Macquarie BK2 Diversified Dynamic Long Short D1 Volatility ex Ags & Livestock

Index Manual
April 2019

NOTES AND DISCLAIMERS

BASIS OF PROVISION

This Index Manual sets out the rules for the Macquarie BK2 Diversified Dynamic Long Short D1 Volatility ex Ags & Livestock Index (the *Index*) and reflects the methodology for determining the composition and calculation of the Index (the Methodology section).

The Index Manual assumes the reader is a sophisticated financial market participant, with the knowledge and expertise to understand the investment strategy described herein and the associated risks. It is unsuitable for a retail or unsophisticated audience.

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The Index and any financial instruments based on the Index may not be suitable for all investors and any investor must made an independent assessment of the appropriateness of any transaction in light of their own objectives and circumstances including the potential risks and benefits of entering into such a transaction. If you are in any doubt about any of the contents of this document, you should obtain independent professional advice.

HISTORICAL VALUES OF THE INDEX

Hypothetical back-tested historical values of the Index are not indicative of future performance. In particular, trading periods that have historically evidenced relatively less futures price dislocation due to commodity index hedging activity may not continue to evidence lower levels of price dislocation, for instance if the pattern of commodity index hedging activity changes in future.

The Index Sponsor makes no representation as to the accuracy or appropriateness of, and shall have no liability to you or any other entity for any loss or damage, direct or indirect, arising from the use of the historical values.

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In particular, the Index Sponsor and Index Calculation Agent are under no obligation to monitor whether or not a Market Disruption Event has occurred and shall not be liable for any losses resulting from (i) any determination that a Market Disruption Event has occurred or has not occurred in relation to a Contract, (ii) the timing relating to the determination that a Market Disruption Event has occurred in relation to a Contract, or (iii) any actions taken or not taken by the Index Calculation Agent as a result of such determination that an Market Disruption Event has occurred.

NOTICES

The Index is based on Underlying Contracts, as described in the Methodology. The Index Sponsor and/or its affiliates actively trade Underlying Contracts and options on Underlying Contracts. The Index Sponsor and/or its affiliates also actively enter into or trade and market securities, swaps, options, derivatives, and related instruments which are linked to the performance of these Underlying Contracts or are linked to the performance of an Index. The Index Sponsor and/or its affiliates may underwrite or issue other securities or financial instruments indexed to the Index, and the Index Sponsor or its affiliates may license an Index for publication or for use by unaffiliated third parties. These activities could present conflicts of interest and could affect the value of the Index. The Index Sponsor trades or may trade as principal in instruments (or related derivatives) linked to an index described in this document, and may have proprietary positions in the instruments (or related derivatives). The Index Sponsor may make a market in such instruments (or related derivatives), which may in extreme circumstances affect the levels of the Index described.

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INTRODUCTION

The Macquarie BK2 Diversified Dynamic Long Short D1 Volatility ex Ags & Livestock Index (hereafter, the *Index*), is designed as a benchmark for exposure to the 'volatility carry' investment strategy in the commodity markets.

THE VOLATILITY CARRY STRATEGY

The Macquarie BK2 Diversified Dynamic Long Short D1 Volatility ex Ags & Livestock Index is a basket of proprietary indices that aims to extract the risk premium in the implied volatility of options in commodity markets through a rules based systematic strategy of selling and buying delta hedged, exchange traded options from a universe of eight commodities across energy, industrial metals and precious metals sectors.

The strategy of the underlying Components aims to capture the difference (either positive or negative) between the option implied volatility and the subsequently realised volatility. If the difference is expected to be positive then the strategy will take short options exposure and if the difference is expected to be negative then the strategy will take long options exposure. The decision to either sell or buy options is made with respect to a momentum indicator and each commodity is assessed in isolation. The rate at which the strategy adds incremental long option exposure is twice as fast as the rate at which the strategy adds short option exposure. The strategy may unwind any residual long options positions (such that only short options exposure remains) when the underlying signals indicate that it may no longer be optimal to continue to hold a long options portfolio and where the strategy may potentially benefit in the near term from only a short options exposure.

Detailed explanations of the index methodology of the underlying Components can be found in the Macquarie Single Commodity D1 Volatility Indices Index Manual, the Macquarie Single Commodity Dynamic Tenor Short Volatility Indices (Second Generation) Index Manual and the Macquarie Single Commodity Short Volatility Indices (Second Generation) Index Manual, available on request from the Index Sponsor.

Each underlying Component relates to a single commodity and will be comprised of delta-hedged call and put options on a futures contract referencing that commodity. Delta-hedging of options involves taking a long or short position in the contract underlying an option in an attempt to balance (hedge) the part of the option price movement that is dependent on the change in the price of the underlying asset which, in this case, is the relevant commodity.

Delta hedged options aim to benefit from the risk premium involved in selling and buying options while reducing the risk associated with moves in the price of the underlying asset.

It should be noted that the Components do not maintain a constant profile of options exposure over time. Due to the fact that exchange-traded options on commodities generally expire on a limited number of dates, a strategy that did not accrete its option exposure over time would manifest exposures that were concentrated around a limited number of strike prices. To avoid this outcome, the Components obtain a set amount of volatility (or "vega") exposure on each trading day, building exposure gradually over time, and with exposure rolling off after each options expiry date. The amount of exposure obtained each day is determined in such a way that equivalent risk exposure is added to the Component each day the Component sells options (buying options is done at twice the rate of selling options).

SELECTION OF COMPONENTS

The selected underlying commodities have been determined by reference to global commodity production and liquidity of available commodity futures and exchange traded option contracts. Exposure to each of the underlying commodities is gained via exposure to a corresponding proprietary index (each a "Component"). Each underlying Component has a static weight to which the exposure is periodically rebalanced.

The weights allocated to the underlying Components have been chosen to ensure the Index represents a non-food diversified universe of commodities across multiple sectors with sufficient liquidity in both futures and exchange traded options markets.

The Components are either Macquarie Single Commodity Short Volatility 2nd Generation Indices, which typically sell options near the front of the futures curve, around the second to expire tenor, Macquarie Single Commodity Dynamic Tenor Short Volatility 2nd Generation Indices, where the tenor of the options that the index sells is chosen dynamically based on the level of implied volatilities or Macquarie Single Commodity D1 Volatility Indices, that both sell and buy options with the aim of capturing both the positive and negative difference between option implied volatility and the subsequently realized volatility.

The Index selects three energy commodities (Brent Crude Oil, WTI Crude Oil and Natural Gas), four industrial metals commodities (Aluminium, Lead, Copper, Zinc) and one precious metals commodity (Gold).

The Natural Gas Component is seasonal and avoids incrementing the short volatility exposure during periods with seasonal risks, such as the US winter and season transition shoulder months. By limiting exposure during these high risk periods, the strategy aims to minimize drawdowns related to price and volatility spikes linked to seasonal price movements. The effect of this is that during its "off-season" periods, the index will provide less exposure to the respective short volatility strategy and the index performance during such periods will be less pronounced or even flat. This seasonal Component is a Macquarie Single Commodity Short Volatility 2nd Gen Index that sells options at the front of the curve (i.e. no option buying).

The Gold Component is a Macquarie Single Commodity Dynamic Tenor Volatility Index with dynamic tenor selection for option selling based on the level of implied volatilities. The index is always short volatility (i.e. no option buying).

The other 6 Components are all Macquarie Single Commodity D1 Volatility Indices that both sell and buy options with the aim of capturing both the positive and negative difference between option implied volatility and the subsequently realized volatility. The indices buy and sell options at the front of the curve.

Information on the Macquarie Seasonal NYMEX Natural Gas (NG) 2nd Gen Volatility Index, the Macquarie COMEX Gold (GC) 2nd Gen Dynamic Tenor Volatility Index and the Macquarie Single Commodity D1 Volatility Indices can be found in the Index Manuals of the Macquarie Single Commodity Short Volatility Indices (Second Generation), the Macquarie Single Commodity Dynamic Tenor Short Volatility Indices

(Second Generation), and the Macquarie Single Commodity D1 Volatility Indices, all of which are available on request.

GENERAL NOTES ON THE INDEX AND THE METHODOLOGY

The Index is designed to be replicable and readily accessible to market participants and is calculated daily in an Excess Return format. To facilitate an understanding of the calculations, this Index Manual contains various worked examples which demonstrate the types of calculations needed to calculate the level of the Index on a particular date. The Index is calculated and maintained by the Index Calculation Agent and supervised by the Index Sponsor and Oversight Committee, as described below. Once the Index has been created, the Components and Weights (or if appropriate, formula for calculating Weights) will not be amended going forward. All determinations with regard to the Index are made following the rules set out in this document, without discretion by the Index Sponsor or Index Calculation Agent. The Index is not based upon submissions provided by third parties (or an affiliate of the Index Sponsor or Index Calculation Agent) or expert judgment. The Index is based upon actual transaction data sourced from regulated markets and exchanges.

INDEX GOVERNANCE

The Index Sponsor has established an independent oversight committee (the *Oversight Committee*) to review and oversee management of the Index and resolve any issues that arise. The Oversight Committee is comprised of the following designees, each an employee of Macquarie Bank Limited:

- A Managing Director in the Commodity Markets and Finance division of the Commodities and Global Markets Group;
- A Director from the Legal and Governance Group;
- A representative from the Technology division of the Corporate Operations Group;
- A representative from the Operational Risk Management division of the Commodities and Global Markets Group;
- A representative from the Risk division of the Risk Management Group; and
- A representative from the Compliance division of the Risk Management Group.

Each member of the Oversight Committee is sufficiently knowledgeable about commodity futures contracts and the commodities markets in general, and is required to act in good faith and in a commercially reasonable manner. The Index Sponsor will make available upon request the names of the individuals forming the Oversight Committee.

The Oversight Committee has considered the features of the Index, the intended, expected or known usage of the Index and the materiality of existing or potential conflicts of interest and, taking these into account, has approved the Methodology and this Index Manual. The Oversight Committee is also charged with overseeing the daily management and operations of the Index. It will be available on an ad hoc basis for the approval of any changes to the Methodology, any contemplated cancellation of the Index and the resolution of any issues which arise in relation to the Index.

INDEX SPONSOR AND INDEX CALCULATION AGENT

THE INDEX SPONSOR

Macquarie Bank Limited is the Index Sponsor. Notwithstanding anything to the contrary, the Index Sponsor will maintain all ownership rights, expressed or otherwise, with respect to the Index, including the ability to license, sell or transfer any or all of its ownership rights with respect to the Index, including but not limited to terminating and appointing any successor Index Calculation Agent. The Index Calculation Agent is appointed by the Index Sponsor to calculate and maintain each Index from and until such time that the Index Sponsor terminates its relationship with the current Index Calculation Agent and appoints a successor index calculation agent. Any such termination or appointment of a successor will be subject to the approval of the Oversight Committee.

The Index Sponsor may, from time to time, revise, amend and/or supplement this Manual. If such revisions or supplement materially affect the calculation of the Index, the Index Sponsor shall publish a new Manual no later than 30 days prior to implementation of the revised or supplemented rules. If it is not reasonably practicable to publish revised Manual 30 days prior to such changes, the revised Manual will be published as soon as reasonably practicable.

THE INDEX CALCULATION AGENT

The Index Calculation department of the Commodities and Global Markets Group of Macquarie Bank Limited acts as “Index Calculation Agent” in respect of the Index as of the date of this Manual. The methodology employed by the Index Calculation Agent in determining the composition and calculation of the Index is set out in the calculations and procedures described in this document.

RELATIONSHIP OF THE INDEX SPONSOR AND THE INDEX CALCULATION AGENT

The Index Calculation Agent is appointed by the Index Sponsor, subject to the approval of the Index Oversight Committee. While, as of the date of publication of these rules, both the Index Sponsor and the Index Calculation Agent form part of Macquarie Bank Limited, they are different divisions within the bank and employees discharging the obligations of the Index Calculation Agent have separate lines of reporting and accountability from the employees performing the functions of the Index Sponsor.

DEFINITIONS

Components, are the following indices specified in the table below:

TABLE 1

Component	Index Ticker of Component	Weight
Macquarie NYMEX WTI Crude Oil (CL) Dynamic D1 Volatility Index	VMACD1CL	18.0%
Macquarie ICE Brent Crude Oil (CO) Dynamic D1 Volatility Index	VMACD1CO	12.0%
Macquarie Seasonal NYMEX Natural Gas (NG) 2nd Gen Volatility Index	VMAC2NGS	12.5%
Macquarie LME Aluminium (LA) D1 Volatility Index	VMACD1LA	14.3%
Macquarie LME Lead (LL) D1 Volatility Index	VMACD1LL	5.7%
Macquarie LME Copper (LP) D1 Volatility Index	VMACD1LP	14.3%
Macquarie LME Zinc (LX) D1 Volatility Index	VMACD1LX	5.7%
Macquarie COMEX Gold (GC) 2nd Gen Dynamic Tenor Volatility Index	VMAC3GC1	17.5%

The calculation and methodology of the Macquarie Seasonal NYMEX Natural Gas (NG) 2nd Gen Volatility Index is described in the "Macquarie Single Commodity Short Volatility Indices (Second Generation)" Index Manual, the calculation and methodology of the Macquarie COMEX Gold (GC) 2nd Gen Dynamic Tenor Volatility Index is described in the "Macquarie Single Commodity Dynamic Tenor Short Volatility Indices (Second Generation)" Index Manual and the calculation and methodology of the Macquarie D1 Volatility Indices is described in the "Macquarie Single Commodity D1 Volatility Indices" Index Manual, all of which are available on request.

Component Level, in respect of an Index Business Day, is the closing level of each Component as determined by the Index Calculation Agent. If the Index Business Day is not a day on which the Component is scheduled to be published, the Component Level for that day will be the most recent available Component Level on the most recent publication day.

Commodity, is each commodity corresponding to each Component. The total number of commodities is denoted by *n*.

Contract, is a futures contract traded in a Trading Facility and having a Commodity as underlying.

Designated Contract Month-Year, is the Month/Year pair used in the name of each contract as established by the relevant Trading Facility and is typically the calendar month/year within which a futures contract can be settled by delivery or the calendar month/year in which the delivery period begins.

Equivalent Holdings, in respect of an Index Business Day, are numbers which, if applied as Holdings to the Underlying Contracts of the Index, would perfectly describe the performance of the Index in respect of that Index Business Day. Equivalent Holdings are determined in order to facilitate calculation of the Index where any Underlying Contract is subject to a Market Disruption Event. The calculation of Equivalent Holdings is set out in Section 3 (*Market Disruption Events*) of the Index Calculation section below.

Equivalent Target Holdings, in respect of an Index Business Day, are numbers which, if applied as Holdings to the Underlying Contracts of the Index, would perfectly describe what the performance of the

Index would have been if the Holdings of the Index were instead equal to the Target Holdings of the Index. Equivalent Target Holdings are determined in order to facilitate calculation of the Index where any Underlying Contract is subject to a Market Disruption Event. The calculation of Equivalent Target Holdings is set out in Section 3 (*Market Disruption Events*) of the Index Calculation section below.

Expiration, is the date established by relevant Trading Facility for each Contract and is typically the date on which trading on that particular Contract ceases.

The **First Notice Date**, is established for each Contract by the relevant Trading Facility and is typically the first day on which notices of intent to deliver against futures market positions can be received.

The **Front Month Contract**, on an Index Business Day is the contract closest to Expiration but with First Notice Date succeeding the current Index Business Day for which a Settlement Price can be obtained.

Holding, in respect of a Component and an Index Business Day, is a number which is determined by the Index Calculation Agent as described in Section 2 (*Holdings Calculation*) of the Index Calculation section below. The Holding in respect of a Component is determined in order to calculate the daily Index Level and represents the proportionate effect on the Index Level of a change in the relevant Component level.

Holdings Calculation Date, is the Index Business Day on which the Target Holdings are periodically calculated in order to rebalance the Holding of each Component back to the specified Weights. The Holdings Calculation Date is the last day of a given calendar month which is an Index Business Day for all of the underlying Components.

Index Business Days, are the days in the Index Calendar.

Index Calendar, is the set of unique days constituted by each Index Business Day specified in any one of the underlying Components.

Initial Index Level, is 100.

Index Level, is the level of the Index that is calculated according to the relevant section of this Methodology.

Index Start Date, is 30 Jan 2007.

Index Sponsor, is Macquarie Bank Limited (Macquarie), the entity that calculates and publishes or announces (directly or through an agent) the daily level of the Index.

Index Ticker, is Excess Return – VMACDBK2 Index (Bloomberg).

Settlement Prices, are the prices, expressed in US dollars, published by the relevant exchange or trading facility and referred by them as the settlement price for that particular contract. If any Index Business Day is not a business day of the relevant exchange or trading facility, then the Settlement Price of that particular contract will be the most recent available price on the most recent business day of the relevant exchange or trading facility.

Target Holdings, are a set of multipliers, derived from the Weights, which are utilized to rebalance the Components of the Index on each Holdings Calculation Date. Calculation of Target Holdings is described in Section 1 (*Holdings Calculation*) of the Index Calculation section below.

Trading Facility, means each regulated futures exchange, facility or platform on or through which the Contracts underlying an Index are traded.

The **Underlying Contracts**, in respect of an Index Business Day are all Contracts which are, directly or indirectly, an underlying of the Index or, if that Index Business Day is a Holdings Calculation Date, scheduled to be an underlying of the Index according to the methodology of that Index or that of its Components.

Weights, are the weights periodically established by the Weighting Methodology for each Component.

Weighting Methodology, on each Holdings Calculation Date, the Weights of the Index, which are used to determine the Holdings of the Index in respect of each Holdings Calculation Date, shall be set according to the Table 1 from the Components definition.

INDEX CALCULATION

On a daily basis the Index replicates the returns obtained by holding a basket of Components, the Weights of which are determined according to Weighting Methodology and rebalanced periodically according to Section 1 (*Holdings Calculation*) of this Index Calculation section. The following sections detail how the Index Calculation Agent will calculate the daily Index Levels of the Index.

SECTION 1: HOLDINGS CALCULATION

On any Index Business Day, *t*, each Component *i* has a Holding, $H_{i,t}$, associated with it. This Holding represents the proportion in which the Index Level will change when the level of that Component changes. In this section, we outline the Holdings, $\{H_{1,t}, \ldots, H_{n,t}\}$, calculations on any Index Business Day, *t*.

On the Holdings Calculation Date of the Index, the Holding of each Component i, is rebalanced in accordance with the Weighting Methodology.

TARGET HOLDINGS CALCULATION ON A HOLDINGS CALCULATION DATE

The calculation of the Target Holdings on a Holdings Calculation Date, *R*, requires as input the set of Weights in respect of that Holdings Calculation Date R and the Component Levels of the Components on the Index Business Day immediately preceding that Holdings Calculations Date, *R*.

On any Holdings Calculation Date, *R*, let the Weight of each Component *i* be denoted by $W_{i,R}$ so that $\{W_{1,R}, \ldots., W_{n,R}\}$ are the Weights of the *n* Components in the Index as determined by the Weighting Methodology of the Index in respect of the Holdings Calculation Date *R*. Analogously, let $\{C_{1,R-1}, \ldots., C_{n,R-1}\}$ be the set of Component Levels of the Components on the Index Business Day immediately preceding the Holdings Calculation Date, *R*. The index Target Holdings, $\{TH_{1,R}, \ldots., TH_{n,R}\}$, for each of the *n* Components in the Index are calculated according to the formula below:

$$TH_{i,R} = |I_{R-1}| \times \frac{W_{i,R}}{|C_{i,R-1}|} \; for\ every\ Component\ i = 1, \ldots, n$$

where $|I_{R-1}|$ is the absolute value of the Index Level on the on the Index Business Day immediately preceding the Holdings Calculation Date R.

For example if, on the Index Business Day preceding a Holdings Calculation Date, R, the Index level is 100, the Component Level is 80 and the Weight of that Component is 40%, then the Target Holding of that Component in respect of that Holdings Calculation Date will be equal to 100*(0.4)/80 = 0.5

DAILY HOLDINGS CALCULATION

On any Index Business Day, *t*, the set of Holdings $\{H_{1,t}, \ldots, H_{n,t}\}$ is calculated according to the following rule:

(i) If t is the Index Business Day immediately following the Holdings Calculation Date R, the Holdings $\{H_{1,t}, \ldots, H_{n,t}\}$ are set equal to the Target Holdings $\{TH_{1,R}, \ldots., TH_{n,R}\}$ calculated on that Holdings Calculations Date.

(ii) On any other Index Business Day, t, the Holding of each Component i on that day, $H_{i,t}$, is set to be equal to the Holding of that particular Component on the previous Index Business Day, $H_{i,t-1}$.

SECTION 2: DAILY INDEX CALCULATION

The Index represents the performance of a synthetic, unfunded exposure to the Underlying Contracts in an Index, that is, the Index tracks what an investor would receive if it purchased or sold the futures contracts ultimately underlying the Index without taking into consideration the cost of investment capital. On each Index Business Day, t, the Index level, I_t, is calculated (rounded to eight decimal places) based on the value of the Index on the preceding Index Business Day, I_{t-1}, and the change in level of each of the Components, according to the formula:

$$I_t = I_{t-1} + \sum_i H_{i,t}\left(C_{i,t} - C_{i,t-1}\right)$$

where:

I_t is the Index Level on the close of day t;
$H_{i,t}$ is the Holding of Component i on the Index Business Day t;
$C_{i,t}$ is the level of Component i on the Index Business Day t;
$t-1$ is the Index Business Day immediately preceding Index Business Day t

The Index Start Date as well as the Initial Index Level, which is the value of the Index on the Index Start Date, are specified in the Definitions section above.

For example, if the Index were comprised of two components (instead of eight, for simplicity) which had the following Component levels:

	Component 1	Component 2
Index Business Day t-1	32.48	31.49
Index Business Day t	32.83	31.21

and the following Holdings:

	Holding
Component 1	1.72
Component 2	1.48

then if the Index Level on Index Business Day t-1 was equal to 102.0564, the Index Level on Index Business Day t will be equal to:

$$I_t = 102.0564 + 1.72 \times (32.83 - 32.48) + 1.48 \times (31.21 - 31.49) = 102.244$$

The Index Level on Business Day t would be 102.244.

SECTION 3: MARKET DISRUPTION EVENTS

The Index is ultimately comprised of a set of futures on physical commodities (the *Underlying Contracts*). On any given Index Business Day, disruptions can occur that prevent these Underlying Contracts from being traded. When this happens, it is necessary for the calculations of the Index to be adjusted so that it remains replicable by market participants i.e. adjustments must be made to the Index calculations to ensure that the Index Levels reflect futures prices that were attainable in the market at the times they would need to be traded in order to replicate the performance of the Index.

On a Holdings Calculation Date, this is generally achieved by delaying any changes to the composition of each Component (or component of a Component) that is directly dependent on the disrupted Underlying Contracts. On any other Index Business Day, given that the replication of the Index does not require trading of Underlying Contracts on such days, in the event that a price is not available for a particular Underlying Contract, that price will be appropriately substituted by the Index Calculation Agent in order for the calculations in respect of a particular Index Business Day to take place.

With respect to the calculation of the Index, a “Market Disruption Event” means the occurrence, in respect of one or more Underlying Contracts, of one or more of the following events, as determined by the Index Calculation Agent:

(i) a failure by the relevant Trading Facility to report or announce a settlement price for an Underlying Contract;

(ii) all trading in an Underlying Contract of the Index is suspended and does not recommence at least ten minutes prior to the actual closing time of the regular trading session;

(iii) the settlement price published by the relevant Trading Facility for one (or more) Underlying Contracts is a “limit price”, which typically means that the Trading Facility published settlement price for such Contract for a trading day has increased or decreased from the previous trading day's settlement price by the maximum amount permitted under applicable rules of the Trading Facility;

(iv) any other event, if the Index Sponsor reasonably determines that the event materially interferes with the ability of market participants to hedge the Index;

The Index Calculation Agent will determine the Index Level under Market Disruption Events in accordance with the following section.

INDEX CALCULATION UNDER MARKET DISRUPTION EVENTS

When a Market Disruption Event occurs or is continuing on a particular Index Business Day, the Index Calculation Agent will determine the basket of futures contracts that is equivalent to the basket of Components that the Index represents, in respect of that Index Business Day. Once this basket is determined, the Index Calculation Agent will make such adjustments as are necessary to ensure the Index Levels reflect contract prices that were attainable in the market at the times they would need to be traded in order to replicate the performance of the index, as described below.

If, on a Holdings Calculation Date *R,* a Market Disruption Event with respect to one or more Underlying Contracts occurs (such day, a "Disrupted Holdings Calculation Date" and each such Contract a "Disrupted Contract"), then the Index Calculation for subsequent Index Business Days, until the second consecutive non-disrupted Index Business Day, will be modified as follows:

(i) As long as a Market Disruption Event that occurred or was continuing on the Holdings Calculation Date R is continuing, the Index Level will be calculated according to the following formula:

$$I_t = I_{t-1} + \sum_j H'_{j,t}\left(f_{j,t} - f_{j,t-1}\right)$$

where

$H'_{j,t}$ is the Equivalent Holding for Underlying Contract *j* as calculated according to sub-paragraphs (ii)-(v) below

$f_{j,t}$ is the settlement price of Underlying Contract *j* as of the Index Business Day t

(ii) The Index Calculation Agent shall determine the Equivalent Holdings and the Equivalent Target Holdings with respect to the Index.

The Equivalent Holdings is the set of holdings $\{H'_{1,R}, \ldots, H'_{m,R}\}$ of Underlying Contracts $\{F_1 \ldots F_m\}$ which perfectly describes the returns of the Index in the time period from the immediately preceding Holdings Calculation Date to the Holdings Calculation Date R.

The Equivalent Target Holdings is a set of target holdings $\{TH'_{1,t}, \ldots, TH'_{m,t}\}$ for the Underlying Contracts, which perfectly describes the returns of the Index on the days following the Disrupted Holdings Calculation Date and until the first subsequent Holdings Calculation Date.

The Equivalent Holdings and the Equivalent Target Holdings shall be determined for all Underlying Contracts, therefore some $H'_{j,t}$ and/or $TH'_{j,t}$ may have a value of 0.

(iii) On the Index Business Day immediately following a Disrupted Holdings Calculation Date and until all Market Disruption Events that occurred on the Disrupted Holdings Calculation Date have ceased, the Equivalent Holdings $\{H'_{1,t}, \ldots, H'_{m,t}\}$ are calculated based on the following formula:

$$H'_{j,t} = TH'_{j,R} + SCH_{j,t}$$

where:

$TH'_{j,R}$ means the Equivalent Target Holding of Contract *j* on Holdings Calculation Date R

$SCH_{j,t}$ means $\begin{cases} H'_{j,t-1} - TH'_{j,R} & if\ j\ is\ a\ Disrupted\ Contract;\ or \\ & 0\ otherwise \end{cases}$

$H'_{j,t-1}$ means the Equivalent Holding of Contract j on Index Business Day t-1

(iv) For each Disrupted Contract *j*, the Equivalent Holding $H'_{j,t}$ shall be equal to the Equivalent Target Holding $TH'_{j,t}$ on the first Index Business Day following a Disrupted Holdings Calculation Date on which no Market Disruption Event in respect of that Contract j occurs or is continuing. If a Market Disruption Event continues for more than 5 Index Business Days following a Disrupted Holdings Calculation Date, the Index Calculation Agent shall, in good faith, determine the levels of each Disrupted Component *j* that will be used in the calculation of Holdings and Index Levels.

(v) For each Underlying Contract that is not a Disrupted Contract, the Holding $H_{j,t}$ on the Index Business Day immediately following the Disrupted Holdings Calculation Date shall be the Equivalent Target Holding.

(vi) On the second consecutive non-disrupted Index Business Day immediately following a Disrupted Holdings Calculation Date, the Index Calculation Agent will resume calculation of the Index in accordance with section 2.

Further explanation of Holdings and Equivalent Holdings:

In respect of any given Index Business Day, the Index is represented as a basket of its Components with a Holding in respect of each Component determined on the immediately preceding Holdings Calculation Date according to the Holdings Calculation section above. For the purposes of determination of whether disruption to futures trading affects the Index, however, the Holdings of the Index must instead be expressed in terms of the futures contracts that ultimately underlie the Index. As the Index is a linear basket of its Components, and because the same holds true of all components of those Components, (whether they themselves are futures or indices), it is possible to work through the Holdings of the Index, and, by ultimately breaking down each index to the futures contracts that comprise it, determine a new set of Holdings that, in respect of that Index Business Day, exactly represents the composition of the Index in terms of its Underlying Contracts.

CONTACTS

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