The Macquarie Pairs Trading Index

Index Specification and Introduction
September 2017

INTRODUCTION

The Macquarie Pairs Trading index (hereinafter, the *Index*) is designed to provide investment exposure to a non-interest bearing cash deposit and a basket of commodity futures. The Index is designed to be readily accessible to market participants and is calculated daily in both an Excess Return and a Total Return format.

The Index calculation methodology is outlined in the Macquarie Pairs Trading Indices Manual (attached as an Annex hereto), which takes inputs specified in the Relevant Index Specification section below. Hence, while that document is self-contained, the precise replication of the Index requires it to be taken in conjunction with the Relevant Index Specification below.

RELEVANT INDEX SPECIFICATION

Calendar: The set of trading days of the NYSE Euronext Holiday schedule (https://www.nyse.com/markets/hours-calendars).

Commodities: Each of the commodities listed under "Commodity 1" or "Commodity 2" in the Contract Schedule Table below

Index Name: The Macquarie Pairs Trading Index

Index Ticker: MQCP512E (Bloomberg)

Dislocation Threshold: 2

Divergence Threshold: 0.5

Convergence Threshold: 0.5

Pair Weight: 7.143% for each Pair in the Index.

Moving Average Lookback: 21

Minimum Holding Period: 5 Index Business Days following each Dislocation Day

Holdings Calculation Day: The last Index Business Day of each calendar month.

Initial Index Level: 100.

Index Start Date: 4th March 2002.

Contract Schedule Table:

Pair	Commodity 1	C1 roll schedule												Commodity 2	C2 roll schedule											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Bean Oil	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+	Z+	Soy Meal	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+	Z+
2	Soybeans	X	X	X	X	X	X	X+	X+	X+	X+	X+	X+	Bean Oil	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+	Z+
3	Soybeans	X	X	X	X	X	X	X+	X+	X+	X+	X+	X+	Corn	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+	Z+
4	Soybeans	X	X	X	X	X	X	X+	X+	X+	X+	X+	X+	Soy Meal	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+	Z+
5	Wheat	N	N	N	N	N	N+	N+	N+	N+	N+	N+	N+	Kansas Wheat	N	N	N	N	N	N+	N+	N+	N+	N+	N+	N+
6	WTI Crude	Z	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+	Heating Oil	Z	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+
7	Brent Crude	Z	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+	Gasoil	Z	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+
8	Brent Crude	Z	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+	Heating Oil	Z	Z	Z	Z	Z	Z	Z	Z+	Z+	Z+	Z+	Z+
9	Gasoline	H	K	K	N	N	U	U	X	X	F+	F+	H+	Heating Oil	H	K	K	N	N	U	U	X	X	F+	F+	H+
10	WTI Crude	H	K	K	N	N	U	U	X	X	F+	F+	H+	Gasoline	H	K	K	N	N	U	U	X	X	F+	F+	H+
11	Live Cattle	M	M	Q	Q	V	V	Z	Z	G+	G+	J+	J+	Feeder Cattle	K	Q	Q	Q	V	V	F+	F+	F+	H+	H+	K+
12	Live Cattle	M	M	Q	Q	V	V	Z	Z	G+	G+	J+	J+	Lean Hogs	M	M	N	Q	V	V	Z	Z	G+	G+	J+	J+
13	Palladium	H	H	M	M	M	U	U	U	Z	Z	Z	H+	Platinum	J	J	N	N	N	V	V	V	F+	F+	F+	J+
14	Copper (COMEX)	K	N	N	U	U	Z	Z	Z	H+	H+	H+	K+	Copper (LME)	K	N	N	U	U	X	X	F+	F+	H+	H+	K+

* The letters, F, G, H, J, K, M, N, Q, U, V, X, and Z stand for the months of Jan, Feb, …, Dec respectively with the sign "+" signalling the contract on the following year.

Macquarie
Pairs Trading Indices

Index Manual
September 2017

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NOTICES AND DISCLAIMERS

BASIS OF PROVISION

This Index Manual sets out the rules for the Macquarie Pairs Trading Indices (each, an *Index*) and reflects the methodology for determining the composition and calculation of each Index (the *Methodology*). The Methodology and each Index derived from this Methodology are the exclusive property of Macquarie Bank Limited (the *Index Sponsor*). They have been provided to you solely for your internal use and you may not, without the prior written consent of the Index Sponsor, distribute, reproduce, in whole or in part, summarise, quote from or otherwise publicly refer to the contents of the Methodology or use it as the basis of any financial instrument.

DATE OF INDEX MANUAL AND CHANGES TO THE INDICES

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 Sponsor may, however, supplement, amend or withdraw the Methodology at any time if it determines that any Index is no longer calculable under the existing Methodology. The Index Sponsor may also determine that a change to the Methodology is required or desirable to address an error, ambiguity or omission. Such changes may include changes to eligibility requirements or construction as well as changes to the daily Index calculations. If a supplement or amendment is required and such supplement or amendment materially affects the Index Level of the any Index, the Index Sponsor will publish such changes to the Methodology, together with the rationale for such changes, 30 days prior to implementation. However if prior publication of the changes is not practicable, the changes and rationale will be published as soon as is reasonably practicable.

The Index Sponsor may withdraw the Index, at any time and without notice, if no financial instruments (in respect of which it has given consent to refer to any Index) are outstanding. The Index Sponsor may, in any case, withdraw the Index, without reason, provided it publishes its intention to do so at least six months prior to cessation of calculation and publication of Index levels.

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

NOT RESEARCH OR AN OFFER

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. Any opinions expressed herein may differ from the opinions expressed in other departments including the research department. Nor have the contents of this document been reviewed by any regulatory authority,

and the distribution of this document and availability of related financial instruments in certain jurisdictions may be restricted by law.

This document 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 an Index. Any offering or potential transaction that may be related to an 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.

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

HISTORICAL VALUES OF THE INDICES

Hypothetical back-tested historical values of an Index are not indicative of future performance. 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.

DISCLAIMER OF LIABILITY

The Methodology is published for information purposes only and does not create any legally binding obligation on the part of the Index Sponsor and/or its affiliates. This document is intended to provide a summary of the indices it purports to describe. The Index Sponsor expressly disclaims (to the fullest extent permitted by applicable law) all warranties (express, statutory or implied) regarding this document and the Methodology or the Indices, 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 Sponsor does not warrant or guarantee the accuracy or timeliness of calculations of an Index value and does not warrant or guarantee the availability of an Index value on any particular date or at any particular time. The Index Sponsor 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 an underlying Contract or as a result of a Contract failing to trade for any reason. Although the Index Sponsor will obtain information concerning Contracts from publicly available sources it believes reliable, it will not independently verify this information. Accordingly, no representation, warranty or undertaking (express or implied) is made by the Index Sponsor as to the accuracy and completeness of information concerning any Index.

In particular, the Index Sponsor is 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 or a Pair, (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 Sponsor as a result of such determination that an Market Disruption Event has occurred.

NOTICES

The Indices are ultimately based on Contracts that underlie each Index, as described in the Methodology. The Index Sponsor and/or its affiliates actively trade Contracts and options on 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 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 an 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 an 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

This Index Manual sets out the Methodology by which the Index Sponsor shall calculate individual indices in the Macquarie Pairs Trading family of indices. The Methodology, however, is not a stand-alone document. The calculation of a particular Index requires the set of parameters that are applicable to that Index. Those parameters will be set out in an index specification document relating to that Index (the *Relevant Index Specification*). An index constructed by applying the Methodology to a Relevant Index Specification is hereinafter generically called the *Index*.

Each Index in the Macquarie Pairs Trading family of indices determines its exposure by tracking a certain number of Pairs, which represent pairs of commodities that are fundamentally related. Each Pair is assigned a Pair Weight which determines the weight of that Pair in the Index. The Pair Weights are specified in the Relevant Index Specification and do not vary once set. Each Pair is used to identify a dislocation in the equilibrium between these two commodities and attempts to benefit from the eventual return of that relationship to the equilibrium state. At times when there is no dislocation being exploited in a particular Pair, the Pair Weight of that Pair in the Index will instead be exposed to a synthetic, non interest-bearing cash deposit.

The Index will switch exposure of a particular Pair Weight from the cash deposit back to the Components that comprise the Pair when the signal, as set out later in this document, identifies that one of the Components (as defined below) in the Pair is considered at the time to be "expensive" relative to the other. The performance of that Pair will then be such that its level will increase if either the "expensive" Component of that Pair falls in price, the other Component of that Pair increases in price, or both these events occur at the same time. The Level of the Index on each Index Business Day is calculated by the Index Calculation Agent according to the Methodology set out in this document, using the level of each Pair and the exposure of the Index to each Pair.

Each Index is calculated and maintained by the Index Calculation Agent and supervised by the Index Sponsor and Supervisory Committee, as described below. Once an Index has been created, the selection of Pairs that comprise it and the Pair Weight of each Pair will be fixed and cannot be changed going forward and all determinations with regard to that Index are made following the rules set out in this document, without discretion by the Index Sponsor or Index Calculation Agent. No Index is based upon submissions provided by third parties (or an affiliate of the Index Sponsor or Calculation Agent) or expert judgment. Each Index is based upon actual transaction data sourced from regulated markets and exchanges.

INDEX GOVERNANCE

Oversight Committee

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

- A Managing Director in the Metals & Agriculture Sales and Trading division of the Fixed Income, Currencies and Commodities 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 required to be sufficiently knowledgeable about commodity futures contracts and the commodities markets in general, and act in good faith and in a commercially reasonable manner.

The Index Sponsor will from time to time (and in any event within 30 days of any change in the membership of the Oversight Committee) make available upon request the names of the individuals forming the Oversight Committee.

The Oversight Committee will have the following responsibilities:

The Oversight Committee considers the features of an Index and intended, expected or known usage of an Index and the materiality of existing or potential conflicts of interest together with overseeing the daily management and operations of each Index including:

- Approval of the Methodology and each Relevant Index Specification;
- Approval of any changes to the Methodology or constituents of an Index, and any cancellation of an Index; and
- Resolution of any issues which arise in relation to the Indices.

The Oversight Committee will meet prior to the finalization of the Index Methodology and any Relevant Index Specification and will otherwise meet no less than annually and will be available on an ad hoc basis for resolution of any issues which arise.

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 CALCULATION AGENT

The Technology division of the Corporate Operations Group ("**COG**") of Macquarie Bank Limited acts as "Index Calculation Agent" in respect of each Index as of the date of this Manual. The methodology employed by the Index Calculation Agent in determining the composition and calculation of each index is set out in the calculations and procedures described in this Manual. The Index Sponsor may from time to time revise, amend and/or supplement this Manual, and if such rules are amended or supplemented, the Index Calculation Agent shall publish a new Manual no later than one calendar month prior to implementation of the amended or supplemented rules. If it is not reasonably practicable to publish a revised Manual one month prior to such changes, the revised Manual will be published as soon as reasonably practicable.

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

Calendar, in respect of an Index, is the calendar of Index Business Days in respect of that Index, as set out in the Relevant Index Specification.

Commodity, in respect of an Index, is each commodity listed in the Contract Schedule table of the Relevant Index Specification.

Commodity 1, in respect of a Pair *i* included in an Index, is the Commodity specified as such in the Contract Schedule Table of the Relevant Index Specification.

Commodity 2, in respect of a Pair *i* included in an Index, is the Commodity specified as such in the Contract Schedule Table of the Relevant Index Specification.

Component, in respect of an Index, means, in respect of an Index Business Day t and a Pair *i*, each of the two Contracts that is selected for Commodity 1 and Commodity 2 according to the Contract Schedule Table of the Relevant Index Specification and the calendar month on which Index Business Day t falls.

Contract is a futures contract traded in a Trading Facility and having a Commodity as underlying, identified by its underlying commodity, its reference month and its reference year.

Convergence Day is a Trading Day on which a Convergence Event occurs.

Convergence Event is a situation in which a Pair which was previously identified as having diverged from its equilibrium returns to that equilibrium, according to Section 1 of the Methodology. When a Convergence Event occurs in respect of a Pair, said Pair will reduce its exposure to its constituent Commodities to zero, subject to the provisions set out in section 5.

Convergence Threshold, in respect of an Index, is a number specified as such in the Relevant Index Specification.

Dislocation Day is a Trading Day on which a Dislocation Event occurs.

Dislocation Event is a situation in which a Pair is identified as having diverged from its equilibrium, according to Section 1 of the Methodology.

Dislocation Threshold, in respect of an Index, the threshold specified as such in the Relevant Index Specification.

Divergence Day is a Trading Day on which a Divergence Event occurs.

Divergence Event is a situation in which a Pair which was previously identified as having diverged from its equilibrium continues to diverge in a manner that indicates a (temporary or permanent) change in that equilibrium, according to Section 1 of the Methodology. When a Divergence Event occurs in respect of a

Pair, said Pair will reduce its exposure to its constituent Commodities to zero, subject to the provisions set out in section 5.

Divergence Threshold, in respect of an Index, is a number specified as such in the Relevant Index Specification.

Holdings Calculation Day, in respect of an Index, is each day specified as such in the Relevant Index Specification.

Holdings, in respect of an Index, are numbers that are used in conjunction with Pair Levels to determine the level of the Index on each Index Business Day

Index Business Days, in respect of an Index, are the Index Business Days as defined in the Relevant Index Specification.

Index Level, in respect of an Index and each Index Business Day, is the level of such Index in respect of such Index Business Day as determined by the Index Calculation Agent in accordance with the Methodology.

Index Sponsor is Macquarie Bank Limited (also referred to as "Macquarie"), the entity that publishes or announces (directly or through an agent) the daily level of the Index.

Index Start Date, in respect of an Index, is the day specified as such in the Relevant Index Specification.

Initial Index Level, in respect of an Index, is the value of the Index on the Index Start Date, specified in the Relevant Index Specification.

Minimum Holding Period, in respect of an Index, is a number of Index Business Days set out in the Relevant Index Specification.

Moving Average Lookback, in respect of an Index, is a number of Index Business Days set out in the Relevant Index Specification.

Non Interest-Bearing Cash Deposit is a synthetic asset that has a level of 100 on each Index Business Day.

Pair, in respect of an Index, is each pair of Commodities listed in the Relevant Index Specification. A Pair is comprised of two Commodities which are fundamentally related.

Pair Calculation Period, in respect of each calendar month, is the period from the last Index Business Day of the month immediately preceding that calendar month (inclusive) to the last Index Business Day of that calendar month (exclusive).

Pair Holdings, in respect of each Pair, are the holdings of that pair in the Contracts that comprise that Pair and in the Non Interest-Bearing Cash Deposit, all three of which are used in the determination of the Pair Level

Pair Weight, in respect of each Pair *i* in an Index, a number as specified in the Relevant Index Specification.

Pair Level is the level of a Pair as calculated in accordance with Section 2 of the Methodology.

Reference Month, in respect of a Contract, is the month by which that Contract is commonly identified.

Reference Year, in respect of a Contract, is the year by which that Contract is commonly identified.

Settlement Price, in respect of a Contract, and an Index Business Day is the price in US dollars that is published by the relevant Trading Facility and referred by them as the settlement price for that particular Contract. If the Index Business Day is not a trading day of the relevant Trading Facility, then the Settlement Price of that particular Contract will be the most recent available price on the most recent trading day of the relevant Trading Facility.

Target Holdings are a set of multipliers used for the daily calculations of the Index.

Target Pair Holdings are a set of multipliers used for the daily calculations of the level of each Pair.

Trading Day, in respect of a Pair *i,* is each Index Business Day on which both Components of that Pair are scheduled to be traded in their respective Trading Facility.

Trading Facility is the exchange, facility or platform on or through which a particular Contract is traded. A Trading Facility may, but is not required to, be a contract market, exempt electronic trading facility, derivatives transaction execution facility, exempt board of trade or foreign board of trade, as such terms are defined in the U.S. Commodity Exchange Act and the rules and regulations promulgated thereunder.

CALCULATION OF THE INDEX

Each Index is designed as a weighted basket of Pairs, each Pair being comprised of either two commodity futures or an allocation to a synthetic non-interest bearing cash deposit on each Index Business Day. The specific futures contracts that comprise each Pair are determined using the schedules provided in the Relevant Index Specification. Each Pair is used to identify dislocations in the equilibrium between the two Commodities that comprise it, which then causes the Index to switch its exposure from the Non Interest-Bearing Cash Deposit to the Contracts underlying those two Commodities.

> **Section 1** describes the triggers for changing the exposure of Pairs between Commodities and the Non Interest-Bearing Cash Deposit, which are called Dislocation Events, Convergence Events and Divergence Events;
>
> **Section 2** describes the calculations of the weights (or Pair Holdings) that apply to each Commodity in a Pair (once a Pair is invested in its underlying Commodities) and to the Non Interest-Bearing Cash Deposit, as well as each Pair Level, which are intermediate calculations needed for the calculation of the Index Level;
>
> **Section 3** describes the calculation of Holdings, which are numbers that reflect the exposure of the Index to each Pair and, along with the Pair Levels, are used in the determination of the Index Level on each Index Business Day;
>
> **Section 4** describes the day-to-day calculation of the Index Level;
>
> **Section 5** describes Market Disruption Events and the modifications to the calculations that the Index Sponsor will perform to determine the Index Level during and following any market disruptions.

On each Index Business Day, the Index Level is determined according to Section 4, using the calculations described in sections 1 through 4 and taking into account any exceptions to the calculations due to market disruption as laid out in Section 5. The Index Calculation Agent will determine whether any of the events laid out in section 1 apply for each Pair included in the Index and modify the calculation of the level of each Pair accordingly. Following this, the Index Calculation Agent will determine the proportion of each Pair in the Index and use these proportions and the Pair Levels to determine the Index Level, subject to the provisions on Market Disruption Events set out in Section 5.

SECTION 1: DISLOCATION, CONVERGENCE AND DIVERGENCE EVENTS

DISLOCATION EVENTS

A Dislocation Event in respect of a Pair is identified when that Pair has moved away from its equilibrium point, defined as a short-term moving average. This will cause the Index to get exposure to the Components of that Pair in such a way as to benefit from a potential return to equilibrium. In order to maintain a more accurate depiction of the relationship between the two Components of that Pair, calculations only take into account those Index Business Days in which both Components are scheduled to be traded ("Trading Days").

On each Trading Day, a Dislocation Event will be identified if the following condition is satisfied:

$$\left|dislocation_t^i\right| \geq \sigma_t^i * D$$

Where:

σ_t^i is the volatility of Pair i in respect of Index Business Day t, calculated as follows:

$$\sigma_t^i = \sqrt{\frac{1}{M}\sum_{j=1}^{M}\left(\ln\left(\frac{F_{t-j}^{i,1}}{F_{t-j}^{i,2}}\right) - \frac{1}{M}\sum_{j=1}^{M}\ln\left(\frac{F_{t-j}^{i,1}}{F_{t-j}^{i,2}}\right)\right)^2}$$

D is the Dislocation Threshold specified in the Relevant Index Specification;

M is the Moving Average Lookback specified in the Relevant Index Specification;

$t - j$ is the Trading Day that falls j Trading Days before Index Business Day t;

$F_{t-j}^{i,1}$ is the Settlement Price on Trading Day t-j of the Contract underlying Commodity 1 for the Pair Calculation Period in which Trading Day t falls

$F_{t-j}^{i,2}$ is the Settlement Price on Trading Day t-j of the Contract underlying Commodity 2 for the Pair Calculation Period in which Trading Day t falls

and

$dislocation_t$ is calculated as follows:

$$dislocation_t^i = \ln\left(\frac{F_{t-1}^{i,1}}{F_{t-1}^{i,2}}\right) - \frac{1}{M}\sum_{j=1}^{M}\ln\left(\frac{F_{t-j}^{i,1}}{F_{t-j}^{i,2}}\right)$$

Once a Dislocation Event in respect of a Pair has been identified, further Dislocation Events in respect of that Pair will be disregarded until either a Divergence Event or a Convergence Event has occurred in respect of that Pair, or until the end of the Pair Calculation Period in which the original Dislocation Event occurred, unless in the following Pair Calculation Period both Components of that Pair remain the same.

Each Index Business Day on which a Dislocation Event has occurred and is not disregarded is called a Dislocation Day.

CONVERGENCE EVENTS

Once a Dislocation Event has been identified in respect of a particular Pair and the Index has assigned exposure to the Commodities underlying that Pair, it is necessary to specify conditions for returning exposure to the cash deposit. This occurs when the relationship between the two Commodities returns to the previous equilibrium or when a new equilibrium is deemed to have been established. Either of these events constitutes a Convergence Event as described below.

On each Index Business Day that falls after the end of the Minimum Holding Period following a Dislocation Day in respect of a Pair *i*, the Index Sponsor will check for the occurrence of a Convergence Event or a Divergence Event. If either event is identified, the Pair Holdings of that Pair will be modified according to Section 2 below.

A Convergence Event in respect of an Index Business Day t will be identified if one of the following conditions is satisfied:

$$\left| dislocation_t^i \right| \leq \sigma_t^i * C$$

or

$$sign\left(dislocation_t^i\right) \neq sign\left(dislocation_d^i\right)$$

Where:

$dislocation_t^i$ is calculated as above;

$dislocation_d^i$ is calculated as above, in respect of the Dislocation Day d immediately preceding Index Business Day t; and

σ_t^i is calculated as above; and

C is the Convergence Threshold as defined in the Relevant Index Specification.

DIVERGENCE EVENTS

In the event that the Commodities underlying a Pair appear to have diverged from their previous equilibrium but not to have yet established a new equilibrium, the Index will move the exposure of the Index to this Pair back to the Non Interest-Bearing Cash Deposit. This function operates like a stop-loss. It is intended to mitigate losses coming from exposure that is meant to profit from a return to equilibrium, at a time when the Commodities that comprise the Pair are still in the process of establishing a new equilibrium.

A Divergence Event in respect of an Index Business Day t will be identified if the following condition is satisfied:

$$\left|dislocation_t^i\right| - \left|dislocation_d^i\right| > Div * \sigma_t^i$$

Where:

Div is the Divergence Threshold specified in the Relevant Index Specification;

$dislocation_t^i$ is calculated as above, in respect of Index Business Day t;

$dislocation_d^i$ is calculated as above and

σ_t^i is calculated as above

On any Index Business Day, *t*, each Commodity in a Pair *i* has a Pair Holding, $PH_{i,t}$, associated with it. As outlined below, the Pair Holdings, $PH^i_{1,t}$ and $PH^i_{2,t}$, of the first and second Commodity in Pair *i* are used as inputs on the daily calculation of the level of Pair *i* which is used in the calculation of the Index.

TARGET PAIR HOLDINGS CALCULATION ON A DISLOCATION DAY

Subject to the provisions of section 5, the calculation of the Target Pair Holdings on a Dislocation Day *d* requires as input the Settlement Prices of the Contracts that correspond to Commodity 1 and Commodity 2 of the Pair for the Pair Calculation Period in which that Dislocation Day falls. Target Pair Holdings are calculated such that the Pair will benefit from a dislocation by having long exposure to the Commodity that is identified as "undervalued" and short exposure to the Commodity that is identified as "overvalued".

The Target Pair Holdings are calculated according to the formulae below:

$$TPH^{i,1}_d = -Pair^i_d \times \frac{sign(dislocation^i_d)}{F^{i,1}_d}$$

$$TPH^{i,2}_d = Pair^i_d \times \frac{sign(dislocation^i_d)}{F^{i,2}_d}$$

Where:

$TPH^{i,1}_d$ is the Target Pair Holding of Commodity 1 in Pair *i* in respect of Dislocation Day d

$TPH^{i,2}_d$ is the Target Pair Holding of Commodity 2 in Pair *i* in respect of Dislocation Day d

$dislocation^i_d$ is calculated as above

$Pair^i_d$ is the Pair Level of Pair i on Dislocation Day d, calculated according to the Daily Pair Calculation section below

$F^{i,1}_d$ is the Settlement Price on Dislocation Day d of the Contract corresponding to Commodity 1 of Pair *i* for the Pair Calculation Period on which Dislocation Day d falls

$F^{i,2}_d$ is the Settlement Price on Dislocation Day d of the Contract corresponding to Commodity 2 of Pair *i* for the Pair Calculation Period on which Dislocation Day d falls

DAILY PAIR HOLDINGS CALCULATION

On each Index Business Day, *t*, the Pair Holdings of each Commodity in Pair *i* are calculated according to the following rules, subject to the provisions in section 5:

(i)   If t is immediately following a Dislocation Day, d, the Pair Holdings for Commodity 1 and Commodity 2 are set equal to the Target Pair Holdings calculated on that Dislocation Day.

(ii)   If t is the Index Business Day immediately following a Convergence Day or a Divergence Day then the Pair Holdings for Commodity 1 and Commodity 2 are equal to zero

(iii)   If

a. t is the Index Business Day immediately following the first day of a Pair Calculation Period;

b. either of the Components of that Pair has changed from the preceding Pair Calculation Period; and

c. no Dislocation Event occurred on the immediately preceding Index Business Day,

then the Pair Holdings for Commodity 1 and Commodity 2 are equal to zero

(iv)   On any other Index Business Day, t, the Holdings for Commodity 1 and Commodity 2 are set equal to the Holdings of Commodity 1 and Commodity 2 on the immediately preceding Index Business Day.

The Pair Holding for both Components of each Pair in respect of which the Index Start Day is not also a Dislocation Day will be equal to zero

NON-INTEREST BEARING CASH HOLDINGS

On each Index Business Day t, the Pair Holding for each Pair in respect of the synthetic Non Interest-Bearing Cash Deposit will be determined as follows:

$$TPH_t^{i,NIBCD} = \begin{cases} \dfrac{Pair_t^i}{100}, if\ PH_t^{i,1} = PH_t^{i,2} = 0 \\ 0, otherwise \end{cases}$$

DAILY PAIR LEVEL CALCULATION

The level of each Pair i will be calculated in respect of each Index Business Day t as follows:

$$P_t = P_{t-1} + PH_t^{i,1} \times \left(F_t^{i,1} - F_{t-1}^{i,1}\right) + PH_t^{i,2} \times \left(F_t^{i,2} - F_{t-1}^{i,2}\right) + PH_t^{i,NIBCD} \times \left(NIBCD_t - NIBCD_{t-1}\right)$$

Where:

P_t is the Pair Level for Pair i in respect of Index Business Day t

$PH_t^{i,1}$ is the Pair Holding of Commodity 1 of Pair i in respect of Index Business Day t

$PH_t^{i,2}$ is the Pair Holding of Commodity 2 of Pair i in respect of Index Business Day t

$F_t^{i,1}$ is the Settlement Price on Index Business Day t of the Contract corresponding to Commodity 1 of Pair *i* for the Pair Calculation Period on which Index Business Day t falls

$F_t^{i,2}$ is the Settlement Price on Index Business Day t of the Contract corresponding to Commodity 2 of Pair *i* for the Pair Calculation Period on which Index Business Day t falls

$NIBCD_t$ is the level of the Non-Interest Bearing Cash Deposit, which is always equal to 100

The level of each Pair on the Index Start Date will be equal to 100.

On any Index Business Day, t, each Pair i has a Holding, $H_{i,t}$, associated with it. As outlined in the next section, the Holdings, $\{H_{1,t}, \cdots, H_{n,t}\}$, of the n Pairs are used as inputs on the daily calculation of the Index. In this section, we outline the Holdings, $\{H_{1,t}, \cdots, H_{n,t}\}$, calculations on any Index Business Day, t.

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 Pair Weights in respect of that Holdings Calculation Date R and the levels of the Pairs on that Holdings Calculations Date, R.

On any Holdings Calculation Date, R, let the Pair Weight of each Pair i be denoted by $W_{i,R}$ so that $\{W_{1,R}, \cdots, W_{n,R}\}$ are the Weights of the n Components in the Index, as specified in the Relevant Index Specification, in respect of the Holdings Calculation Date R. Analogously, let $\{C_{1,R}, \cdots, C_{n,R}\}$ be the set of levels of the Pairs on the Holdings Calculation Date, R. The Index Target Holdings, $\{TH_{1,R}, \cdots, TH_{n,R}\}$, for each of the n Pairs in the Index are calculated according to the formula below:

$$TH_{i,R} = I_R \times \frac{W_{i,R}}{P_{i,R}} \; for \; every \; Pair \; i = 1, \dots, n$$

where I_R is the Index Level on the Holdings Calculation Date R and n is the total number of Pairs in the Index as listed in the Relevant Index Specification.

DAILY HOLDINGS CALCULATION

On any Index Business Day, t, the set of Holdings $\{H_{1,t}, \cdots, H_{n,t}\}$ in respect of each of the n Pairs in the Index is calculated according to the following rule:

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

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

SECTION 4: DAILY INDEX CALCULATION

EXCESS RETURN INDEX LEVEL CALCULATION

On each Index Business Day, *t*, the Excess Return Index level, I_t, is calculated (rounded to seven significant figures) based on the value of the Excess Return Index in the preceding Index Business Day, I_{t-1}, and the change in level of each of the Pairs, according to the formula:

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

where:

I_t is the Index Level on the Index Business Day t

$H_{i,t}$ is the Holding of Pair *i* on the Index Business Day t;

$P_{i,t}$ is the level of Pair *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 Excess Return Index Starting Level, which is the value of the Excess Return Index on the Index Start Date, are specified in the Relevant Index Specification.

TOTAL RETURN INDEX LEVEL CALCULATION

On an Index Business Day, *t*, the Total Return Index level, TI_t, is calculated (rounded to seven significant figures) based on the value of the Total Return Index on the preceding Index Business Day, TI_{t-1}, the Index Daily Return, IDR_t, and the **Collateral Return**, CR_t, according to the formula:

$$TI_t = TI_{t-1} \times (1 + IDR_t + CR_t)$$

$$CR_t = \left[\frac{1}{1 - \frac{91}{360} \times TBAR_{t-1}}\right]^{days/91} - 1$$

Where:

TBAR $_{t-1}$ is the Treasury Bill Rate of the most recent weekly US Treasury Bill auction prior to the Index Business Day *t*;

days is the number of calendar days between the Index Business Day *t* and the previous Index Business Days *t-1*; and

IDR$_t$ is equal to $\frac{I_t}{I_{t-1}} - 1$

If a Total Return Index is calculated by the Index Sponsor, the Total Return Index Start Date as well as the Total Return Index Starting Level, which is the value of the Total Return Index on the Index Start Date, will be specified in the Relevant Index Specification.

With respect to the daily calculation of the Index, a "Market Disruption Event" means the occurrence of one or more of the following events as determined by the Index Sponsor in its sole discretion:

(i)   a failure by the relevant Trading Facility to report or announce a settlement price for a Component of a Pair included in the Index;

(ii)   all trading in a Component of a Pair included in 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) Contract underlying the Index 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 determines in its sole discretion that the event materially interferes with the ability of the Index Sponsor or any of its affiliates to hedge the Index.

If any of the points (i), (ii), (iii), (iv) apply to a Component of a Pair then it shall be deemed to apply to any Components that are included in that Pair for the purposes of calculating the level of that Pair. A Pair which contains a Disrupted Component shall be called a "Disrupted Pair".

HOLDINGS CALCULATION UNDER MARKET DISRUPTION EVENTS

If a Market Disruption Event with respect to one or more Pairs (each a *Disrupted Pair*) occurs on a Holdings Calculation Day *R* (hereinafter called the *Disrupted Holdings Calculation Day*), , then the Daily Holdings Calculation for subsequent Index Business Days will be modified as follows:

(i)   On the Index Business Day immediately following a Disrupted Holdings Calculation Day, the Holdings $\{H_{1,t}, \cdots, H_{n,t}\}$ are calculated based on the following formula:

$$H_{i,t} = TH_{i,R} + SCH_{i,t}$$

Where:

$H_{i,t}$ means the Holding of Pair i on Index Business Day t

$TH_{i,R}$ means the Target Holding of Pair i on Holdings Calculation Day R

$SCH_{i,t}$ means $\begin{cases} H_{i,t-1} - TH_{i,t} & if\ i\ is\ a\ Disrupted\ Pair;\ or \\ 0 & otherwise \end{cases}$

(ii)   For each Disrupted Pair i, the Holding $H_{i,t}$ shall be equal to the Target Holding $TH_{i,t}$ on the first Index Business Day following a Disrupted Holdings Calculation Day, on which no Market Disruption Event in respect of that Pair i occurs or is continuing. If a Market Disruption Event continues for more than 5 Index Business Days following a Disrupted

Holdings Calculation Day, the Index Calculation Agent shall, in good faith and in a commercially reasonable manner, determine the levels of each Disrupted Pair i that will be used in the calculation of Holdings and Index Levels.

(iii)   For each Pair that is not a Disrupted Pair, the Holding $H_{i,t}$ on the Index Business Day immediately following the Disrupted Holdings Calculation Day shall be calculated according to the provisions in section 2.

PAIR HOLDINGS CALCULATION UNDER MARKET DISRUPTION EVENTS

If, on an Index Business Day (a *Disrupted Business Day*) a Market Disruption Event with respect to one or more Components (each a *Disrupted Component*) occurs, then the Pair Holdings for subsequent Index Business Days will be equal to the Pair Holdings for Commodity 1 and Commodity 2 on the immediately preceding Index Business Day.

PAIR LEVEL CALCULATION UNDER MARKET DISRUPTION EVENTS

If a Market Disruption Event with respect to one or more Components of a Pair is continuing following the end of a Calculation Period and either of the Components of that Pair in the following Calculation Period is scheduled to change according to the Relevant Index Specification, then the level of each Disrupted Pair will be calculated using Pair Holdings as of the first Index Business Day on which the Market Disruption Event occurred and, for the purposes of calculating the Pair Level for each Disrupted Pair, the Components of each Disrupted Pair will be the same as they were on the first Index Business Day on which the Market Disruption Event occurred. On the first subsequent Index Business Day on which no Market Disruption Event occurs or is continuing, the Components of each Pair will be determined as normal, and the Pair Holdings of each Pair that was a Disrupted Pair will be equal to zero unless a Dislocation Event in respect of that Pair has occurred on that Index Business Day.