

# Macquarie Dynamic Carry Ex Agriculture & Livestock Index

**Index Manual  
December 2021**

## IMPORTANT INFORMATION

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### BASIS OF PROVISION

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This document (the **Index Manual**) sets out the rules for the Macquarie Dynamic Carry Ex Agriculture & Livestock Index (the **Index**) and reflects the methodology for determining the composition and calculation of the Index (the **Methodology**). The Methodology and the Index derived from this Methodology are the exclusive property of Macquarie Bank Limited (the **Index Administrator**). The Index Administrator owns the copyright and all other rights to the Index. They have been provided to you solely for your internal use and you may not, without the prior written consent of the Index Administrator, distribute, reproduce, in whole or in part, summarize, quote from or otherwise publicly refer to the contents of the Methodology or use it as the basis of any financial instrument.

### SUITABILITY OF INDEX

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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 make 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 Index Manual, you should obtain independent professional advice.

**This Index Manual assumes the reader is a sophisticated financial market participant, with the knowledge and expertise to understand the financial mathematics and derived pricing formulae, as well as the trading concepts, described herein. Any financial instrument based on the Index is unsuitable for a retail or unsophisticated investor.**

### RISK FACTORS

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See the risk factors relating to Macquarie indices in the document headed “Macquarie Proprietary Indices – Risk Factors” at <https://www.macquarie.com/uk/en/about/company/commodities-and-global-markets/commodities/commodity-index-documentation.html> (the **Risk Factors**). Investors should note in particular the following sections of the Risk Factors: Part 1 (*General Risk Factors*), Part 2 (*Asset Class Specific Risk Factors*) and paragraph 4 (*Commodity Curve Carry*) of Part 4 (*Risks related to particular commodity strategies*).

A copy of the Risk Factors may be obtained free of charge upon request to the Index Administrator.

### HISTORICAL DATA

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The Index has been calculated from the Index Live Date but historical Index levels (prior to the Index Live Date) have been produced by a back-test process from the Index Start Date. For more information, see Section 9.3 (*Historical Values of the Index*).

## CONFLICTS AND USE OF DISCRETION

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For operational reasons the Index may, in limited circumstances, permit the exercise of discretion by the Index Calculation Agent (acting in good faith and in a commercially reasonable manner). For further information see Section 7.4 (*Discretion*).

For information on potential conflicts, see Section 8.3 (*Conflicts*).

## CESSATION OR MODIFICATION OF THE INDEX

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If you have been granted written consent by the Index Administrator to reference the Index in any contract or financial instrument, you should include in such contract or financial instrument robust fallback provisions to deal with cessation or material modification of the Index.

For information on corrections, changes and cessation of the Index, see Section 7 (*Corrections, Changes, Cessation and Discretion*).

## DISCLAIMER OF LIABILITY

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The Methodology is published for information purposes only and does not create any legally binding obligation on the part of the Index Administrator, the Index Calculation Agent and/or their affiliates. This Index Manual is intended to provide a summary of the Index it purports to describe. The Index Administrator expressly disclaims (to the fullest extent permitted by applicable law) all warranties (express, statutory or implied) regarding this Index Manual and the Methodology or the Index, including but not limited to, all warranties of merchantability, fitness for a particular purpose (including investment by regulated funds) and all warranties arising from course of performance, course of dealing or usage of trade and their equivalents under applicable laws of any jurisdiction. In particular, the Index Administrator and the Index Calculation Agent do not warrant or guarantee the completeness or accuracy of the Index or timeliness of calculations of any Index Level and do not warrant or guarantee the availability of any Index Level on any particular date or at any particular time. The Index Administrator and the Index Calculation Agent shall have no liability to any person for delays, omissions or interruptions in the delivery of any Index, including as a result of the failure of prices to be published in respect of any Component or, as applicable, any other reference value for any reason. Although the Index Calculation Agent will obtain information concerning Components and or reference values from publicly available sources it believes to be reliable, it will not independently verify this information. Accordingly, no representation, warranty or undertaking (express or implied) is made by the Index Administrator or the Index Calculation Agent as to the accuracy and completeness of information concerning any Index.

In particular, the Index Administrator and the Index Calculation Agent shall not be liable (whether in contract, tort or otherwise) for any losses (including direct, indirect, special, punitive or other damages (including loss of profits)) resulting from (i) any determination that a Market Disruption Event, an Adjustment Event or an Error has occurred or has not occurred, (ii) the timing relating to the determination that a Market Disruption Event, an Adjustment Event or an Error has occurred, or (iii) any actions taken or not taken by the Index Calculation Agent or the Index Administrator as a result of a determination that a Market Disruption Event, an Adjustment Event or an Error has occurred.

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## SECTION 1: OVERVIEW

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### 1.1 INTRODUCTION AND INDEX OBJECTIVE

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The Macquarie Dynamic Carry Ex Agriculture & Livestock Index is designed as a rules-based index for exposure to the “commodity carry” investment strategy. The carry strategy aims to take advantage of storage-related risk premium, the existence of which can be explained by the fact that short-term storage is typically more expensive than long-term storage. The premium can be captured by taking long exposure to long-dated (deferred) commodity futures contracts and simultaneous short exposure to short-dated (front month) commodity futures contracts (a “Spread”). If the shape of the futures curve remains unchanged, the strategy aims to generate a positive return through the difference in roll yields between the contracts on which long and short exposures are taken.

The Index aims to outperform traditional static carry strategies (that take exposure to a static set of commodity spreads) by selecting, on a monthly basis, the Spreads that have exhibited positive historic momentum and negative skewness in their returns. Momentum is measured by assessing the average daily return of a given spread over a period of 120 days and can potentially serve as a good indicator for predicting subsequent performance. Skewness is used to measure the degree of asymmetry of a return distribution around its mean and is applied to the daily returns of a given spread over a period of 120 days to validate the bullish/bearish view inferred by the momentum signal.

Each of the spreads that are selected in a given month are assigned a set of initial weights that are calculated in proportion to their recent risk-adjusted returns and then subject to an iterative capping procedure to ensure that no Commodity or Group has a disproportionate effect on the Index. For each Commodity and Spread selected, the Index obtains a long (positive) exposure to a deferred futures contract in respect of that commodity and a short (negative) exposure to a front month futures contract.

The Index is designed to be replicable and is calculated daily in the Index Return format(s) specified in Section 5.1 (*Index Parameters Values*).

To facilitate an understanding of the calculations, the Methodology contains certain worked examples which demonstrate the types of calculations needed to calculate the level of an Index on a particular date – See Section 2 (*Index Methodology*).

### 1.2 INDEX CALCULATION

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The Index is calculated and maintained by the Index Calculation Agent and supervised by the Index Administrator and the Index Oversight Committee, as described in Section 8 (*Oversight, Roles, Conflicts and Reviews*). All determinations with regard to the Index are made following the rules set out in this Index Manual, without discretion by the Index Administrator or the Index Calculation Agent, other than in the limited circumstances set out in this Index Manual – see Section 7 (*Corrections, Changes, Cessation and Discretion*) for further information.

The Index Level as of the Index Start Date is equal to the Index Start Level specified in Section 5.1 (*Index Parameters Values*). Thereafter, each Index Level is calculated as set out in Section 2 (*Index Methodology*) – See Section 1.4 (*Methodology*) for further explanation.

The Index is not based upon submissions provided by third parties (or an affiliate of the Index Administrator or the Index Calculation Agent). The Index is based upon actual transaction data sourced from regulated markets and exchanges.

### 1.3 COSTS AND CHARGES

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There are no costs or charges embedded in the Index. Please refer to the Component Methodology for each Component for information on any costs or charges embedded in such Component.

## SECTION 2: INDEX METHODOLOGY

On a daily basis the Index seeks to replicate synthetically the returns obtained by notionally holding a basket of Components (each a Single Commodity Index), the Weights of which are determined according to Weighting Methodology described in Section 2.4 (*Weighting Methodology*) and rebalanced periodically according to Section 2.2 (*Holdings Calculation*). The following sections detail how the Index Calculation Agent will calculate the daily Index Levels of the Index:

- **Section 2.1** describes the Index Universe and the Components of the Index;
- **Section 2.2** describes the calculation of Holdings, which are intermediate calculations that enable the Index Calculation Agent to reflect the changes stemming from the Index rebalance in the returns of the Index;
- **Section 2.3** describes the day-to-day calculation of the Index Level; and
- **Section 2.4** describes the Weighting Methodology.

### 2.1 INDEX UNIVERSE

#### 2.1.1 The Universe of Selectable Commodities

The Index invests in a universe of Components providing exposure to up to 7 different Commodities across energy and metals chosen to have sufficient liquidity in the Underlying Contracts to sustain the trading activity resulting from the expected levels of investment in the Index.

Index exposure to deferred or front month commodity futures contracts is obtained via allocation to Macquarie Single Commodity Indices. Each such index tracks a sequence of futures contracts relating to a single commodity and a particular point on the futures curve (either deferred or front month).

The **Components** of the Index are the Macquarie Single Commodity Indices specified in the columns “Deferred Index” and “F0 Index” specified in the table below:

**TABLE 1**

COMMODITY	F3VSF0 SPREAD		F6VSF0 SPREAD		ANNROLLVSF0 SPREAD		GROUP	GROUP CAP	CAP
	DEFERRED INDEX	F0 INDEX	DEFERRED INDEX	F0 INDEX	DEFERRED INDEX	F0 INDEX			
WTI Crude Oil	MQSDCL3E	MQSDCLER	MQSDCL6E	MQSDCLER	MQSYCLRA	MQSDCLER	PETROLEUM	35%	35%
Gasoline	MQSDXB3E	MQSDXBER	MQSDXB6E	MQSDXBER	MQSYXBRA	MQSDXBER	PETROLEUM		35%
Natural Gas	MQSDNG3E	MQSDNGER	MQSDNG6E	MQSDNGER	MQSYNGRA	MQSDNGER	NONE		20%
Zinc	MQSDLX3E	MQSDLXER	MQSDLX6E	MQSDLXER			NONE		20%
Nickel	MQSDLN3E	MQSDLNER	MQSDLN6E	MQSDLNER			NONE		20%
Aluminum	MQSDLA3E	MQSDLAER	MQSDLA6E	MQSDLAER			NONE		20%
Copper	MQSDHG3E	MQSDHGER	MQSDHG6E	MQSDHGER			NONE		20%

The calculation and methodology of each Deferred Index and F0 Index in the Macquarie Single Commodity Indices Index Manual, which is available on request or at



<https://www.macquarie.com/assets/macq/about/company/commodities-and-global-markets/commodities/trading-and-hedging/macquarie-single-commodity-indices.pdf> (the **Component Methodology**). For ease of reference, only ticker references have been included in Table 1 above.

The universe of 7 commodities has been determined by the Index Administrator as a result of a one-off process prior to the creation of the Index and will not change for the life of the Index.

### 2.1.2 Selection of Components

In respect of each Commodity, the Index takes exposure to selected Components depending on whether or not the Commodity is an energy commodity. Each Commodity that is not an energy commodity (a **Non-Energy Commodity**) is represented by four Components, two Spreads and one Group (if applicable). Each Commodity that is an energy commodity (an **Energy Commodity**) is represented by six Components, three Spreads and one Group. Therefore, the Index has a universe of 17 potential Spreads (9 Spreads within Energy and 4 Spreads across all the Non-Energy Commodities).

Each month, the Index selects a subset of Spreads and Commodities from the universe of 7 Commodities and 17 potential Spreads. The selection is made with reference to the momentum and return skewness of each of the Spreads in respect of each Commodity. Spreads that have exhibited positive momentum and negative return skewness are considered as eligible Spreads on which the Index takes exposure. Spreads that exhibit negative momentum or positive return skewness are excluded from the Index.

For example:

**Commodity:** WTI Crude Oil

**Group:** Petroleum

**Components:**

**F3vsF0 Spread:** MQSDCL3E which can be assigned a positive/long weight and MQSDCLER which can be assigned a negative/short weight, together referred to as WTI Crude Oil F3vsF0 Spread.

**F6vsF0 Spread:** MQSDCL6E which can be assigned a positive/long weight and MQSDCLER which can be assigned a negative/short weight, together referred to as WTI Crude Oil F6vsF0 Spread.

**AnnRollvsF0 Spread:** MQSYCLRA which can be assigned a positive/long weight and MQSDCLER which can be assigned a negative/short weight, together referred to as WTI Crude Oil AnnRollvsF0 Spread.

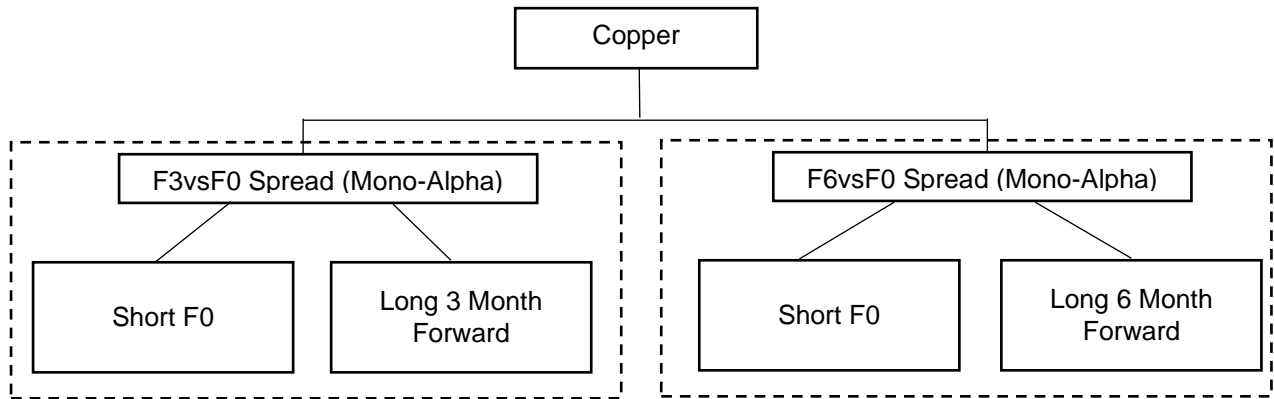
Once the provisional list of Commodities and the associated Spreads has been determined, an Initial Weight is allocated to each Spread in proportion to the Risk Adjusted Return of each such Spread.

### Eligible Spreads for Selection

Commodity	F3vsF0 Spread (Long 3 Month Forward / Short F0)	F6vsF0 Spread (Long 6 Month Forward / Short F0)	AnnRollvsF0 Spread (Long Annual Roll / Short F0)	Sector
WTI Crude Oil	Yes	Yes	Yes	Energy
Gasoline	Yes	Yes	Yes	Energy
Natural Gas	Yes	Yes	Yes	Energy
Zinc	Yes	Yes	No	Metals

Nickel	Yes	Yes	No	Metals
Aluminum	Yes	Yes	No	Metals
Copper	Yes	Yes	No	Metals

Below is an example of Commodity Copper and its associated Spreads and Components.



### 2.1.3 The Diversification Requirements

After the Initial Weights have been assigned, they are adjusted such that the weights satisfy the specific Commodity and Group caps defined in Table 1 in Section 2.1.1 (*The Universe of Selectable Commodities*) above.

The process of selection and the application of the diversification requirements are described in Section 2.4 (*Weighting Methodology*).

## 2.2 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,  $\{H_{1,t}, \dots, H_{n,t}\}$ , calculations on any Index Business Day,  $t$ .

On each Index Rebalance Day, the Holding of each Component  $i$ , is rebalanced in accordance with the Target Holdings and the Weighting Methodology.

### 2.2.1 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 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  $\{W_{1,R}, \dots, W_{n,R}\}$  are the Weights of the  $n$  Components in the Index as determined by the Weighting Methodology of the Index in respect of Holdings Calculation Date  $R$ . Analogously, let  $\{C_{1,R-1}, \dots, C_{n,R-1}\}$  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,  $\{TH_{1,R}, \dots, TH_{n,R}\}$ , for each of the  $n$  Components in the Index are calculated according to the formula below:

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

Where  $I_{R-1}$  is the Index Level on the Index Business Day immediately preceding 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  $100 \times (0.4) / 80 = 0.5$

## 2.2.2 Daily Holdings Calculation

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

- (a) If such Index Business Day,  $t$  is the Index Business Day immediately following the Holdings Calculation Date  $R$ , the Holdings  $\{H_{1,t}, \dots, H_{n,t}\}$  for each of the  $n$  Components in the Index are calculated according to the formula below:

$$H_{i,t} = H_{i,R} + \frac{TH_{i,R} - H_{i,R}}{3} \text{ for every Component } i = 1, \dots, n$$

- (b) If such Index Business Day,  $t$  is the second Index Business Day immediately following the Holdings Calculation Date  $R$ , the Holdings  $\{H_{1,t}, \dots, H_{n,t}\}$  for each of the  $n$  Components in the Index are calculated according to the formula below:

$$H_{i,t} = H_{i,R} + 2 \times \frac{TH_{i,R} - H_{i,R}}{3} \text{ for every Component } i = 1, \dots, n$$

- (c) If such Index Business Day,  $t$  is the third Index Business Day immediately following the Holdings Calculation Date  $R$ , the Holdings  $\{H_{1,t}, \dots, H_{n,t}\}$  for each of the  $n$  Components in the Index are calculated according to the formula below:

$$H_{i,t} = TH_{i,R} \text{ for every Component } i = 1, \dots, n$$

- (d) 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,  $H_{i,t-1}$ .

## 2.3 INDEX LEVEL CALCULATION

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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 level of the Index (the **Index level,  $I_t$** ), is calculated (rounded to eight decimal places) based on the Index Level on the preceding Index Business Day,  $I_{t-1}$ , and the change in the Component Levels, according to the following formula:

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

Where:

- $I_t$  is the Index Level on the close of Index Business 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

For example, if, on an Index Business Day t, the Index were comprised of two Components (for simplicity) which had the following Component Levels:

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

and the following Holdings:

	Holding
Component 1	1.72
Component 2	1.48

and if the Index Level on Index Business Day t-1,  $I_{t-1}$ , was equal to 102.0564, the Index Level on Index Business Day t,  $I_t$ , would 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 Index Business Day t would be 102.244.

## 2.4 WEIGHTING METHODOLOGY

The Weights of the Components (each Deferred and F0 Macquarie Single Commodity Index) are derived from the Final Weights of the Mono-Alpha Indices as described in Section 2.4.1 (*Component Weights*) below.

The Final Weights of the Mono-Alpha Indices are determined in 3 steps and are described in Section 4.2 (*Mono-Alpha Index Weights*) below.

### 2.4.1 Component Weights

Once the Final Weights of each Mono-Alpha Index in respect of each Commodity and Spread have been determined, the Weight (rounded to 12 decimal places) applied to each Deferred Index and F0 Index (i.e. each Component) comprising each Mono-Alpha Index in respect of commodity  $C$  and Spread  $S$  on Holdings Calculation date  $R$  and for the purpose of the Holdings Calculation is:

$$W_i = \begin{cases} FW_{C,S,R}, & \text{if Component } i \text{ is a Deferred Index with underlying Commodity } C \text{ and Spread } S \\ -1 \times VAF_{C,S,R} \times FW_{C,S,R}, & \text{if Component } i \text{ is a F0 Index with underlying Commodity } C \text{ and Spread } S \end{cases}$$

Where  $VAF_{C,S,R}$  is the Volatility Adjustment Factor in respect of each Commodity and Spread and calculated as the ratio of the standard deviation of returns of the Deferred Index to the standard deviation of returns of the F0 Index over a period of 63 days ending on the day immediately preceding the Holdings Calculation Date. The formula for standard deviation is given below in section 4.2.1.

The Volatility Adjustment Factor is applied to adjust the exposure of the short leg of each Mono-Alpha Index such that the historic volatility of the long leg is equal to the historic volatility of the short leg.

That is, for each Mono-Alpha Index Final Weight, the Index takes a long position in its respective Deferred Index and a short position in its respective F0 Index.

## 2.4.2 Mono-Alpha Index Weights

A number of intermediate calculations used in the subsequent Mono-Alpha Index weights calculation is described in Section 4.2.1 (*Intermediate Calculations*).

Section 4.2.3 (*Mono-Alpha Index Weights Steps*) provides an overview of the subsequent Mono-Alpha Index weight calculation steps. The Final Weights of the Mono-Alpha Indices are determined pursuant to the 3 steps described therein.

### (a) Intermediate Calculations

In order to determine the Final Weights of the Mono-Alpha Indices, the average daily return (mean return), standard deviation and risk adjusted return (ratio of the mean return to the standard deviation) of each Mono-Alpha Index in respect of each Commodity and Spread is calculated.

Each non-Energy Commodity will have two Mono-Alpha Indices associated with it with differing Spreads, either a F3vsF0 Mono-Alpha Index or a F6vsF0 Mono-Alpha Index. Each Energy Commodity will have three (including the AnnRollvsF0 Mono-Alpha Index) Indices associated with it. For example, WTI Crude Oil will have:

- 1) a F3vsF0 Mono-Alpha Index constructed by taking +100% exposure to the 3 Month Forward Index and  $-100\% \times VAF_{CL,F3,R}$  exposure to the corresponding F0 Index,
- 2) a F6vsF0 Mono-Alpha Index constructed by taking +100% exposure to the 6 Month Forward Index and  $-100\% \times VAF_{CL,F6,R}$  exposure to the corresponding F0 Index, and
- 3) a AnnRollvsF0 Mono-Alpha Index constructed by taking +100% exposure to the Annual Roll Index and  $-100\% \times VAF_{CL,AR,R}$  exposure to the corresponding F0 Index.

Each Mono-Alpha Index is rebalanced on each Holdings Calculation Date using the most recent Volatility Adjustment Factor. That is, the Volatility Adjustment Factor calculated on the current Holdings Calculation Date is applied, for the purpose of the Mono-Alpha rebalance, as though it was the Volatility Adjustment Factor calculated throughout the entire history of the Mono-Alpha Index.

Therefore, in respect of each Commodity,  $C$ , each Spread,  $S$ , on a given Holdings Calculation Date  $R$  the Index calculates:

- (i) **Volatility Adjustment Factor**, as the bounded ratio of the standard deviation of prior 63 daily returns of the Deferred index over the standard deviation of prior 63 daily returns of the F0 Index

$$MUR_{C,X,R} = \frac{1}{63} \times \sum_{i=1}^{63} (DUR_{C,X,R-i})$$

$$DUR_{C,X,R-i} = \frac{U_{C,X,R-i}}{U_{C,X,R-i-1}} - 1$$

$$SDU_{C,X,R} = \sqrt{\frac{1}{62} \sum_{i=1}^{62} (DUR_{C,X,R-i} - MUR_{C,X,R})^2}$$

$$VAF_{C,S,R} = \min(1.25, \max(0.75, \frac{SDU_{C,DEF,R}}{SDU_{C,F0,R}}))$$

Where:

**$MUR_{C,X,R}$**  is the Mean Return of the Deferred Index or F0 Index (as applicable) in respect of Commodity  $C$  and Component of Spread  $X$  (i.e. F0, F3, F6 or Annual Roll) on Holdings Calculation Date  $R$ .

**$DUR_{C,X,R-i}$**  is the Daily Return of the Deferred Index or F0 Index (as applicable) in respect of Commodity  $C$  and Component of Spread  $X$  on Holdings Calculation Date  $R - i$ .

**$U_{C,X,R-i}$**  is the Deferred Index or F0 Index (as applicable) Level in respect of Commodity  $C$  and Component of Spread  $X$  on Holdings Calculation Date  $R - i$ .

**$SDU_{C,X,R}$**  is the Standard Deviation of the Daily Returns of the Deferred Index or F0 Index (as applicable) in respect of commodity  $C$  and Component of Spread  $X$  on Holdings Calculation Date  $R$ .

**$VAF_{C,S,R}$**  is the Volatility Adjustment Factor for the Mono-Alpha respect of Commodity  $C$  and Spread  $S$  on Holdings Calculation Date  $R$ , where  $DEF$  is the Deferred Component of Spread  $S$ , and  $F0$  is the F0 component of Spread  $S$ . Spread  $S$  can either be F3vsF0, F6vsF0 or AnnRollvsF0.

- (ii) **Mean Return**, as the average of the prior 120 daily returns, ending on the Index Business Day immediately preceding  $R$ .

$$MR_{C,S,R} = \frac{1}{120} \times \sum_{i=1}^{120} (DR_{C,S,R-i})$$

$$DR_{C,S,R-i} = \frac{MA_{C,S,R-i}}{MA_{C,S,R-i-1}} - 1$$

Where:

**$MR_{C,S,R}$**  is the Mean Return of the Mono-Alpha Index in respect of Commodity  $C$  and Spread  $S$  on Holdings Calculation Date  $R$ .

**$DR_{C,S,R-i}$**  is the Daily Return of the Mono-Alpha Index in respect of Commodity  $C$  and Spread  $S$  on Holdings Calculation Date  $R - i$ .

$MA_{C,S,R-i}$  is the Mono-Alpha Index level in respect of Commodity  $C$  and Spread  $S$  on Holdings Calculation Date  $R - i$ .

**Spread  $S$**  can either be F3vsF0, F6vsF0 or AnnRollvsF0.

- (iii) **Standard Deviation**, as the standard deviation of the prior 120 daily returns, ending on the Index Business Day immediately preceding  $R$ .

$$SD_{C,S,R} = \sqrt{\frac{1}{119} \sum_{i=1}^{120} (DR_{C,S,R-i} - MR_{C,S,R})^2} \quad MR_{C,S,R} = \frac{1}{120} \sum_{i=1}^{120} DR_{C,S,R-i}$$

Where:

$SD_{C,S,R}$  is the Standard Deviation of the Daily Returns of the Mono-Alpha Index in respect of commodity  $C$  and Spread  $S$  on Holdings Calculation Date  $R$ .

$MR_{C,S,R}$  is the mean return of the Daily Returns of the Mono-Alpha Index in respect of commodity  $C$  and Spread  $S$  on Holdings Calculation Date  $R$ :

$$MR_{C,S,R} = \frac{1}{120} \sum_{i=1}^{120} DR_{C,S,R-i}$$

- (iv) **Risk Adjusted Return**, as ratio of the **Mean Return** divided by the **Standard Deviation**

$$RAR_{C,S,R} = \frac{MR_{C,S,R}}{SD_{C,S,R}}$$

- (v) **Skewness**, as the measure of asymmetry of the Mono-Alpha Index return distribution over a period of 120 days, ending on the Index Business Day immediately preceding  $R$ .

$$SK_{C,S,R} = \frac{120}{119 * 118} \sum_{i=1}^{120} \left( \frac{DR_{C,S,R-i} - MR_{C,S,R}}{SD_{C,S,R}} \right)^3$$

Negative skewness indicates that the tail on the left side of the return distribution is longer or fatter than the right side.

Conversely, positive skewness indicates that the tail on the right side of the return distribution is longer or fatter than the left side.

On each Holdings Calculation Date  $R$ , and in respect of each Commodity and Mono-Alpha Index, if the Deferred Contract is **different** to the F0 Contract (i.e. resulting in non-zero spread exposure in the Mono-Alpha Index which is taking long exposure to the Deferred Contract and short exposure to the F0 Contract between the current and following Holding Calculation Dates) then such Mono-Alpha Index will be referred to as being part of the **Active Mono-Alpha set**.

On each Holdings Calculation Date  $R$ , and in respect of each Mono-Alpha Index, if the Mean Return is **strictly positive** and the Skewness is **strictly negative**, then such Mono-Alpha Index will be considered as being part of the **Potential Mono-Alpha set**. A sub-set of the Potential Mono-Alpha set will be utilised for preliminary weight allocations, as further detailed below.

#### 4.2.3 MONO-ALPHA INDEX WEIGHTS - STEPS

After the signals are calculated and the Active Mono-Alpha and Potential Mono-Alpha sets are determined, the following steps are taken (detailed further below) to determine the Final Weights of the Mono-Alpha Indices that are then used to calculate the Component Weights, as described in the Component Weights Sub-Section:

**Step 1 (Zero Weights):** A Final Weight of zero will be allocated to all Mono-Alpha Indices that are not part of both the Active Mono-Alpha set and Potential Mono-Alpha set.

**Step 2 (Determination of Non-Zero Weights):** A non-zero Initial Weight, the determination of which is described below, will be allocated to all Mono-Alpha Indices that are the intersection of the Active Mono-Alpha set and the Potential Mono-Alpha set, i.e. Mono-Alpha indices that display a **strictly positive** Mean Return and **strictly negative** Skewness and have a non-zero spread exposure between the current Holdings Calculation Date and the following Holdings Calculation Date in respect of the long/short exposures established by the Deferred and FO Indices that comprise such Mono-Alpha Index. The Initial Weights in this step will sum up to 100%.

If the intersection of the Active Mono-Alpha set and the Potential Mono-Alpha set is empty, then Steps 2 and 3 are skipped and the Final Weights in respect of each Commodity are equal to zero until the next Holdings Calculation Date  $R$ .

**Step 3 (Iterative Capping Procedure):** The Initial Weights are then subject to an **Iterative Capping Procedure** in order to determine the Final Weights of the Mono-Alpha Indices.

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#### STEP 1: ZERO WEIGHTS

For each Mono-Alpha Index that is not part of either the Active Mono-Alpha set or the Potential Mono-Alpha set, a Weight of zero is applied:

$$IW_{C,S,R} = 0$$

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#### STEP 2: DETERMINATION OF NON-ZERO WEIGHTS

Each Mono-Alpha Index that is part of the intersection of the Active Mono-Alpha set and the Potential Mono-Alpha set is weighted according to its Risk Adjusted Returns.

$$IW_{C,S,R} = \frac{RAR_{C,S,R}}{\sum_1^n RAR_{C,S,R}}$$

Where:

$IW_{C,S,R}$  is the Initial Weight allocated to the Mono-Alpha Index in respect of Commodity  $C$  and Spread  $S$  on Holdings Calculation Date  $R$ .

$\sum_1^n RAR_{C,S,R}$  is the sum of the Risk Adjusted Returns with respect to each Mono-Alpha Index that is part of the intersection of the “Active Mono-Alpha” set and the “Potential Mono-Alpha” set.

$n$  is the total number of Mono-Alpha Indices that are part of the intersection of the “Active Mono-Alpha” set and the “Potential Mono-Alpha” set.

The Initial Weights are then subject to the Iterative Capping Procedure described below to obtain the set of Final Weights in respect of each Mono-Alpha Index.

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#### STEP 3: ITERATIVE CAPPING PROCEDURE



The following weight caps are imposed (with reference to the Table 1 in Section 2.1.1 (*The Universe of Selectable Commodities*)):

- i. The sum of the weights of the Mono-Alpha Indices in respect of each Commodity belonging to a Group is capped. There is one group; Petroleum Group which is capped at 35%.
- ii. The sum of the weights of the Mono-Alpha Indices in respect of a particular Commodity is capped.

**Step A:** The Temporary Weight applied to the Mono-Alpha Index in respect of Commodity  $C$ , Spread  $S$  on Holdings Calculation date  $R$  is assigned the Initial Weight and the Excess weight is equal to zero.

$$TW_{C,S,R} = IW_{C,S,R}$$

$$Excess = 0$$

**Step B:** For each Mono-Alpha Index belonging to the **Petroleum** Group:

If the sum of the weights of all Mono-Alpha Indices in respect of each Commodity belonging to the Petroleum Group is greater than 35% then:

$$FW_{C,S,R} = \frac{TW_{C,S,R}}{\sum_1^P TW_{C,S,R}} \times 35\%$$

$$Excess = Excess_{-1} + \sum_1^P TW_{C,S,R} - 35\%$$

Where  $\sum_1^P TW_{C,S,R}$  is the sum of the Temporary Weights of all Mono-Alpha Indices in respect of each Commodity belonging to the Petroleum Group and  $P$  is the number of Commodities of each Spread belonging to the Petroleum Group.  $Excess_{-1}$  is the Excess determined in the immediately preceding step.

In such a case where the Final Weight has been assigned as above all such Mono-Alpha Indices whose respective Commodities are belonging to the Petroleum Group will be regarded as being capped.

**Step C:** For each Mono-Alpha Index in respect of each Commodity that has a cap of less than 20%:

If the sum of the weight of the two Mono-Alpha Indices with respect to such Commodity is greater than the corresponding Commodity Cap (with reference to the Table 1 in Section 2.1.1 (*The Universe of Selectable Commodities*)):

$$FW_{C,S,R} = \frac{TW_{C,S,R}}{\sum_1^2 TW_{C,S,R}} \times Cap_c$$

$$Excess = Excess_{-1} + \sum_1^2 TW_{C,S,R} - Cap_c$$

Where:

$Cap_c$  is the weight Cap in respect of Commodity  $c$  as specified in Table 1 (in Section 2.1.1 (*The Universe of Selectable Commodities*)).

$\sum_1^2 TW_{C,S,R}$  is the sum of the Temporary Weights of the two Mono-Alpha Indices in respect of Commodity  $c$  on Holdings Calculation Date  $R$ .

At the end of this step, if the sum on the weights of the Mono-Alpha Indices in respect of any Commodity is equal to the corresponding Commodity cap, then those Mono-Alpha Indices will be regarded as being capped for the purpose of the remaining calculations.

**Step D:** For each Commodity that has a cap of 20%, if the sum of the weights of each Mono-Alpha Index in respect of that Commodity is greater than 20%:

$$FW_{C,S,R} = \frac{TW_{C,S,R}}{\sum_1^N TW_{C,S,R}} \times 20\%$$

$$Excess = Excess_{-1} + \sum_1^N TW_{C,S,R} - 20\%$$

Where  $\sum_1^N TW_{C,S,R}$  is the sum of the Temporary Weights of the  $N$  Mono-Alpha Indices (one for each Spread) in respect of Commodity  $C$  on Holdings Calculation Date  $R$ .

At the end of this step, if the sum on the weights of the Mono-Alpha Indices in respect of any Commodity is equal to the corresponding Commodity cap, then those Mono-Alpha Indices will be regarded as being capped for the purpose of the remaining calculations.

**Step E:** Distribute the final Excess weight in proportion to all eligible uncapped Commodity Spreads.

The set of eligible uncapped Commodity Spreads are those whose Mono-Alpha Indices are in the intersection of the Potential and Active Mono-Alpha Sets.

$$TW_{C,S,R} = TW_{C,S,R} \times \left( 1 + \frac{Excess}{\sum_1^U TW_{C,S,R}} \right)$$

$$Excess = 0$$

Where  $\sum_1^U TW_{C,F,R}$  is the sum of the weights of all Mono-Alpha Indices in respect of the uncapped Commodities and  $U$  is the number of uncapped Commodities.

Steps B to E are repeated until the sum of weights of the Mono-Alpha Indices in respect of each Commodity or Group of Commodities satisfy the Caps specified in Table 1 in Section 2.1.1 (*The Universe of Selectable Commodities*), in which case:

$$FW_{C,S,R} = TW_{C,S,R} \text{ for any uncapped Commodity}$$

If at the end of the Iterative Capping Procedure, the sum of all the Final Weights in respect of each Commodity is not equal to 100% (i.e., if any non-zero Excess cannot be allocated across uncapped Commodities if all Commodities are capped), then the strategy will remain underinvested (the sum of all the Final Weights is less than 100%) until the next Holdings Calculation Date.

## SECTION 3: MARKET DISRUPTION

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### 3.1 UNDERLYING CONTRACTS

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The Index is calculated on a daily basis based on the settlement prices of the contracts that underlie the Index (the **Underlying Contracts**). The Underlying Contracts may directly or ultimately underlie the Index, depending on how the Index is constructed. If the Component of the Index is a futures or other contract, then the Underlying Contracts will refer to the Component of the Index. If the Component of the Index is an index, then the Underlying Contracts of the Index will refer to the contracts that underlie the Component index either directly (where the Component index is comprised of constituents that are contracts) or ultimately (where the Component is comprised of constituents that are indices, in which case the underlying contracts of those constituent indices will be the Underlying Contracts).

The determination of a Market Disruption Event (as defined below) is made in respect of the Underlying Contracts of the Index.

On an Index Rebalance Day, 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.

### 3.2 MARKET DISRUPTION EVENTS

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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 (including each Index Business Day where the Trading Facility is not open for business);
- (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 Administrator reasonably determines that the event materially interferes with the ability of market participants to hedge the Index; or
- (v) the occurrence of a Market Disruption Event (as defined in sub-paragraphs (i) to (iv) (inclusive), above) in respect of an Underlying Contract that shares the same Commodity.

For the avoidance of doubt, the occurrence of a Market Disruption Event in accordance with sub-paragraph (v) above shall be deemed to occur in respect of an Underlying Contract regardless of whether or not any other Market Disruption Event (in accordance with sub-paragraphs (i) to (iv) (inclusive), above) has occurred in respect of such Underlying Contract.

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

### 3.3 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 an Index Rebalance Day, a Market Disruption Event with respect to one or more Underlying Contracts occurs (such day, a “Disrupted Index Rebalance Day” 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:

- (a) As long as a Market Disruption Event that occurred or was continuing on the Index Rebalance Day  $R$  is continuing, the Index Level will be calculated according to the following formula:

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

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  $t$

- (b) 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  $\{H'_{1,R}, \dots, H'_{m,R}\}$  of Underlying Contracts  $\{F_1 \dots F_m\}$  which perfectly describes the returns of the Index in the time period from the immediately preceding Index Rebalance Day to the Disrupted Index Rebalance Day  $R$ .

The Equivalent Target Holdings is a set of target holdings  $\{TH'_{1,R}, \dots, TH'_{m,R}\}$  for the Underlying Contracts, which perfectly describes the returns of the Index on the days following the Disrupted Index Rebalance Day  $R$  and until the first subsequent Index Rebalance Day.

The Equivalent Holdings and the Equivalent Target Holdings shall be determined for all Underlying Contracts, therefore some  $H'_{j,R}$  and/or  $TH'_{j,R}$  may have a value of 0.

- (c) On the Index Business Day  $t$  immediately following a Disrupted Index Rebalance Day  $R$  and until all Market Disruption Events that occurred on the Disrupted Index Rebalance Day have ceased, the Equivalent Holdings  $\{H'_{1,t}, \dots, H'_{m,t}\}$  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 Index Rebalance Day  $R$

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

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

- (d) 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 Index Rebalance Day 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 Index Rebalance Day, 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.
- (e) For each Underlying Contract that is not a Disrupted Contract, the Holding  $H_{j,t}$  on the Index Business Day immediately following the Disrupted Index Rebalance Day shall be the Equivalent Target Holding.
- (f) On the second consecutive non-disrupted Index Business Day immediately following a Disrupted Index Rebalance Day, 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 Index Rebalance Day 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.

## SECTION 4: DEFINITIONS

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**Active Mono-Alpha Set**, on an Index Calculation Date, the group of Mono-Alpha indices with Spreads in which the Deferred Contract is different to the F0 Contract (i.e. resulting in a non-zero spread exposure by taking long exposure to the Deferred Contract and short exposure to the F0 contract).

**Adjustment Event** is defined in Section 6.1 (*Adjustment Events*).

**Affected Index Level** is defined in Section 7.1 (*Corrections and Error Handling*).

**AnnRollvsF0 Spread**, is the Mono-Alpha Index generated by taking long exposure to the annual roll (Deferred Index) and short exposure to the F0 Index in respect of a Commodity.

**Asset Class Specific Adjustment Event** is defined in Section 6.2 (*Asset Class Specific Definitions – Adjustment Events*).

**Calculation Error** is defined in Section 7.1 (*Corrections and Error Handling*).

**Cap**, in respect of each Commodity is the maximum aggregate weight that can be allocated to the Mono-Alpha Indices that comprise the long/short spread exposure, as specified in Table 1 in Section 2.1.1 (*The Universe of Selectable Commodities*).

**Change in Economic Assumptions** is defined in Section 6.1 (*Adjustment Events*).

**Commodity**, in respect of a Component, is the corresponding commodity set out in Table 1 in Section 2.1.1 (*The Universe of Selectable Commodities*).

**Components** are defined in Section 2.1 (*Index Universe*).

**Component Change Event** is defined in Section 6.1 (*Adjustment Events*).

**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.

**Component Licensing Event** is defined in Section 6.1 (*Adjustment Events*).

**Component Methodology**, in respect of a Component, means the methodology for calculating such Component, as defined in Section 2.1.1 (*The Universe of Selectable Commodities*).

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

**Dealer** is defined in Section 6.1 (*Adjustment Events*).

**Deferred Contract**, in respect of each Commodity and Spread, on Holding Calculation Date  $R$ , is the contract that the Deferred Index (either 3 Month Forward, 6 Month Forward or Annual Roll) will be fully invested by the end of the month in which the Holding Calculation Date  $R$  falls.

**Deferred Index**, in respect of each Commodity and Spread, is the Single Commodity Index described in Table 1 in Section 2.1.1 (*The Universe of Selectable Commodities*), under the relevant Commodity row and relevant “Deferred Index” column.

**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 3.3 (*Index Calculation under Market Disruption Events*).

**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 3.3 (*Index Calculation under Market Disruption Events*).

**Error** is defined in Section 7.1 (*Corrections and Error Handling*).

**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.

**F0 Contract**, in respect of each Commodity and Spread, on Holding Calculation Date  $R$ , is the contract that the F0 Index will be fully invested by the end of the month in which the Holding Calculation Date  $R$  falls.

**F0 Index**, in respect of each Commodity and Spread, is the Single Commodity Index described in Table 1 in Section 2.1.1 (*The Universe of Selectable Commodities*) under the relevant Commodity row and relevant "F0 Index" column.

**F3vsF0 Spread**, is the Mono-Alpha Index generated by taking long exposure to the 3 month forward (Deferred Index) and short exposure to the F0 Index in respect of a Commodity.

**F6vsF0 Spread**, is the Mono-Alpha Index generated by taking long exposure to the 6 month forward (Deferred Index) and short exposure to the F0 Index in respect of a Commodity.

**Final Weight**, is weight applied (after capping) to each Component represented in the Index from one rebalancing to the next.

**General Adjustment Event** is defined in Section 6.1 (*Adjustment Events*).

**Group**, in respect of each Commodity as specified in Table 1 in Section 2.1.1 (*The Universe of Selectable Commodities*). Groups are utilised in the capping procedure described in Section 4 (*Weighting Methodology*).

**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 2.2 (*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 and is defined in Section 5 (*Index Parameters*).

**Index**, is defined in the section headed "Important Information".

**Index Administrator**, is defined in the section headed “Important Information”.

**Index Business Day**, is defined in Section 5 (*Index Parameters*).

**Index Calculation Agent** is defined in Section 8.2.2 (*Index Calculation Agent*).

**Index Calendar**, is defined in Section 5 (*Index Parameters*).

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

**Index Live Date** is defined in Section 5 (*Index Parameters*) and is the date on which the Methodology of the Index was finalised.

**Index Manual** is defined in the section entitled “Important Information”.

**Index Oversight Committee** is defined in Section 8.1 (*Oversight, Roles, Conflicts and Reviews*).

**Index Publication Day** is defined in Section 5 (*Index Parameters*).

**Index Rebalance Days**, is defined in Section 5 (*Index Parameters*).

**Index Start Date**, is defined in Section 5 (*Index Parameters*).

**Index Start Level**, is defined in Section 5 (*Index Parameters*).

**Index Ticker**, is defined in Section 5 (*Index Parameters*).

**Initial Calculation Date** means the date on which the Index Calculation Agent first implemented the Index and published the Index Level. The Initial Calculation Date may fall on or after the Index Live Date.

**Initial Weight**, is the starting weight applied (before capping) to each Component represented in the Index from one rebalancing to the next.

**Input Error** is defined in Section 7.1 (*Corrections and Error Handling*).

**Macquarie Index Component** is defined in Section 6.2.1 (*Macquarie Index Components*).

**Market Disruption Event** is defined in Section 3.2 (*Market Disruption Events*).

**Methodology** is defined in the section entitled “Important Information”.

**Mono-Alpha Index**, in respect of each Commodity and Spread, the index series (rounded to 12 decimal places) generated by taking +100% exposure to the Deferred Index and -100% \* VAF exposure to the corresponding F0 Index. Each such Mono-Alpha Index is rebalanced, on each Holdings Calculation Date, (using prices as of the Holdings Calculation Date) and calculated in accordance with the methodology laid out in Section 1 (*Holdings Calculation*) (assuming the holdings are calculated on one day only) and Section 2 (*Daily Index Calculation*) of this document, as though such Mono-Alpha Index was the “Index”, where Market Disruptions are *not* taken into account. The dates on which the Mono-Alpha Index series is calculated is with reference to the Index Calendar.

**Potential Mono-Alpha Set**, the group of Mono-Alpha Indices that are determined to exhibit strictly positive momentum and strictly negative skewness.



**Publication Time** is defined in Section 9.2 (*Publication of Index Level*).

**Regulatory Event** is defined in Section 6.3 (*Regulatory Event*).

**Replicability Event** is defined in Section 6.1 (*Adjustment Events*).

**Risk Factors**, is defined in the section headed “Important Information”.

**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.

**Spread**, is either F3vsF0 (closer to the front of the curve), F6vsF0 (6 Month Forward spread) or AnnRollvsF0 (further down the curve) and describes the relative spread exposure by reference to the contracts along a commodity futures curve.

**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.

**Temporary Weight**, is the weight assigned to each Mono-Alpha Index during the iterative capping procedure before they are finalised.

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

**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.

**Volatility Adjustment Factor (VAF)**, in respect of each Mono-Alpha Index, is the scalar by which the exposure of the short leg (applied to the F0 Index) is multiplied such that the realised volatility of the long exposure (Deferred Index) is equal to the realised volatility of the short exposure (F0 Index). The Volatility Adjustment Factor is a number **between 0.75 and 1.25** (i.e. an adjustment either upwards or downwards by a maximum of 25%). The volatility in respect of each of the long and short legs of the Mono-Alpha index are calculated using 63 days of returns up to and including the day immediately preceding the Holdings Calculation Date.

**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 Section 2.4 (*Weighting Methodology*).

## SECTION 5: INDEX PARAMETERS

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<b>Index Parameter</b>	<b>Definition</b>
<b>Holdings Calculation Date</b>	The tenth Index Business Day of each calendar month.
<b>Index Business Day</b>	Each day in the Index Calendar.
<b>Index Calendar</b>	Each scheduled trading day of the New York Mercantile Exchange
<b>Index Publication Day</b>	Each Index Business Day
<b>Index Live Date</b>	20 January 2021
<b>Index Rebalance Day</b>	The set of Index Business Days comprised of the Holdings Calculation Date and the subsequent two Index Business Days
<b>Index Start Date</b>	12 August 2004
<b>Index Start Level</b>	100
<b>Index Return</b>	Excess Return
<b>Index Ticker</b>	MQCP713E Index (Bloomberg)

## SECTION 6: ADJUSTMENT EVENTS AND REGULATORY EVENT

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### 6.1 ADJUSTMENT EVENTS

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If an Adjustment Event occurs, the Index Calculation Agent may, but shall not be obliged to, take one or more of the following steps:

- (i) suspend the publication of the Index Level until such time as the Adjustment Event ceases to occur; or
- (ii) with the approval of the Index Oversight Committee:
  - (a) substitute the Component, if applicable, affected by the Adjustment Event with an asset which has similar characteristics and make such adjustments to the Index as are necessary, if any, in order to account for the substitution;
  - (b) make such adjustments to the Index (including to any of the weights or values of the Components or to the Index Level) and/or alter the methodology of the Index, in order to account for the effect of the Adjustment Event; or
  - (c) if no such adjustment or alteration could be made to preserve the objective of the Index, discontinue the Index.

Where:

**Adjustment Event** means, in respect of a Component, each General Adjustment Event and each Asset Class Specific Adjustment Event (as defined in Section 6.2 (*Asset Class Specific Definitions – Adjustment Events*)) as applicable for such Component.

**Change in Economic Assumptions** means, in respect of a Component, a material change of any economic assumptions (including, but not limited to, assumptions as to liquidity, estimated trading and/or rolling costs of the Components, bid/offer spreads in the market in respect of the Components and the funding cost associated with trading the Components) incorporated into the Methodology for such Component.

**Component Change Event** means, in respect of a Component, that since the Index Live Date, liquidity for the Component on the relevant trading venue has materially decreased in the context of the known or expected financial exposure to the Index.

**Component Licensing Event** means, in respect of a Component or any instrument or security on which the value of a Component depends, and for which a license has been granted to the Index Administrator (or an affiliate of the Index Administrator) in relation to the calculation, hedging or use of the Index, that either (a) such license is revoked, impaired or otherwise disputed for any reason, or (b) there is a material increase in the fee schedule applicable to such license.

**Dealer** means a hypothetical broker dealer subject to the same securities laws and rules and regulations of any securities regulators, exchanges and self-regulating organisations as apply to the Index Administrator.

**General Adjustment Event** means any of the following: a Change in Economic Assumptions, a Component Change Event, a Component Licensing Event, a Market Disruption Adjustment Event and a Replicability Event.

**Replicability Event** means that, on or after the Index Live Date, the Index Oversight Committee determines that one or more Dealers would be unable, after using commercially reasonable efforts, to hold, acquire, maintain, short sell or dispose of:

- (i) one or more Components;
- (ii) any instrument or security on which the value of a Component depends; or
- (iii) any instrument or security which is required to replicate the calculation methodology of the Index (including, but not limited to, interest rates and FX rates, if applicable).

## 6.2 ASSET CLASS SPECIFIC DEFINITIONS – ADJUSTMENT EVENTS

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### 6.2.1 Macquarie Index Components

The following term is applicable in respect of any Component that is an index administered by Macquarie Bank Limited (a **Macquarie Index Component**).

**Asset Specific Adjustment Event** means the occurrence of the following:

- (a) *Index Component Cancellation*: the index administrator of such Macquarie Index Component permanently cancels the Macquarie Index Component;
- (b) *Index Component Modification*: the index administrator of such Macquarie Index Component announces that it will make a material change in the formula for or method of calculating such Macquarie Index Component (other than a modification prescribed in that formula or method to maintain such Macquarie Index Component in the event of routine events); or
- (c) *Index Succession Event*: such Macquarie Index Component is (i) not calculated and announced by the relevant index administrator of the Macquarie Index Component but is calculated and announced by a successor index administrator or (ii) is replaced by a successor index; or
- (d) *Underlying Contract Change Event*: in respect of an Underlying Contract of such Macquarie Index Component, either: (i) the specifications of an Underlying Contract are materially altered by the relevant trading venue or (ii) an Underlying Contract is permanently no longer traded on the relevant trading venue; or
- (e) *Index Component Adjustment*: an “Adjustment Event” (as defined in the Component Methodology) occurs in respect of such Macquarie Index Component.

## 6.3 REGULATORY EVENT

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If a Regulatory Event occurs, the Index Administrator may, but shall not be obliged:

- (i) to suspend the publication of the Index Level until such time as the Regulatory Event ceases to occur; or
- (ii) with the approval of the Index Oversight Committee, to discontinue the Index.

**Regulatory Event** means that on or after the Index Live Date (a) due to the adoption of or any change in any applicable regulation, or (b) due to the promulgation of or any change in the interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable regulation, the Index Administrator determines that it is not permitted (or there is a reasonable likelihood that, within the next 30 Index Publication Days, it will not be permitted) to continue to sponsor, administer, maintain or calculate, as applicable, the Index.

## SECTION 7: CORRECTIONS, CHANGES, CESSATION AND DISCRETION

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### 7.1 CORRECTIONS AND ERROR HANDLING

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#### 7.1.1 Errors

Where the Index Administrator or the Index Calculation Agent becomes aware of an Input Error or a Calculation Error (an **Error**), the cause of such error will be investigated and steps taken, to the extent practicable and within the control of the Index Calculation Agent, to prevent such errors from recurring.

If an Error is not corrected by 11.59pm, New York time, on the Index Publication Day following the occurrence of the Error, the Index Calculation Agent shall determine whether such Error affects any published Index Level (such Error, a **Material Error** and each affected Index Level, an **Affected Index Level**).

Where:

**Input Error** means any error in input data that is detected by, or notified to, the Index Calculation Agent.

**Calculation Error** means any error in the implementation of the Methodology or arising in the Index calculation and dissemination process that is detected by or notified to the Index Calculation Agent.

#### 7.1.2 Notification of Errors

The Index Calculation Agent shall publish an announcement regarding the occurrence of any Material Error and any change to the Methodology (see Section 7.2 (*Changes in Methodology*)).

#### 7.1.3 Restatement of Index Levels

The Index Calculation Agent will restate any Affected Index Level resulting from a Material Error in the following circumstances:

- (a) in respect of a Material Error that is an Input Error:
  - (i) if the Index Calculation Agent becomes aware of such Input Error within 2 Index Publication Days of publication of the relevant Affected Index Level; or
  - (ii) otherwise, as determined by the Index Oversight Committee.
- (b) In respect of a Material Error that is a Calculation Error:
  - (i) if the Index Calculation Agent becomes aware of such Calculation Error prior within 30 calendar days following the Index Publication Day on which the first Affected Index Level was published; or
  - (ii) otherwise, as determined by the Index Oversight Committee.

## 7.2 CHANGES IN METHODOLOGY

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Various factors, including external factors beyond the control of the Index Administrator, might necessitate material changes to an Index. The Index Manual contains information as of the date appearing on its cover, and such information may change from time to time. No assurance can be given that the Methodology reflects information subsequent to this date.

The Index Administrator may amend the Methodology at any time if the change is (i) of a formal, minor or technical nature, (ii) to correct any manifest or proven error or (iii) where the Index Calculation Agent determines that such change is not materially prejudicial to investors in financial products (in respect of which the Index Administrator has given consent to refer to the Index).

In any other case, a change to the Methodology will be considered to be a material change and may only be made subject to the approval of the Index Oversight Committee. The Index Oversight Committee shall determine the implementation timeline for such change and the timing for notification of such change to investors (which shall generally be at least 30 calendar days prior to implementation, but may be shorter if the Index Oversight Committee so determines), which the Index Administrator will communicate to investors by email.

## 7.3 CESSATION OF INDEX

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The Index Administrator may withdraw the Index, at any time and without notice, if no financial instruments (in respect of which Macquarie Bank Limited has given consent to refer to the Index) are outstanding. The Index Administrator may, in any case (subject to the approval of the Index Oversight Committee), withdraw an Index, without reason, provided that either (i) it notifies all investors in financial instruments (in respect of which Macquarie Bank Limited has given consent to refer to the Index) of its intention to do so by email at least 30 calendar days prior to cessation of calculation and publication of the Index or (ii) all investors in financial instruments (in respect of which Macquarie Bank Limited has given consent to refer to the Index) have agreed to the cessation of the Index and the date of such cessation.

## 7.4 DISCRETION

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In order to ensure continuity, the methodology of this Index permits the exercise of discretion or expert judgement in certain limited circumstances as set out in this Index Manual - see the following sections:

- Section 3 (*Market Disruption*);
- Section 6 (*Adjustment Events and Regulatory Event*); and
- Section 7 (*Corrections, Changes, Cessation and Discretion*).

The Index Calculation Agent or the Index Oversight Committee may also exercise discretion in the administration of the Index if an event or circumstance arises in respect of which there is no fallback provided for in the methodology of this Index and which the Index Calculation Agent or Index Oversight Committee determines prevents the Index Calculation Agent from determining the Index in the normal manner, constitutes a market disruption under the relevant Index Manual or the exercise of expert judgement or discretion is otherwise appropriate in the circumstances.

The Index Calculation Agent or the Index Oversight Committee may exercise any such discretion or expert judgement acting in good faith and in a commercially reasonable manner. Any exercise of discretion or expert judgement that the Index Calculation Agent determines will have a material effect on the Index shall be subject to the approval of the Index Oversight Committee.

## SECTION 8: OVERSIGHT, ROLES, CONFLICTS AND REVIEWS

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### 8.1 INDEX GOVERNANCE

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

- A Managing Director in the Quantitative Investment Strategies team of the Commodities and Global Markets Group;
- A Director from the Legal and Governance Group;
- A representative from the Index Calculation Agent;
- A representative from the Risk division of the Risk Management Group;
- A representative from the Compliance division of the Risk Management Group; and
- A representative from the Business Operational Risk Management department within the Central division of the Commodities and Global Markets Group.

Each member of the Index Oversight Committee is sufficiently knowledgeable about algorithmic indices and is required to act in good faith and in a commercially reasonable manner, provided that the Managing Director from the Commodities and Global Markets Group will not be a voting member of the Committee, but shall act in an advisory capacity only. In giving approval to any adjustments made to the Index in accordance with this Index Manual, the Index Oversight Committee shall give due consideration to any equivalent decisions and actions taken by relevant trading venues or trade bodies.

The Index 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 Index 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 consideration or approval of any relevant Adjustment Events, Regulatory Events, Errors, exercises of discretion, changes to the Methodology, any contemplated cancellation of the Index and the resolution of any other issues which arise in relation to the Index.

### 8.2 INDEX ADMINISTRATOR AND INDEX CALCULATION AGENT

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#### 8.2.1 Index Administrator

Macquarie Bank Limited is the Index Administrator. Notwithstanding anything to the contrary, the Index Administrator 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.



### **8.2.2 Index Calculation Agent**

The Index Calculation Agent is appointed by the Index Administrator to calculate and maintain each Index from and until such time that the Index Administrator 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 Index Oversight Committee.

The Index Calculation Team within the Commodities and Global Markets Group of Macquarie Bank Limited acts as index calculation agent (the **Index Calculation Agent**) in respect of the Index as of the date of this Index 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 Index Manual.

### **8.2.3 Relationship of the Index Administrator and the Index Calculation Agent**

The Index Calculation Agent is appointed by the Index Administrator, subject to the approval of the Index Oversight Committee. While, as of the date of publication of these rules, both the Index Administrator and the Index Calculation Agent form part of Macquarie Bank Limited, they are independent teams within the bank and the 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 Administrator.

### **8.2.4 Not acting as a fiduciary**

Neither the Index Administrator nor the Index Calculation Agent owes any duty of care or acts as agent of another person in respect of its respective obligations in relation to the Index as set out in this Index Manual.

## **8.3 CONFLICTS**

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The Index is based on underlying assets, as described in the Methodology. The Index Administrator and/or its affiliates actively trade these underlying assets and options on these underlying assets. The Index Administrator 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 assets or are linked to the performance of the Index. The Index Administrator and/or its affiliates may underwrite or issue other securities or financial instruments indexed to the Index, and the Index Administrator or its affiliates may license the 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 Administrator trades or may trade as principal in instruments (or related derivatives) linked to an index described in this Index Manual and may have proprietary positions in the instruments (or related derivatives). The Index Administrator may make a market in such instruments (or related derivatives), which may in extreme circumstances affect the levels of the Index described.

The Index Administrator, the Index Calculation Agent and the business unit which creates instruments linked to the Index are all businesses or entities of Macquarie. Steps have been taken to manage and mitigate the inherent conflicts of interest which result, including the establishment of separate reporting lines for the respective roles, establishment of an independent Index Oversight Committee and the implementation and enforcement of policies and procedures to ensure that appropriate controls are in place.

Certain activities conducted by the Index Administrator may conflict with interests of investors in the Index. Such activities could include (but are not limited to) providing or participating in competing products (such as financial instruments linked to the Index, a Component or a similar index or component) and hedging its exposure to the Index. The Index Administrator could receive substantial returns in respect of such activities, which will not be passed on to any investors in products linked to the Index; whereas the value of investments linked to the Index may decline. Any such activities conducted by the Index Administrator around the time of a rebalancing could adversely impact the performance of the Index and therefore the level of a concurrent rebalancing.

The Index Administrator may have access to information relating to the Index, a Component or investments linked to a Component. The Index Administrator is not obliged to use that information for the benefit of any person entering into products linked to the Index.

#### 8.4 REVIEWS

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The Index Administrator has procedures in place to review a sample of its indices (which may not include this Index) on an annual basis (or more frequently, if it determines appropriate). Such sample shall include the indices requested by the Index Oversight Committee to be reviewed. The Index Administrator shall submit a report on its reviews to the Index Oversight Committee. If the Index Administrator determines that changes are required to a methodology, the Index Oversight Committee shall review the changes and the reasons for such changes. Any such changes approved by the Index Oversight Committee shall be implemented in accordance with Section 7.2 (*Changes in Methodology*).

## SECTION 9: GENERAL INFORMATION

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### 9.1 VALUATION AND CALCULATIONS

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The Index Calculation Agent shall, unless stated otherwise, perform all calculations in this Index Manual from the Initial Calculation Date. It shall perform such calculations in its sole and absolute discretion, acting in good faith and in a commercially reasonable manner. All such calculations shall be subject to the Index Calculation Agent's policies and procedures and will (in the absence of manifest error) be final, conclusive and binding. Neither the Index Calculation Agent nor the Index Administrator shall have any liability for errors or omissions made in good faith.

### 9.2 PUBLICATION OF INDEX LEVEL

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The publication of the Index Level by the Index Calculation Agent for an Index Publication Day follows a publication cycle which ends at the Publication Time for such day. Any Index Level published before the Publication Time in respect of a day is indicative and may be restated up to and including the Publication Time.

In respect of an Index Publication Day, the Index Level as published by the Index Calculation Agent on the Bloomberg Ticker at the Publication Time for such day shall be the official Index Level and shall be final and binding (save for changes made pursuant to Section 7 (*Corrections, Changes, Cessation and Discretion*)). See Section 7.1.2 regarding the publication of Material Errors.

Where:

**Publication Time** means, in respect of an Index Publication Day, 23:59:59 (New York Time) on the Index Publication Day immediately following such Index Publication Day.

**Index Publication Day** is defined in Section 5.1 (*Index Parameters Values*).

### 9.3 HISTORICAL VALUES OF THE INDEX

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Hypothetical back-tested historical levels of the Index prior to the Index Live Date are not indicative of future performance. The Index Administrator 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.

## **SECTION 10: NOTICES AND DISCLAIMERS**

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### **10.1 REGULATORY STATUS**

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This material is prepared and distributed in the UK by Macquarie Bank Limited, London Branch (MBLLB) and in the EEA member states (other than the UK) by Macquarie Bank Europe (DAC) (MBE) where required. It is intended only for professional clients and eligible counterparties as defined in the rules of the Financial Conduct Authority. MBLLB is registered in England and Wales (Branch No: BR002678, Company No: FC018220, Firm Reference No: 170934). MBE is registered and incorporated in the Republic of Ireland (Company No. 634817). The registered office for MBLLB is Ropemaker Place, 28 Ropemaker Street, London, EC2Y 9HD. The registered office of MBE is First Floor, Connaught House, 1 Burlington Road, Dublin 4, D04 C5Y6, Ireland. MBLLB is authorised and regulated by the Australian Prudential Regulation Authority. MBE is authorised and regulated by the Central Bank of Ireland. Details about the extent of our regulation are available from us on request.

### **10.2 NOT RESEARCH OR AN OFFER**

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This Index Manual is not a personal recommendation as defined by the Financial Conduct Authority and you should consider whether you can rely upon any opinion or statement contained in this Index Manual without seeking further advice tailored for your own circumstances. It is also not investment research, and has not been prepared in accordance with legal requirements designed to promote the independence of such. Any opinions expressed herein may differ from the opinions expressed in other departments including the research department. Nor have the contents of this Index Manual been reviewed by any regulatory authority, and the distribution of this Index Manual and availability of related financial instruments in certain jurisdictions may be restricted by law.

This Index Manual does not constitute a prospectus, offer, invitation or solicitation to buy or sell financial instruments and is not intended to provide the sole basis for any evaluation of the securities or any other financial instruments which may be discussed within, referred to or based upon the Index. Any offering or potential transaction that may be related to the Index will be made separately and subject to distinct documentation and in such case the information contained herein may be superseded in its entirety by such documentation in final form.

### **10.3 THIRD-PARTY DISCLAIMER**

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The Index is not endorsed, sponsored or promoted by the issuer or sponsor of any Component of underlying asset of any Component.