

Macquarie Congestion Rotator Index

**Index Manual
July 2017**

NOTES AND DISCLAIMERS

BASIS OF PROVISION

This Index Manual sets out the rules for the Macquarie Congestion Rotator 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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This document 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 document 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.

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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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representation, warranty or undertaking (express or implied) is made by the Index Sponsor or Index Calculation Agent as to the accuracy and completeness of information concerning any Index.

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 Congestion Rotator Index (hereafter, the *Index*), is designed as a benchmark for exposure to the 'congestion' investment strategy in the commodity markets.

THE CONGESTION STRATEGY

The commodities selected for inclusion in commonly traded commodity indices are not easily investable on a direct and replicable basis. Futures contracts on commodities, however, represent a widely utilized synthetic proxy for direct investment in commodities. Accordingly, the components of such indices reflect the price performance of exchange traded futures contracts relating to the underlying commodities. In order to ensure the continuity of each component, when the futures contract approaches expiration, it will be replaced by an identical contract with a later expiration (the exposure of the index to that commodity future will 'roll' from one contract into the next). Each underlying component thus tracks a sequence of futures contracts relating to a single commodity.

The most commonly traded commodity indices roll their contracts during five days starting on the 5th business day of the month and ending on the 9th business day of the month. As a result, during this period there is a substantial amount of similar trading activity, or congestion, when rolling from a nearby (or 'front-month') commodity futures contract to a contract with a later expiration. This can cause price pressure in the contracts such indices are exposed to. Trading (i.e. rolling) away from this standard roll period, to avoid this price pressure, is the optimization principle behind the congestion strategy underlying the Macquarie Single Commodity Indices that constitute the Components to which the Index allocates a long and short exposure. The exposures established by the index methodology are determined with respect to a momentum signal (average Mono-Alpha Index daily returns over a period of 120 days) which is used to determine which Components will be assigned a non-zero weight from one rebalancing to the next. The strategy aims to take exposure to commodities that have performed positively and exclude commodities that have performed negatively.

The period for rolling prior to the standard roll period have been selected by the Index Sponsor taking into account historical price performance (the tendency of these periods to exhibit less price dislocation) and its view of the trading days that have sufficient liquidity in the Underlying Contracts to sustain the trading activity resulting from expected levels of investment in the Index.

Information on the Macquarie Single Commodity Indices (i.e. the long and short exposure of the Index) is available at <http://static.macquarie.com/dafiles/Internet/mgl/global/shared/corporate/trading-and-hedging/commodities/macquarie-single-commodity-indices.pdf>, or upon request.

To isolate this source of return in the Index attributed to congestion and minimize correlation to the broader commodities market, the Index will avoid taking outright positions in the commodities market and will aim to have a neutral allocation across each underlying commodity (i.e. the long and short exposures to each Commodity add up to zero).

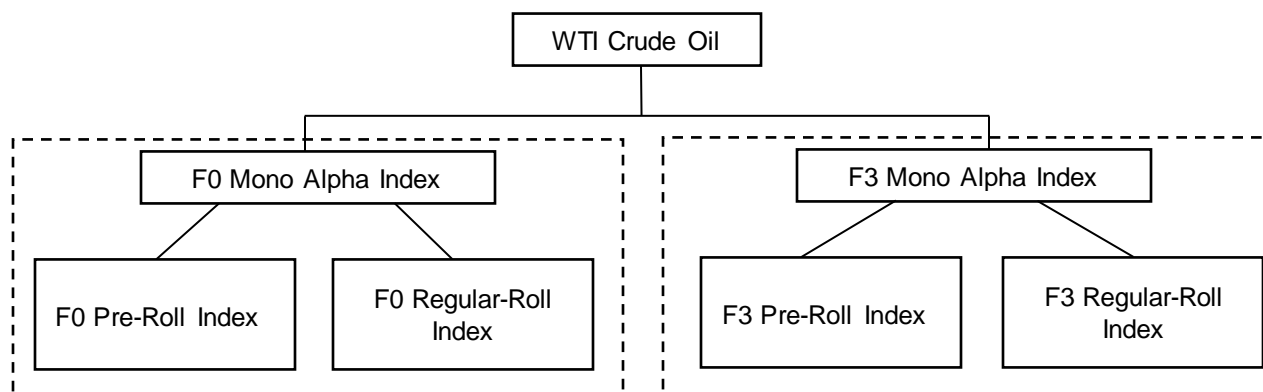
SELECTION OF COMPONENTS AND ROLL SCHEDULES

The Index invests in 21 different Commodities chosen to have sufficient liquidity in the Underlying Contracts to sustain the trading activity resulting from the expected levels of investment in the Index. For each Commodity, the Index can take exposure at two different points on the forward curve (F0 Tenor, near the front of the forward curve and F3 Tenor, further back the forward curve).

In respect of each selected Commodity and Tenor, the Index takes a short exposure in a “Regular-Roll” Macquarie Single Commodity Index that rolls its exposure between the 5th Index Business Day of the month and the 9th Index Business Day of the month and a matching long exposure in a “Pre-Roll” Macquarie Single Commodity Index that rolls its exposure between the 9th last Index Business Day of the month to the 7th last Index Business Day of the month. Thus, for each selected Commodity and Tenor, the Index will have a long/short exposure type in the respective Regular-Roll and Pre-Roll Macquarie Single Commodity Indices that nets out to zero. (For avoidance of doubt, the “Pre-Roll” Single Commodity Index will roll its exposure ahead of the “Regular-Roll” Single Commodity Index with respect to the scheduled roll for a given month.)

Therefore, the Macquarie Congestion Rotator Index has a universe of 84 potential Components (21 Pre-Roll F0 Macquarie Single Commodity Indices, 21 Regular-Roll F0 Macquarie Single Commodity Indices, 21 Pre-Roll F3 Single Commodity Indices and 21 Regular-Roll F3 Single Commodity Indices), as described in the Definitions section.

Below is an example of Commodity WTI Crude Oil and its associated F0 Mono-Alpha Indices, F3 Mono-Alpha Indices and Components.



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 Metals, Mining and Agriculture division of the Commodities and Financial 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 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 Technology division of the Corporate Operations 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 independent 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

Active Mono-Alpha Set, the group of Mono-Alpha Indices that are comprised of a set of Regular-Roll and Pre-Roll indices in which the Pre-Roll Contract is different to the Regular-Roll Contract (i.e. resulting in a non-zero spread exposure by taking long exposure to the Pre-Roll Contract and short exposure to the Regular-Roll contract)

Components, are the Macquarie Single Commodity Indices specified in the columns F0 Mono-Alpha Index and F3 Mono-Alpha Index in the table below:

TABLE 1

COMMODITY	F0 MONO-ALPHA INDEX		F3 MONO-ALPHA INDEX		GROUP	CAP
	F0 PRE-ROLL INDEX	F0 REGULAR-ROLL INDEX	F3 PRE-ROLL INDEX	F3 REGULAR-ROLL INDEX		
WTI Crude Oil	MQSDP0CL	MQSDCLER	MQSDP3CL	MQSDCL3E	Petroleum	35%
Brent Crude Oil	MQSDP0CO	MQSDCOER	MQSDP3CO	MQSDCO3E	Petroleum	35%
Gasoline	MQSDP0XB	MQSDXBER	MQSDP3XB	MQSDXB3E	Petroleum	35%
Heating Oil	MQSDP0HO	MQSDHOER	MQSDP3HO	MQSDHO3E	Petroleum	35%
Natural Gas	MQSDP0NG	MQSDNGER	MQSDP3NG	MQSDNG3E	-	20%
Zinc	MQSDP0LX	MQSDLXER	MQSDP3LX	MQSDLX3E	-	20%
Nickel	MQSDP0LN	MQSDLNER	MQSDP3LN	MQSDLN3E	-	20%
Aluminum	MQSDP0LA	MQSDLAER	MQSDP3LA	MQSDLA3E	-	20%
Copper	MQSDP0HG	MQSDHGER	MQSDP3HG	MQSDHG3E	-	20%
Corn	MQSDP0CX	MQSDCER	MQSDP3CX	MQSDC3E	-	20%
Soybeans	MQSDP0SX	MQSDSER	MQSDP3SX	MQSDS3E	-	15%
Soybean Meal	MQSDP0SM	MQSDSMER	MQSDP3SM	MQSDSM3E	-	5%
Wheat (CBOT)	MQSDP0WX	MQSDWER	MQSDP3WX	MQSDW3E	Wheat	10%
Wheat (KCBOT)	MQSDP0KW	MQSDKWER	MQSDP3KW	MQSDKW3E	Wheat	10%
Sugar	MQSDP0SB	MQSDSBER	MQSDP3SB	MQSDSB3E	-	10%
Coffee	MQSDP0KC	MQSDKCER	MQSDP3KC	MQSDKC3E	-	5%
Cocoa	MQSDP0CC	MQSDCCER	MQSDP3CC	MQSDCC3E	-	10%
Cotton	MQSDP0CT	MQSDCTER	MQSDP3CT	MQSDCT3E	-	5%
Lean Hogs	MQSDP0LH	MQSDLHER	MQSDP3LH	MQSDLH3E	-	5%
Live Cattle	MQSDP0LC	MQSDLCER	MQSDP3LC	MQSDLC3E	-	10%
Feeder Cattle	MQSCP0FC	MQSCFCER	MQSCP3FC	MQSCFC3E	-	3%

The calculation and methodology of each F0 Pre-Roll Index, F3 Pre-Roll Index, F0 Regular-Roll Index and F3 Regular-Roll Index is described in the “Macquarie Single Commodity Indices” Index Manual, which is available on request or at

[<http://static.macquarie.com/dafiles/Internet/mgl/global/shared/corporate/trading-and-hedging/commodities/macquarie-single-commodity-indices.pdf>]. For ease of reference, only ticker references have been included.

Each Commodity is represented by four Components, two Mono-Alpha indices and one Group.

For example:

Commodity: WTI Crude Oil

Group: Petroleum

F0 Mono-Alpha Index: MQSDP0CL 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 F0 Mono-Alpha Index.

F3 Mono-Alpha Index: MQSDP3CL which can be assigned a positive/long weight and MQSDCL3E which can be assigned a negative/short weight, together referred to as WTI Crude Oil F3 Mono-Alpha Index.

Cap, in respect of each Commodity is the maximum weight that can be allocated to the corresponding Pre-Roll/Regular-Roll Single Commodity Indices long/short exposure, as specified in Table 1 under the definition of Components.

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.

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

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.

F0 Mono-Alpha Index, is the Mono-Alpha Index generated by taking 100% long exposure to the F0 Pre-Roll Index and -100% short exposure to the F0 Regular-Roll index in respect of a Commodity.

F3 Mono-Alpha Index, is the Mono-Alpha Index generated by taking 100% long exposure to the F3 Pre-Roll Index and -100% short exposure to the F3 Regular-Roll 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.

Group, in respect of each Commodity, is the collection of commodities that are subject to 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 (*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 tenth Index Business Day of each calendar month.

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

Index Calendar, is the set of trading days of the New York Mercantile Exchange schedule.

Initial Index Level, is 100.

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

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

Index Start Date, is 10 Dec 2004.

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 – **MQCP700E** Index (Bloomberg).

Mono-Alpha Index, in respect of each Commodity and Tenor, the index series (rounded to 12 decimal places) generated by taking +100% exposure to the Pre-Roll Index and -100% exposure to the corresponding Regular-Roll Index. Each such Mono-Alpha Index is rebalanced on the first Index Business Day of each month (using prices as of the first Index Business Day) and calculated in accordance with the methodology laid out in Section 1 (*Holdings Calculation*) and Section 2 (*Daily Index Calculation*) of this document, as though such Mono-Alpha Index was an “Index”. 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 positive momentum.

Pre-Roll Contract, in respect of each Commodity and Tenor, on Holding Calculation Date *R*, is the contract that the Pre-Roll Index will be fully invested by the end of the month of the Holding Calculation Date *R* falls.

Pre-Roll Index, in respect of each Commodity and Tenor is the Single Commodity Index described in Table 1 under the definition of Components under the relevant Commodity Row and relevant Tenor Pre-Roll column

Regular Roll Contract, in respect of each Commodity and Tenor, on Holding Calculation Date R , is the contract that the Regular-Roll Index will be fully invested by the end of the month that the Holding Calculation Date R falls.

Regular-Roll Index, in respect of each Commodity and Tenor is the Single Commodity Index described in Table 1 under the definition of Components under the relevant Commodity Row and relevant Tenor Regular-Roll column

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.

Tenor, is either F0 (Near the front of the curve) or F3 (3 Month Forward) and describes the relative position of a contract along a commodity futures curve.

Temporary Weight, is the weight of Mono-Alpha Indices that are assigned 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.

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 Section 4.

INDEX CALCULATION

On a daily basis the Index replicates the returns obtained by holding a basket of Components (each a Single Commodity Index), 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** 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** describes the day-to-day calculation of the Index Level;
- **Section 3** describes Market Disruption Events and the additional calculations that the Index Calculation Agent will perform to determine the Index Level during and following any market disruptions.
- **Section 4** describes the Weighting Methodology;

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, $\{H_{1,t}, \dots, H_{n,t}\}$, 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 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 $100 \times (0.4) / 80 = 0.5$

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 rule:

- (i) If t is the Index Business Day immediately following the Holdings Calculation Date R , the Holdings $\{H_{1,t}, \dots, H_{n,t}\}$ are set equal to the Target Holdings $\{TH_{1,R}, \dots, TH_{n,R}\}$ 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:

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

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 (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

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;
- (v) the occurrence of a Market Disruption Event in respect of an Underlying Contract that shares the same Commodity.

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:

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

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

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

The Equivalent Target Holdings is a set of target holdings $\{TH'_{1,t}, \dots, TH'_{m,t}\}$ 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 $\{H'_{1,t}, \dots, H'_{m,t}\}$ 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 Holdings Calculation Date 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 $t-1$

- (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.

SECTION 4: WEIGHTING METHODOLOGY

The Weights of the Components (each Pre-Roll and Regular-Roll Macquarie Single Commodity Index) are derived from the Final Weights of the Mono-Alpha Indices as described in Section 4.1 (*Component Weights*) below.

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

4.1 COMPONENT WEIGHTS

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

$$W_i = \begin{cases} FW_{C,F,R}, & \text{if Component } i \text{ is a Pre Roll Index with underlying Commodity } C \text{ and Tenor } F \\ -1 \times FW_{C,F,R}, & \text{if Component } i \text{ is a Regular Roll Index with underlying Commodity } C \text{ and Tenor } F \end{cases}$$

That is, for each Mono-Alpha Index Final Weight, the Index takes an equivalent long position in its respective Pre-Roll Index and an equivalent short position in its respective Regular-Roll Index.

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 and the Final Weights of the Mono-Alpha Indices are determined in four steps.

4.2.1 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 Tenor is calculated.

Each Commodity will have two Mono-Alpha Indices associated with it with differing Tenors, either a F0 Mono-Alpha Index or a F3 Mono-Alpha Index. For example, WTI Crude Oil will have a F0 Mono Alpha Index constructed by taking +100% exposure to the F0 Pre-Roll Index and -100% exposure to the corresponding F0 Regular Roll Index and a F3 Mono Alpha Index, will be similarly constructed by taking +100% exposure to the F3 Pre-Roll Index and -100% exposure to the corresponding F3 Regular Roll Index. Each Mono-Alpha Index is rebalanced on the first Index Business Day of each month (using prices as of

the first Index Business Day of the month). Therefore, in respect of each Commodity, C , and each Tenor, F , the Index calculates:

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

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

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

Where:

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

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

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

Tenor F can either be 0 (for F0) or 3 (for F3).

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

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

Where:

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

$MR_{C,F,R}$ is the average of the Daily Returns of the Mono-Alpha Index in respect of commodity C and Tenor F on Holdings Calculation Date R :

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

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

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

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

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 Final 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 the Active 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 positive Mean Return and have a non-zero exposure between the current Holdings Calculation Date and the following Holdings Calculation Date in respect of the long/short exposures established by the Pre-Roll and Regular-Roll 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 Step 2 is skipped and the methodology described in the section titled **Fall Back Procedure** is applied before proceeding to Step 3 (*Iterative Capping Procedure*).

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.

Step 4 (Potential Activation of the Fall Back Procedure): If at the end of the Iterative Capping Procedure, the sum of all the Final Weights in respect of each Mono-Alpha Index is **not** equal to 100%, then the **Fall Back Procedure** is applied.

STEP 1: ZERO WEIGHTS

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

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

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.

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

Where:

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

$\sum_1^n RAR_{C,F,R}$ 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.

STEP 3: ITERATIVE CAPPING PROCEDURE

The following weight caps are imposed (with reference to the Table 1 under the definition of Components in the Definitions section):

- i. The sum of the weights of the Mono-Alpha Indices in respect of each Commodity belonging to a Group is capped. There are two groups; Petroleum Group which is capped at 35% and Wheat Group which is capped at 10%.
- 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 , Tenor F on Holdings Calculation date R is assigned the Initial Weight and the Excess weight is equal to zero.

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

$$Excess = 0$$

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:

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

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

Where $\sum_1^P TW_{C,F,R}$ 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 Tenor belonging to the Petroleum Group.

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 belonging to the **Wheat** Group:

If the sum of the weights of all Mono-Alpha Indices in respect of each Commodity belonging to the Wheat Group is greater than 10% then:

$$FW_{C,F,R} = \frac{TW_{C,F,R}}{\sum_1^W TW_{C,F,R}} \times 10\%$$

$$Excess = Excess + \sum_1^W TW_{C,F,R} - 10\%$$

Where $\sum_1^W TW_{C,F,R}$ is the sum of the Temporary Weights of all Mono-Alpha Indices in respect of each Commodity belonging to the Wheat Group and W is the number of Commodities of each Tenor belonging to the Wheat Group.

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

Step D: 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 under the definition of Components in the Definitions section):

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

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

Where

Cap_c is the weight Cap in respect of Commodity c as specified in the Table I.

$\sum_1^2 TW_{C,F,R}$ 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 E: 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%:

$$FW_{C,F,R} = \frac{TW_{C,F,R}}{\sum_1^2 TW_{C,F,R}} \times 20\%$$

$$Excess = Excess + \sum_1^2 TW_{C,F,R} - 20\%$$

Where $\sum_1^2 TW_{C,F,R}$ is the sum of the Temporary Weights of the two (one for each Tenor) 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, then those Mono-Alpha Indices will be regarded as being capped for the purpose of the remaining calculations.

Step F: Distribute the Excess weight in proportion to all uncapped Commodities.

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

$$Excess = 0$$

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 F are repeated until both:

- (1) 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 under the definition of Components in the Definitions section
- (2) Excess is equal to 0

In which case:

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

STEP 4: POTENTIAL ACTIVATION OF THE FALL BACK PROCEDURE

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%, then the Fall Back Procedure is applied as described below.

That is, if:

$$\sum_1^n FW_{C,F,R} \neq 100\%$$

Where n is the number of Commodities defined in Table 1 under the definition of Components in the Definitions section, then the Fall Back Procedure is applied.

FALL BACK PROCEDURE

Firstly, an equal weight is allocated to all Mono-Alpha Indices in respect of the Commodities contained within the “Active Mono-Alpha” set.

$$IW_{C,F,R} = \frac{1}{N}$$

Where

N is the number of Commodities contained in the “Active Mono-Alpha” set.

Then the Iterative Capping Procedure described in Step 3 (*Iterative Capping Procedure*) is applied until the Final Weights are determined for all Commodities.

CONTACTS

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