation Date, an amount calculated by the Index Calculation Agent as the Futures TWAP of such Futures minus the Cash TWAP

"**Black Scholes Formula**" has the meaning given in Section 1 (*Implied Volatility*) of Annex 2 (*Determination of Implied Volatility, Delta and Vega*).

"**Bloomberg**" means Bloomberg L.P. or any of its Affiliates and subsidiaries, or any successor market price information provider(s).

"**Call Option**" means each monthly call option contract on the Underlying Index, which is listed and traded on the Options Exchange.

"**Cash Balance**" has the meaning given in Section 2.7 (*Determination of Cash Balance*) of Part 3 (*Calculation of the Index*).

"**Cash Close**" means, in respect of an Index Calculation Date, the official closing level (in index points) of the Underlying Index on such day, as published on the Price Source.

"**Cash EDSP**" means, in respect of an Index Calculation Date, the Official Settlement Level (in index points) of the Underlying Index in respect of such Index Calculation Date.

"**Cash Index**" means the Deutsche Bank Fed Funds Effective Rate Total Return Index (Bloomberg code: DBMMFED1 Index).

"**Cash Index Event**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Cash Index Level**" means, in respect of an Index Calculation Date, the official closing level of the Cash Index in respect of such Index Calculation Date as published on the Price Source.

"**Cash PnL**" has the meaning given in Section 2.5 (*Determination of Cash PnL*) of Part 3 (*Calculation of the Index*).

"**Cash Snap**" means, in respect of an Index Calculation Date, the level of the Underlying Index published on the Price Source 15 minutes prior to the TWAP Process Start Time in respect of the TWAP Option Process on such Index Calculation Date, or, if no level of the Underlying Index is published at such time on such Index Calculation Date, the first level of the Underlying Index published after such time in respect of such Index Calculation Date, in each case as determined by the Index Calculation Agent.

"**Cash TWAP**" means, in respect of an Index Calculation Date, an amount determined by the Index Calculation Agent as the level returned by the TWAP Option Process (as defined in Annex 3 (*Time-Weighted Average Price Observation process*)) run on such Index Calculation Date on the level of the Underlying Index, as published on the Price Source.

"**CBOE**" has the meaning given in Part 1 (*Description and Overview*).

"**Change of Law or Rules**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Contract Size**" means 100.

"**De Minimis Trading**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Delta Hedge PnL**" has the meaning given in Section 2.8 (*Determination Delta Hedge PnL*) of Part 3 (*Calculation of the Index*).

"**Delta Hedge Return**" has the meaning given in Section 2.8.1 (*Delta Hedge Return*) of Part 3 (*Calculation of the Index*).

"**Delta Hedge Cost**" has the meaning given in Section 2.8.3 (*Delta Hedge Cost*) of Part 3 (*Calculation of the Index*).

"**Delta Hedge MtM**" has the meaning given in Section 2.8.2 (*Delta Hedge MtM*) of Part 3 (*Calculation of the Index*).

"**Disappearance of an Option or Futures Price**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Disruption Event**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Dividends Paid**" means, in respect an Index Calculation Date ("**Index Calculation Date**"), an amount determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Dividends Paid}_t = \frac{\text{TR}_t}{\text{TR}_{t-1}} - \frac{\text{Cash Close}_t}{\text{Cash Close}_{t-1}}$$

Where:

"**Dividends Paid_t**" means the Dividends Paid in respect of Index Calculation Date_t;

"**TR_t**" means the Total Return Underlying Index Close in respect of Index Calculation Date_t;

"**TR_{t-1}**" means the Total Return Underlying Index Close in respect of the Index Calculation Date immediately preceding Index Calculation Date_t;

"**Cash Close_t**" means the Cash Close in respect of Index Calculation Date_t; and

"**Cash Close_{t-1}**" means the Cash Close in respect of the Index Calculation Date immediately preceding Index Calculation Date_t.

"**EDSP Basis**" means, in respect an Index Calculation Date ("**Index Calculation Date_t**"), an amount determined by the Index Calculation Agent in accordance with the following formula:

$$\text{EDSP Basis}_t = \text{Basis TWAP}_{t-1} - \text{Dividends Paid}_t \times \text{Cash Close}_{t-1}$$

Where:

"**EDSP Basis_t**" means the EDSP Basis in respect of Index Calculation Date_t;

"**Basis TWAP_{t-1}**" means the Basis TWAP in respect of the Futures expiring on the Futures Expiry Date immediately following Index Calculation Date_t and Index Calculation Date_t;

"**Dividends Paid_t**" means the Dividends Paid in respect of Index Calculation Date_t; and

"**Cash Close_{t-1}**" means the Cash Close in respect of the Index Calculation Date immediately preceding Index Calculation Date_t.

"**Financial Product**" has the meaning given in Part 2 (*Risk Considerations and Conflicts of Interest*).

"**Force Majeure Event**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Front Futures**" means, in respect an Index Calculation Date, the Futures expiring on the Futures Expiry Date immediately following such Index Calculation Date.

"**Futures**" means each E-Mini futures contract on the Underlying Index, which is listed and traded on the Futures Exchange.

"**Futures Close**" means, in respect of a Futures and an Index Calculation Date, the sum of (i) the Cash Close in respect of such Index Calculation Date and (ii) the Basis TWAP in respect of such Futures and such Index Calculation Date.

"**Futures EDSP**" means, in respect an Index Calculation Date, the sum of (i) the Cash EDSP in respect of such Index Calculation Date and (ii) the EDSP Basis in respect of such Index Calculation Date.

"**Futures Exchange**" means the Chicago Mercantile Exchange (the "**CME**"), or any successor

to such exchange or quotation system or any substitute exchange or quotation system to which trading in futures contracts on the Underlying Index has temporarily relocated (provided that the Index Administrator has determined that there is comparable liquidity relative to futures contracts on the Underlying Index on such temporary substitute exchange or quotation system as on the original Futures Exchange).

"Futures Expiry Date" means a day which is the expiry date of a Futures.

"Futures Roll Date" means the Index Calculation Date immediately preceding each Futures Expiry Date.

"Futures TWAP" means, in respect of a Futures and an Index Calculation Date, an amount calculated by the Index Calculation Agent as the arithmetic mean of the prices returned by the TWAP Delta Process (as defined in Annex 3 (*Time-Weighted Average Price Observation process*)) run on such Index Calculation Date using (i) the bid prices quoted for a size of 1 or more contracts of such Futures and (ii) the ask prices quoted for a size of 1 or more contracts of such Futures, in each case as published on the Price Source.

"Hedging Disruption" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"Implied Volatility" has the meaning given in Annex 2 (*Determination of Implied Volatility, Delta and Vega*).

"Index" has the meaning given in the Introduction.

"Index Administrator" has the meaning given in the Introduction.

"Index Business Day" means each day on which (i) options contracts on the Underlying Index are scheduled to be traded on the Options Exchange, (ii) futures contracts on the Underlying Index are scheduled to be traded on the Futures Exchange, (iii) the Underlying Index Sponsor is scheduled to publish the level of the Underlying Index and the Total Return Underlying Index and (iv) the Relevant Exchange is scheduled to be open for trading, in each case as determined by the Index Calculation Agent.

"Index Calculation Agent" has the meaning given in the Introduction.

"Index Calculation Date" means each Index Business Day and each Option Expiry Date.

"Index Commencement Date" has the meaning given in the Introduction.

"Index Description" has the meaning given in the Introduction.

"Index Level" has the meaning given in Section 2.1 (*Calculation of Index Level*) of Part 3 (*Calculation of the Index*).

"Index Live Date" has the meaning given in the Introduction.

"Index Rules" has the meaning given in the Introduction.

"Index Sponsor" has the meaning given in the Introduction.

"**Intraday Delta**" has the meaning given in Annex 2 (*Determination of Implied Volatility, Delta and Vega*).

"**IOSCO Principles**" has the meaning given in Part 1 (*Description and Overview*).

"**K_{Call,2m,t}**", "**K_{Call,3m,t}**", "**K_{Put,2m,t}**", "**K_{Put,3m,t}**", "**K_{OTMPut,pre,t}**" and "**K_{OTMPut,post,t}**" have the meaning given in Section 2.4 (*Determination of strike price*) of Part 3 (*Calculation of the Index*).

"**Market Disruption Event**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Matching Option**" has the meaning given in Section 2 (*Definitions*) of Annex 2 (*Determination of Implied Volatility, Delta and Vega*).

"**Material Change in Circumstance**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Material Change in Content**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Material Change in Formula or Determination**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**NC_{ATM,t}**", "**NC_{OTM,pre,t}**" and "**NC_{OTM,post,t}**" have the meaning given in section 2.3 (*Determination of number of contracts traded*) of Part 3 (*Calculation of the Index*).

"**Notional Index Settlement Date**" means (i) the Index Commencement Date, and (ii) thereafter, each Option Expiry Date falling in March, June, September and December of each calendar year.

"**Official Settlement Level**" means, in respect of any day, the level of the Underlying Index that is used to calculate the official settlement price of Options on the Underlying Index for such day, as published on the Price Source, provided that if such level is not published or available on such day, then the Official Settlement Level for such day will be determined by the Index Administrator.

"**Option**" means each Call Option and Put Option.

"**Option Close Delta**" means, in respect of an Option ("**Option_i**") and an Index Calculation Date ("**Index Calculation Date_t**"), an amount determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Option Close Delta}_{i,t} = \text{TU}_{i,t} \times \text{ID}_{i,t}$$

Where:

"**Option Close Delta_{i,t}**" means the Option Close Delta in respect of Option_i and Index Calculation Date_t;

"**TU_{i,t}**" means the Traded Units in respect of Option_i and Index Calculation Date_t; and

"ID_{i,t}" means the Intraday Delta in respect of Option_i and Index Calculation Date.

"Option Delta" means, in respect of an Option and an Index Calculation Date, an amount calculated by the determined by the Index Calculation Agent as the sum of the Option Intraday Delta in respect of such Option and such Index Calculation Date and the Option Close Delta in respect of such Option and such Index Calculation Date.

"Option Expiry Date" means each day which is or will be the expiry date of an Option falling on the Third Friday of each month or if that Friday is not a business day, the alternative day designated by the Options Exchange.

"Option Intraday Delta" means, in respect of an Option ("Option_i") and an Index Calculation Date ("Index Calculation Date_t"), an amount determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Option Intraday Delta}_{i,t} = (UE_{i,t} - TU_{i,t}) \times ID_{i,t}$$

Where:

"Option Intraday Delta_{i,t}" means the Option Intraday Delta in respect of Option_i and Index Calculation Date_t;

"UE_t" means the Unit Exposure in respect of Option_i and Index Calculation Date_t;

"TU_{i,t}" means the Traded Units in respect of Option_i and Index Calculation Date_t; and

"ID_{i,t}" means the Intraday Delta in respect of Option_i and Index Calculation Date.

"Option Market Disruption Event" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"Option Portfolio" means, in respect of an Index Calculation Date, the notional portfolio comprising of all Options expiring after such Index Calculation Date that have been notionally traded by the Index in the period commencing from, and including, the Index Commencement Date, and ending on, and including, such Index Calculation Date.

"Option Premium" has the meaning given to it in section 2.7.2 (*Option Premium*) of Part 3 (*Calculation of the Index*).

"Option Price" has the meaning given to it in section 2.6.2 (*Option Price*) of Part 3 (*Calculation of the Index*).

"Option TWAP" means, in respect of an Option and an Index Calculation Date, an amount calculated by the Index Calculation Agent as the arithmetic mean of the prices returned by the TWAP Option Process (as defined in Annex 3 (*Time-Weighted Average Price Observation process*)) run on such Index Calculation Date using (i) the bid prices quoted for a size of 1 or more contracts of such Option and (ii) the ask prices quoted for a size of 1 or more contracts of such Option), in each case as published on the Price Source.

"Options Exchange" means the CBOE, or any successor to such exchange or quotation

system or any substitute exchange or quotation system to which trading in options contracts on the Underlying Index has temporarily relocated (provided that the Index Administrator has determined that there is comparable liquidity relative to the options contracts on the Underlying Index on such temporary substitute exchange or quotation system as on the original Options Exchange).

"**OTM**" has the meaning given in Part 1 (*Description and Overview*).

"**Out-of-the-Money Option**" has the meaning given in Section 4 (*Definitions*) of Annex 2 (*Determination of Implied Volatility, Delta and Vega*).

"**Out-of-the-Money Options Scaling Factor**" means [3].

"**Portfolio Mark-to-Market**" has the meaning given in Section 2.6.1 (*Portfolio Mark-to-Market*) of Part 3 (*Calculation of the Index*).

"**Price Source**" means Reuters (or any successor thereto, as determined by the Index Administrator).

"**Put Option**" means each monthly put option contract on the Underlying Index, which is listed and traded on the Options Exchange.

"**Put Option Expiry Date**" means each Option Expiry Date falling in January, March, June, September or December.

"**Purchased Put Option Target Expiry Date**" means, in respect of an Index Calculation Date, the day falling twelve calendar months after such Index Calculation Date (or, if such day doesn't exist, the last calendar day of the twelfth calendar month following the month of such Index Calculation Date).

"**Related Exchange**" means each of the Options Exchange and the Futures Exchange.

"**Relevant Exchange**" means the New York Stock Exchange (the "**NYSE**"), or any successor thereto, as determined by the Index Calculation Agent.

"**Relevant Exchange Event**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Reuters**" means Reuters Group PLC or any of its Affiliates and subsidiaries, or any successor market price information provider(s).

"**Scheduled Closing Time**" means, in respect of the Relevant Exchange and any relevant day, the scheduled closing time of the Relevant Exchange on such day, without regard to after hours or any other trading outside of its regular trading session hours.

"**Settlement Value**" means, in respect of an Option ("**Option_i**"), an amount determined by the Index Calculation Agent in accordance with the following formula:

- (i) if Option_i is a Call Option:

$$\text{Settlement Value}_i = \text{Max}(0; \text{Cash EDSP}_t - K_i)$$

(ii) if Option_i is a Put Option:

$$\text{Settlement Value}_i = \text{Max}(0; K_i - \text{Cash EDSP}_t)$$

Where:

"**Settlement Value**_i" means the Settlement Value in respect of Option_i;

"**K**_i" means the strike price in respect of Option_i; and

"**Cash EDSP**_t" means the Cash EDSP in respect of the expiry date of Option_i.

"**Tax Disruption**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Total Return Underlying Index**" means the S&P 500 Total Return 4 Jan 1988 Index (*Bloomberg Code: SPTR Index*).

"**Total Return Underlying Index Close**" means, in respect of an Index Calculation Date, the official closing level of the Total Return Underlying Index in respect of such Index Calculation Date, as published on the Price Source.

"**Traded Units**" means, in respect of an Option and an Index Calculation Date, the product of (i) the number of contracts notionally traded by the Index of such Option in respect of such Index Calculation Date (which in respect of a notional sale by the Index shall be a positive number and in respect of a notional purchase by the Index a negative number, as defined in section 2.3 (*Determination of number of contracts traded*)) and (ii) the Contract Size.

"**Trading Limitation**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Trading Suspension**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**TWAP Disruption Event**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Underlying Index**" has the meaning given in the Introduction.

"**Underlying Index Event**" has the meaning given in Section 1.3 (*Definitions*) of Part 4 (*Disruptions, Corrections, Change in Methodology and Publication*).

"**Underlying Index Sponsor**" means, in respect of the Underlying Index, the corporation or other entity that (i) is responsible for setting and reviewing the rules and procedures and the methods of calculation and adjustments, if any, related to the Underlying Index, and (ii) announces (directly or through an agent) the level of the Underlying Index on a regular basis in respect of each Index Calculation Date for the Underlying Index. As of the Index Live Date, the Underlying Index Sponsor for the Underlying Index is S&P Dow Jones Indices LLC.

"**Unresolved Option TWAP Disruption Event**" has the meaning given in Section 1.1 (*Option TWAP Disruption Event*) of Part 4 (*Disruptions, Corrections, Change in Methodology and*

Publication).

"**Unit Exposure**" means, in respect of an Option and an Index Calculation Date, the aggregate of the Traded Units in respect of such Option and each Index Calculation date in the period from, and including, the Index Commencement Date to, and including, such Index Calculation Date, as calculated by the Index Calculation Agent.

"**USD**" means United States dollars.

"**Vega**" has the meaning given in Annex 2 (*Determination of Implied Volatility, Delta and Vega*).

Annex 1

Strike Selection Methods

1 Delta Strike Selection Method

In order to determine the strike price of an Option, a delta-based strike selection method (the "**Delta Strike Selection Method**") may be used.

For the purpose of determining a strike price using the Delta Strike Selection Method, the following inputs shall be required (the "**Delta Strike Selection Inputs**"):

- (i) the "**Delta Strike Selection Date**";
- (ii) the "**Target Expiry Date**";
- (iii) the "**Option Type**";
- (iv) the "**Strike Interval**";
- (v) the "**Target Delta**";
- (vi) the "**Low Delta Threshold**"; and
- (vii) the "**High Delta Threshold**".

The Delta Strike Selection Method will return a strike price, based on the Delta Strike Selection Inputs, which shall be determined by Index Calculation Agent to be the strike price of an Option whose type is the Option Type expiring on the Target Expiry Date which is:

- (i) an integral multiple of Strike Interval;
- (ii) such that the Intraday Delta of such Option in respect of the Delta Strike Selection Date is greater than or equal to the Low Delta Threshold;
- (iii) such that the Intraday Delta of such Option in respect of the Delta Strike Selection Date is less than or equal to the High Delta Threshold; and
- (iv) such that the Intraday Delta of such Option in respect of the Delta Strike Selection Date is closest to the Target Delta.

If there is no strike price in respect of the relevant option as specified by the Delta Strike Selection Inputs that satisfies a) to d) above, then the Delta Strike Selection Method will not return a strike price.

Annex 2

Determination of Implied Volatility, Delta and Vega

Terms used in this Annex 2 (*Determination of Implied Volatility, Delta and Vega*) and not

defined in Part 5 (*Definitions*) have the meanings given to them in Section 4 (*Definitions*) of this Annex 2 (*Determination of Implied Volatility, Delta and Vega*).

1 Implied Volatility

The Implied Volatility in respect of an Option and an Index Calculation Date shall be determined by the Index calculation Agent as follows:

- (i) If such Option is an Out-of-the-Money Option in respect of such Index Calculation Date, the Implied Volatility in respect of such Option and such Index Calculation Date shall be the Black-Scholes Volatility (as defined below) in respect of such Option and such Index Calculation Date; or
- (ii) If such Option is not an Out-of-the-Money Option in respect of such Index Calculation Date, the Implied Volatility in respect of such Option and such Index Calculation Date shall be the Black-Scholes Volatility (as defined below) in respect of the Matching Option (in respect of such Option) and such Index Calculation Date.

The Black-Scholes Volatility in respect of an Option ("**Option_i**") and an Index Calculation Date ("**Index Calculation Date_t**") shall be determined the Index calculation using an iterative trial and error methodology such that it satisfies the following equation (the "**Black Scholes Formula**"):

- (i) If such Option is a Call Option:

$$\text{Option TWAP}_{i,t} = \exp(-r_{i,t} \times T_{i,t}) \times (\text{Forward TWAP}_{i,t} \times N(d1_{i,t}) - K_i \times N(d2_{i,t}))$$

- (ii) If such Option is a Put Option:

$$\text{Option TWAP}_{i,t} = \exp(-r_{i,t} \times T_{i,t}) \times (K_i \times N(-d2_{i,t}) - \text{Forward TWAP}_{i,t} \times N(-d1_{i,t}))$$

Where, for the purposes of this formula only:

"**Option TWAP_{i,t}**" means the Option TWAP in respect of Option_i and Index Calculation Date_t;

"**r_{i,t}**" means the OIS Swap Rate in respect of Option_i and Index Calculation Date_t;

"**T_{i,t}**" means the quotient of (i) the number of calendar days in the period commencing on, and including, Index Calculation Date_t, and ending on, but excluding, the expiry date of Option_i and (as numerator) and (ii) 360 (as denominator).

"**Forward TWAP_{i,t}**" means the Forward TWAP in respect of Option_i and Index Calculation Date_t;

"**K_i**" means the strike price of Option_i;

"**N**" means the standard normal cumulative distribution function;

"**d1_{i,t}**" means an amount determined by the Index Calculation Agent in accordance with the following formula:

$$d1_{i,t} = \frac{\ln\left(\frac{\text{Forward TWAP}_{i,t}}{K_i}\right) + \left[\frac{\sigma_{i,t}^2}{2}\right] \times T'_{i,t}}{\sigma_{i,t} \times \sqrt{T'_{i,t}}}$$

where:

" $\sigma_{i,t}$ " means the Black-Scholes Volatility in respect of Option_i and Index Calculation Date_t; and

" $T'_{i,t}$ " means the quotient of (i) the number of Index Business Days in the period commencing on, and including, Index Calculation Date_t and ending on, but excluding, the expiry date of Option_i (as numerator) and (ii) 252 (as denominator); and

" $d2_{i,t}$ " means an amount determined by the Index Calculation Agent in accordance with the following formula:

$$d2_{i,t} = \frac{\ln\left(\frac{\text{Forward TWAP}_{i,t}}{K_i}\right) - \left[\frac{\sigma_{i,t}^2}{2}\right] \times T'_{i,t}}{\sigma_{i,t} \times \sqrt{T'_{i,t}}}$$

where:

" $\sigma_{i,t}$ " means the Black-Scholes Volatility in respect of Option_i and Index Calculation Date_t; and

" $T'_{i,t}$ " means the quotient of (i) the number of Index Business Days in the period commencing on, and including, Index Calculation Date_t and ending on, but excluding, the expiry date of Option_i (as numerator) and (ii) 252 (as denominator).

2 Intraday Delta

The Intraday Delta in respect of an Option ("**Option_i**") and an Index Calculation Date ("**Index Calculation Date_t**") shall be determined by the Index calculation Agent as follows:

(i) If such Option is a Call Option:

$$\text{Intraday Delta}_{i,t} = N(d1_{i,t}) \times \exp(-r_{i,t} \times T_{i,t})$$

(ii) If such Option is a Put Option:

$$\text{Intraday Delta}_{i,t} = (N(d1_{i,t}) - 1) \times \exp(-r_{i,t} \times T_{i,t})$$

Where, for the purposes of such formula only:

"**Intraday Delta_{i,t}**" means the Intraday Delta in respect of Option_i and Index Calculation Date_t;

"**N**" means the standard normal cumulative distribution function;

" $r_{i,t}$ " means the OIS Snap Swap Rate in respect of Option_i and Index Calculation Date_t;

" $T_{i,t}$ " means the quotient of (i) the number of calendar days in the period commencing on, and including, Index Calculation Date_t, and ending on, but excluding, the expiry date of Option_i and

(as numerator) and (ii) 360 (as denominator); and

"**d1_{i,t}**" means an amount determined by the Index Calculation Agent in accordance with the following formula:

$$d1_{i,t} = \frac{\ln\left(\frac{\text{Forward}_{i,t}}{K_i}\right) + \left[\frac{\sigma_{i,t-1}^2}{2}\right] \times T'_{i,t}}{\sigma_{i,t-1} \times \sqrt{T'_{i,t}}}$$

where:

"**σ_{i,t-1}**" means the Implied Volatility in respect of Option_i and the Index Calculation Date immediately preceding Index Calculation Date_i;

"**T'_{i,t}**" means the quotient of (i) the number of Index Business Days in the period commencing on, and including, Index Calculation Date_t and ending on, but excluding, the expiry date of Option_i (as numerator) and (ii) 252 (as denominator); and

"**Forward_{i,t}**" means the Forward Snap in respect of Option_i and Index Calculation Date_t.

3 Vega

The Vega in respect of an Option ("**Option_i**") and an Index Calculation Date ("**Index Calculation Date_t**") shall be determined by the Index calculation Agent in accordance with the following formula:

$$\text{Vega}_{i,t} = N'(d1_{i,t}) \times \text{Forward TWAP}_{i,t} \times \sqrt{T'_{i,t}} \times \frac{\exp(-r_{i,t} \times T_{i,t})}{100}$$

Where:

"**Vega_{i,t}**" means the Vega in respect of Option_i and Index Calculation Date_t;

"**r_{i,t}**" means the OIS Swap Rate in respect of Option_i and Index Calculation Date_t;

"**T_{i,t}**" means the quotient of (i) the number of calendar days in the period commencing on, and including, Index Calculation Date_t and ending on, but excluding, the expiry date of Option_i and (as numerator) and (ii) 360 (as denominator);

"**T'_{i,t}**" means the quotient of (i) the number of Index Business Days in the period commencing on, and including, Index Calculation Date_t and ending on, but excluding, the expiry date of Option_i (as numerator) and (ii) 252 (as denominator);

"**Forward TWAP_{i,t}**" means the Forward TWAP in respect of Option_i and Index Calculation Date_t;

"**N**" means the standard normal probability density function; and

"**d1_{i,t}**" means an amount determined by the Index Calculation Agent in accordance with the following formula:

$$d1_{i,t} = \frac{\ln\left(\frac{\text{Forward TWAP}_{i,t}}{K_i}\right) + \left[\frac{\sigma_{i,t}^2}{2}\right] \times T'_{i,t}}{\sigma_{i,t} \times \sqrt{T'_{i,t}}}$$

where:

" $\sigma_{i,t}$ " means the Implied Volatility in respect of Option_i and Index Calculation Date_t.

4 Definitions

"**Forward Snap**" means, in respect of an Option ("**Option_i**") and an Index Calculation Date ("**Index Calculation Date_t**"), an amount calculated by the Index Calculation Agent in accordance with the following formula:

$$\text{Forward Snap}_{i,t} = \text{Forward TWAP}_{i,t-1} \times \frac{\text{Cash Snap}_t}{\text{Cash TWAP}_{t-1}}$$

Where:

"**Forward Snap_{i,t}**" means the Forward Snap in respect of Option_i and Index Calculation Date_t;

"**Forward TWAP_{i,t-1}**" means the Forward TWAP in respect of Option_i and the Index Calculation Date immediately preceding Index Calculation Date_t;

"**Cash Snap_t**" means the Cash Snap in respect of Index Calculation Date_t; and

"**Cash TWAP_{t-1}**" means the Cash TWAP in respect of the Index Calculation Date immediately preceding Index Calculation Date_t.

"**Forward TWAP**" means, in respect of an Option ("**Option_i**") and an Index Calculation Date ("**Index Calculation Date_t**"), an amount determined by the Index Calculation Agent in accordance with the following formula:

$$\text{Forward TWAP}_{i,t} = \frac{\text{Call TWAP}'_{i,t} - \text{Put TWAP}'_{i,t}}{\exp(-r_{i,t} \times T_{i,t})} + K'_{i,t}$$

Where:

"**Forward TWAP_{i,t}**" means the Forward TWAP in respect of Option_i and Index Calculation Date_t;

"**K'_{i,t}**" means the strike price of an Option with the same expiry date as Option_i, and a strike price which is both (i) an integral multiple of 25 points and (ii) nearest to the Cash Snap in respect of Index Calculation Date_t, as determined by the Index Calculation Agent by reference to Reuters;

"**Call TWAP'_{i,t}**" means the Option TWAP in respect of a Call Option with the same expiry date as Option_i, and a strike price equal to K'_{i,t};

"**Put TWAP'_{i,t}**" means the Option TWAP in respect of a Put Option with the same expiry date as Option_i, and a strike price equal to K'_{i,t};

" $r_{i,t}$ " means the OIS Swap Rate in respect of Option_i and Index Calculation Date_t; and

" $T_{i,t}$ " means the quotient of (i) the number of calendar days in the period commencing on, and including, Index Calculation Date_t, and ending on, but excluding, the expiry date of Option_i (as numerator) and (ii) 360 (as denominator);

"Matching Option" means, in respect of an Option, if such Option is (i) a Call Option, the Put Option with the same strike price and expiry date as such Call Option or (ii) a Put Option, the Call Option with the same strike price and expiry date as such Put Option.

"OIS Price Source" means any of (as selected by the Index Calculation Agent), (i) Reuters RIC USDOIS=, or any successor page; or (ii) such other market price information provider that the Index Calculation Agent in its sole discretion selects.

"OIS Snap Swap Rate" means, in respect of an Option and Index Calculation Date, a percentage rate of interest determined by the Index Calculation Agent by reference to the mid USD OIS swap rate as published by the OIS Price Source 35 minutes prior to the TWAP Process Start Time in respect of the TWAP Option Process on such Index Calculation Date, with a maturity equal to the expiry date of such Option, determined, if applicable, using linear interpolation (and flat extrapolation), as determined by the Index Calculation Agent, provided that if such rate is not published at or around such time for such Index Calculation Date, then the OIS Swap Rate will be determined by the Index Administrator.

"OIS Swap Rate" means, in respect of an Option and Index Calculation Date, a percentage rate of interest determined by the Index Calculation Agent by reference to the mid USD OIS swap rate as published by the OIS Price Source 60 minutes prior to the Scheduled Closing Time of the Relevant Exchange on such Index Calculation Date, with a maturity equal to the expiry date of such Option, determined, if applicable, using linear interpolation (and flat extrapolation), as determined by the Index Calculation Agent, provided that if such rate is not published at or around such time for such Index Calculation Date, then the OIS Swap Rate will be determined by the Index Administrator.

"Out-of-the-Money Option" means, in respect of an Index Calculation Date, an Option whose strike price is, if such Option is (i) a Call Option, greater than the Cash Snap in respect of such Index Calculation Date or (ii) a Put Option, less than the Cash Snap in respect of such Index Calculation Date.

Annex 3

Time-Weighted Average Price Observation Process

1 TWAP Processes

1.1 TWAP Process

In order to establish relevant inputs to calculate the Index Level, a time-weighted average price observation process (the "**TWAP Process**") will be used.

For the purpose of determining any input using the TWAP Process in respect of any relevant day, the relevant price or level will be recorded at the end of every 15 second interval (each such 15 second interval being a "**TWAP Observation Interval**") in the period commencing at and including the "**TWAP Process Start Time**" on such day and ending at and including the "**TWAP Process End Time**" on such day, in each case, as determined in accordance with paragraph 1.2, 1.3 or 1.4 of this Annex 3 below (as applicable).

In respect of each TWAP Observation Interval, the price or level to be recorded for such TWAP Observation Interval will be the most recent relevant price published by the relevant exchange or level as published by the relevant price source on or after the Lookback Period Start Time to, and including, the end of such TWAP Observation Interval. If no such price or level exists, then no price or level will be recorded from such TWAP Observation Interval.

The "**Lookback Period Start Time**" means, for any relevant day, the time falling 300 minutes prior to the TWAP Process Start Time on such day. For the avoidance of doubt, the first time at which a price or level will be recorded (subject to there being a price or level to record) is the TWAP Process Start Time plus the TWAP Observation Interval.

The TWAP Process will return a price or level which is the arithmetic average of the recorded prices or levels. If there are no recorded prices or levels, then the TWAP Process will not return a price or a level.

1.2 TWAP Option Process

The "**TWAP Option Process**" is defined, in respect of any relevant day, as the TWAP Process parameterised as follows:

- (i) TWAP Process Start Time: 25 minutes before the Scheduled Closing Time of the Relevant Exchange on such day; and
- (ii) TWAP Process End Time: 5 minutes before the Scheduled Closing Time of the Relevant Exchange on such day.

1.4 TWAP Delta Process

The "**TWAP Delta Process**" is defined, in respect of any relevant day, as the TWAP Process parameterised as follows:

- (i) TWAP Process Start Time: the Window Start Time in respect of such day (as defined in section 2.1 (*Window Start Time*) of this Annex); and

(ii) TWAP Process End Time: a number of minutes equal to the Window Duration in respect of such day (as defined in section 2.2 (*Window Duration*) of this Annex) after the Window Start Time.

2 Determination of Window Start Time and Window Duration

2.1 Window Start Time

The "**Window Start Time**" in respect of any relevant day shall be 25 minutes prior to the Scheduled Closing Time of the Relevant Exchange.

2.2 Window Duration

The "**Window Duration**" in respect of any relevant day ("**Day_t**") shall be 20 minutes.