DB Commodity Momentum Alpha Indices

This Index Guide is only intended to be viewed by professional clients under the Markets in Financial Instruments Directive 2004/39/EC (MiFID) who have the knowledge and experience in financial and business matters and expertise to assess all relevant risks associated with the Index. Please see the 'Index Guide Disclaimers' section below for further information. Please refer to the Glossary section for the definition of various terms.

Summary

This section summarises a number of features of each Index. This section should be read as a summary introduction to the Index Guide and is no substitute for reviewing the Index Guide in full. This section is subject to the more detailed provisions set out in the remainder of this Index Guide. Capitalised terms not otherwise defined shall have the meanings given to them in the Glossary section.

The index suite covered in this guide consists of two master indices,

- DB Commodity Momentum Alpha Long ER Index ("***Long Index***")
- DB Commodity Momentum Alpha Short ER Index ("***Short Index***")

and, their respective Euro-hedged augmentations,

- DB Commodity Momentum Alpha Long EUR ER Index ("***Long EUR Index***")
- DB Commodity Momentum Alpha Short EUR ER Index ("***Short EUR Index***")

The Long Index extracts potential price returns based on commodities that are rising. Allocations are made to 13 commodities across Energy, Industrial Metals and Precious Metals. The allocation method aims to achieve a diversified portfolio to avoid component concentration. The index employs a leveraged position of between 125% and 225%.

The Short Index extracts potential price returns based on commodities that are falling. Allocations are made to 13 commodities across Energy, Industrial Metals and Precious Metals. The allocation method aims to achieve a diversified portfolio to avoid component concentration. The index employs a leveraged position of between 125% and 225%.

The DB Commodity Momentum Alpha USD ER Index (Bloomberg Ticker: *DBCMMAUE Index*) (***"The Base Index"***) is based on the idea that the duration of price momentum varies across commodities. Price momentum may be short-lived for a given commodity and persist over time for others. The signal employed is to calculate a trading indicator and in order to measure the momentum duration we employ a technique called Local Linear Regression distinctive to each commodity. In simple terms for each commodity we use a weighting scheme of past data based on a decay factor in order to project future returns. For consideration of more recent performances latest price performance is assigned a higher weight than past performance. The higher the decay factor, the higher the weight is placed on more recent performance to the assessment.

Both the Long Index and the Short Index allocations are based on the allocations in the Base Index, such that each of the Long Index and the Short Index diversifies its allocation across commodities and avoids component concentration. Components are defined as Oil (which comprises WTI Crude Oil, Brent Crude Oil, Gasoil, RBOB Gasoline and Heating Oil (together, the "**Oil Component**")) and Natural Gas, Aluminium, Copper, Nickel, Zinc, Lead, Gold and Silver. The Base Index extracts returns based on the relative momentum of commodities across the following sectors - Energy, Industrial Metals and Precious Metals.

The Long Index and the Short Index also take hypothetical positions in the same 13 S&P GSCI 3m forward Indices as that taken by the Base Index.

The implementation of the Long Index and the Short Index are described as follows:

- *Long Index*
  - On each Index Selection Day, weights in the Base Index are segregated such that the commodities with negative weights are assigned a weight of zero and the positive weights are considered as is for selection. These segregated

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weights are then added to a leverage weight within each component, where the leverage weight in the Oil Component is equally distributed among the commodities in this component.

- *Short Index*
  - On each Index Selection Day, weights in the Base Index are segregated such that the commodities with positive weights are assigned a weight of zero and the absolute of the negative weights are considered for selection. These segregated weights are then added to a leverage weight within each component, where the leverage weight in the Oil Component is equally distributed among the commodities in this component.

Relative weights in the Long Index and the Short Index are such that the largest component has a relative weight less than 35% and all other components have a relative weight of 16.26% or less.

Index Suite

The indices are calculated and published to Bloomberg in the following versions;

Table 1: Index Suite

Index Name	Return Type	Currency	Bloomberg Ticker
DB Commodity Momentum Alpha Long ER Index	ER	USD	DBCMMULE
DB Commodity Momentum Alpha Long EUR ER Index	ER	EUR	DBCMMELE
DB Commodity Momentum Alpha Short ER Index	ER	USD	DBCMMUSE
DB Commodity Momentum Alpha Short EUR ER Index	ER	EUR	DBCMMESE

Source: DBIQ

Key Index Information

Index Inception Date

3-Jan-2002

Index Live Date

13-Jun-2017

Index Business Day

Each day on which the New York Mercantile Exchange is scheduled to be open for its regular trading session.

Index Selection Day

Table 2: Index Selection Day

Index Name	Index Selection Day
DB Commodity Momentum Alpha Long ER Index	1st and 11th Index Business Day of every month (or, if none, the 1st Index Business Day of the month prior to the Index Inception Date based on the calendar of the Index Business Day)
DB Commodity Momentum Alpha Short ER Index	1st and 11th Index Business Day of every month (or, if none, the 1st Index Business Day of the month prior to the Index Inception Date based on the calendar of the Index Business Day)

Source: DBIQ

Index Rebalancing Day

Table 3: Index Rebalancing Day

Index Name	Index Rebalancing Day
DB Commodity Momentum Alpha Long ER Index	Rebalanced on the 2nd and 12th Index Business Day of each month
DB Commodity Momentum Alpha Long EUR ER Index	Reweighted on the last Index Business Day of each month
DB Commodity Momentum Alpha Short ER Index	Rebalanced on the 2nd and 12th Index Business Day of each month
DB Commodity Momentum Alpha Short EUR ER Index	Reweighted on the last Index Business Day of each month

Source: DBIQ

Index Owner and Index Administrator

Each Index is a Deutsche Bank AG proprietary index. Each Index is the intellectual property of Deutsche Bank AG ("Deutsche Bank AG" or the "Index Owner", which expression shall include any successor in such capacity). The Index Owner owns the copyright and all other intellectual property rights to each Index and this Index Guide. Any use of these intellectual property rights must be with the prior written consent of the Index Owner.

Each Index will be governed by the Index Administrator. The initial Index Administrator shall be Deutsche Bank AG operating through Deutsche Bank Index Quant ("DBIQ"), a research unit within Deutsche Bank AG via its internal processes and the "Index Administrator" shall mean Deutsche Bank AG acting in such capacity or any successor thereto. The Index Administrator controls the creation and operation of the index administrative process, including all stages and processes involved in the production and dissemination of the Long Index, the Short Index, the Long EUR Index and the Short EUR Index.

The Index Administrator has implemented and maintains the DBIQ User Guidance and Administrator Handbook Overview (the "Overview"), which sets out a summary of the policies, procedures and controls implemented by the management of the Index Administrator to promote sound business practices for the lifecycle management of the Index Owner's proprietary benchmarks by the Index Administrator. The Overview also includes the Index Administrator's policy related to quality of benchmarks and input data management. Additional issues related to governance, controls, benchmark classification and risk controls, periodic reviews and conflicts of interest are also addressed.

The Overview is available on the DBIQ homepage under the following URL (the "DBIQ Website"):

https://index.db.com

Index Publication

The level of each Index on each relevant Index Business Day shall be published:

(i) on the DBIQ Website; and

(ii) where applicable, on Bloomberg under the Bloomberg ticker in respect of such Index as set out in Table 1 above.

Any such publication may be restricted by means determined as appropriate for such purpose by the Index Administrator in its sole and absolute discretion including, but not limited to, password protection on the DBIQ Website restricting access to a limited set of persons in accordance with arrangements agreed between the Index Administrator and such person. The Index Administrator may, at any time and without notice, change the frequency or method publication of an Index, as the case may be. The Index Administrator accepts no legal liability to any person for publishing or not continuing to publish for any period of time and level in respect of an Index at any particular place or any particular time.

Index Rules and Calculations

Underlying commodities, Relevant Exchange and the corresponding S&P GSCI 3m Forward Indices

Settlement or fixing spot prices where relevant, of the commodities under the associated "Spot Symbol" as set out in Table 4 below or any Successor Source thereto. Levels of the S&P GSCI 3m forward indices (each an "**S&P GSCI 3m Forward Index**") are published on Reuters as per the RICs given in Table 4 or any Successor Source thereto.

Table 4: Underlying commodities, corresponding S&P GSCI 3m Forward Indices and Inverse of the Decay Factors

Sector	Commodity Name	Spot symbol	Relevant Exchange	Inverse of the Decay Factors	Corresponding S&P GSCI 3m forward Name	S&P GSCI 3m forward Reuters RIC
Energy	WTI Crude Oil	CLc1	NYMEX	0.3210938	S&P GSCI 3 Month Forward Crude Oil Index Excess Return	.SG3MCLP
	Brent Crude	HOc1	ICE	0.2390625	S&P GSCI 3 Month Forward Brent Crude Index Excess Return	.SG3MBRP
	Heating Oil	RBc1	NYMEX	0.9812500	S&P GSCI 3 Month Forward Heating Oil Index Excess Return	.SG3MHOP
	Natural Gas	NGc1	NYMEX	0.1511719	S&P GSCI 3 Month Forward Natural Gas Index Excess Return	.SG3MNGP
	RBOB Gasoline	LCOc1	NYMEX	0.0447266	S&P GSCI 3 Month Forward Unleaded Gasoline Index Excess Return	.SG3MHUP
	Gas Oil	LGOc1	ICE	0.7234375	S&P GSCI 3 Month Forward Gasoil Index Excess Return	.SG3MGOP
Industrial Metals	Aluminium	MAL0	LME	0.1072266	S&P GSCI 3 Month Forward Aluminum Index Excess Return	.SG3MIAP
	Copper	MCU0	LME	0.0566895	S&P GSCI 3 Month Forward Copper Index Excess Return	.SG3MICP
	Nickel	MNI0	LME	0.5945313	S&P GSCI 3 Month Forward Nickel Index Excess Return	.SG3MIKP
	Zinc	MZN0	LME	0.8875000	S&P GSCI 3 Month Forward Zinc Index Excess Return	.SG3MIZP
	Lead	MPB0	LME	0.3054688	S&P GSCI 3 Month Forward Lead Index Excess Return	.SG3MILP
Precious Metals	Gold	GCc1	COMEX	0.6375000	S&P GSCI 3 Month Forward Gold Index Excess Return	.SG3MGCP
	Silver	SIc1	COMEX	0.7234375	S&P GSCI 3 Month Forward Silver Index Excess Return	.SG3MSIP

Where "NYMEX" is the NYMEX CME Group, "ICE" is the Intercontinental Exchange and "LME" is the London Metal Exchange.

Source: DBIQ

DB Commodity Momentum Alpha Long ER Index

The Long Index is constructed based on the allocations in the Base Index, as of each Index Selection Day, and is calculated on all Index Business Days as follows:

$$ILL(t) = ILL(t-1) + \sum_{i=1}^{13} (ILo(t,i) - ILo(t-1,i)) * Ul(t-1,i)$$

Where:

t = Any Index Business Day t

i = Corresponds to the commodities listed in 4

s	=	Any Index Selection Day s
$ILL(t)$	=	Index level of the Long Index in respect of t
$ILL(t-1)$	=	Index Level of the Long Index in respect of the Index Business Day immediately preceding t (or, if none, 100)
$ILo(t,i)$	=	Index level of the S&P GSCI 3m Forward Index in respect of t corresponding to commodity i
$ILo(t-1,i)$	=	Index level of the S&P GSCI 3m Forward Index in respect of the Index Business Day immediately preceding t corresponding to commodity i
$Ul(t-1,i)$	=	Notional Holdings of the S&P GSCI 3m Forward Index corresponding to commodity i in the Long Index on the Index Business Day immediately preceding t (or, if none the initial Notional Holdings of such S&P GSCI 3m Forward Index) determined pursuant to sub-section "Index Rebalancing" immediately below
$w_L(s,i)$	=	Weight of the S&P GSCI 3m forward Index corresponding to commodity i in the Long Index, determined on s, as determined in the sub-section "Index Selection" below

Index Rebalancing

If t is an Index Rebalancing Day, the Notional Holdings of the S&P GSCI 3m Forward Index corresponding to commodity i, in the Long Index is calculated as follows,

$$Ul(t,i) = w_L(s,i) * \frac{ILL(t)}{ILo(t,i)}$$

On any other Index Business Day t the Notional Holdings in the Long Index remains constant:

$$Ul(t,i) = Ul(t-1,i)$$

The initial Notional Holdings in the Long Index applicable on the Index Inception Day are given under the Annex in Table 5.

Index Selection

Base Index Weights

The Index is rebalanced twice in a month on the relevant Index Rebalancing Days based on the weights $W(o,i)$ calculated on the relevant Index Selection Day immediately preceding such Index Rebalancing Day. The weighting mechanism is based on the idea that the duration of price momentum varies across commodities. In order to measure the momentum duration, a technique called "Local Linear Regression" is employed. This statistical measure is based on a weighting scheme such that past data has a decay factor applied in order to project future returns for each commodity. Recent price performance is assigned higher weight than past performance. The higher the decay factor, the higher the weight is placed on more recent performance to the assessment. For each commodity, the decay factor γ has been calibrated and takes into account the long dated price history of that commodity. The inverse of decay factor is given in figure 1 above.

Local Linear Regression

Let t be a vector of times (measured in days), S^i the Settlement Price for commodity i and t_n is the most recent time in the data set. Note that the element of the vector t are equally spaced and $dt = \frac{1}{252}$

The aim is to choose α^i and β^i as to minimize the outcome of the below formula:

$$L(\alpha^i, \beta^i) = \sum_{k=1}^{n} \left(S^i_{t_k} - \alpha^i - \beta^i_{t_k}\right)^2 q^i(t_n, t_k)$$

The weight assigned to past data is a function $K(x)$ of the rescaled distance between the current time t_n and the past time t_k,

$$q^i(t_n, t_k) = K\left(\frac{t_n - t_k}{h^i}\right)$$

where $h^i = {}^{1}/_{\gamma^i}$ is the inverse of the decay factor. The kernel function $K(x)$ used in the mechanism is "tricubic" defined as

$$K(x) = (1 - x^3)^3 \mathbf{1}_{|x|<1}$$

For each commodity, the output of the regression β^i is used to calculate the expected return on which the allocation decision is based upon. The expected return for each commodity is equal to:

$$ER^i_{t_k} = \frac{\beta^i}{S^i_{t_n}}$$

Minimization Algorithm

The local linear regression parameter β can be computed explicitly using the algorithm below:

$$tt_i = t_i - t_1 \; \forall \; i = 1, \dots, n$$

$$d_i = t_n - \; t_i \; \forall \; i = 1, \dots, n$$

$$k_i = K\left(\frac{d_i}{h_i}\right) \; \forall \; i = 1, \dots, n$$

$$z_i = \frac{k_i}{\sum_{i=j}^{N} k_j} \; \forall \; i = 1, \dots, n$$

$$\bar{y} = \sum_{i=1}^{n} (y_i \times z_i)$$

$$\bar{t} = \sum_{i=1}^{n} (tt_i \times z_i)$$

$$ty = \sum_{i=1}^{n} (tt_i \times y_i \times z_i)$$

$$\overline{t_2} = \sum_{i=1}^{n} ((tt_i)^2 \times z_i)$$

$$\beta = \frac{ty - \bar{t} \times \bar{y}}{\overline{t_2} - (\bar{t})^2}$$

Weighing Algorithm

- For each commodity i and Index Rebalancing Day t_j, run the local linear regression as described above over the last 500 Index Business Days. The independent variable of the regression is the time interval $\Delta t_j = (t_{j-500}, t_j]$ and the dependent variable is the Settlement Price history of commodity i. The weight given to past data depends on the decay factor γ_i. The higher is γ_i, the lower the weight assigned to past data.
- For each commodity i we obtain an expected return (or momentum signal) $ER^i_{t_j}$. If the expected return is more than the "invest" threshold (the same for all commodities, i.e. $ER^i_{t_j} > b$ then a long weight $W = \frac{1}{N}$ is assigned to commodity i. If $ER^i_{t_j} < -b$ a short weight $W = -\frac{1}{N}$ is assigned to the commodity. For these purposes, "N" is the number of the commodities included in the index and is equal to 13 and "b" is 20%.
- The steps above are repeated on each Index Rebalancing Day t_j.

Long Index Weights

On every Index Selection Day, the Long Index Weights to be allocated to the 13 S&P GSCI 3m Forward Indices in the Long Index are determined in the following steps:

Step 1 -

The positive weights determined pursuant to sub-section "Weighing Algorithm" above are segregated such that the underlying commodity i with a negative weight is assigned zero weight and rest considered as they are. We denote the Segregated Long Weights by $w^+(s,i)$ and determine them as follows:

$$w^+(s,i) = \max(w(s,i), 0)$$

Where,
$w(s,i)$ is the Base Index Weight of the S&P GSCI 3m Forward Index corresponding to commodity i, determined under the sub section "Base Index Weights", on any Index Selection Day s;
$w^+(s,i)$ is the Segregated Long Weight of the S&P GSCI 3m Forward Index corresponding to commodity I; and
Max function selects the maximum between the Base Index Weight $w(s,i)$ and zero for each underlying commodity i

Step 2 -

The Segregated Long Weights under each component is added to a Leverage Weight equal to 1.25/9 such that the Leverage Weight added to the Segregated Long Weights in the Oil Component is equally distributed among the 5 commodities comprising the Oil Component. The below mathematically describes the allocation of the Leverage Weight to the Segregated Long Weights across the commodities:

(i) Oil Component: Brent Crude, WTI Crude Oil, Heating Oil, RBOB Gasoline and Gas Oil

$$w_L(s,i) = w^+(s,i) + LW/5$$

(ii) Other components,

$$w_L(s,i) = w^+(s,i) + LW$$

Where,

$w_L(s,i)$ is the Long Index Weight of the S&P GSCI 3m Forward Index corresponding to commodity i, and is used to determine the Notional Holdings in the Long Index, as given in the sub-section "Index Rebalancing" above; and
LW is the Leverage Weight which is equal to 1.25/9.

DB Commodity Momentum Alpha Long EUR ER Index

The DB Commodity Momentum Alpha Long EUR ER Index is the Euro hedged version of the Long Index and is calculated on all Index Business Days as follows:

$$ILL_{EUR}(t) = (1 + \mathrm{Re}\,tILer(t) + \mathrm{Re}\,tILer(t) * FXr(t)) * ILL_{EUR}(r)$$

Where:

t	=	Any Index Business Day t
r	=	Previous Index Rebalancing Day which is the last Index Business Day of the previous month (or, if none, then the Index Inception Day)
$ILL_{EUR}(t)$	=	Index level of the Long EUR Index in respect of t
$ILL_{EUR}(r)$	=	Index level of the Long EUR Index in respect of the Index Business Day immediately preceding t (or, if none, 100)

$$\mathrm{Re}\,tILer(t) = \frac{ILL(t)}{ILL(r)} - 1$$

$ILL(t)$	=	Index level of the Long Index in respect of t
$ILL(r)$	=	Index level of the Long Index in respect of the Index Business Day immediately preceding t (or, if none, 100)

$$FXr(t) = \frac{FX(t)}{FX(r)} - 1$$

$FX(t)$		FX spot rate as published on Reuters screen USDEURFIX=WM at approximately 4 PM London Time on t (or, if not available, as determined by the Index Administrator by reference to such sources it deems appropriate)
$FX(r)$	=	FX spot rate as published on Reuters screen USDEURFIX=WM at approximately 4 PM London Time on r (or, if not available, as determined by the Index Administrator by reference to such sources it deems appropriate)

DB Commodity Momentum Alpha Short USD ER Index

The Short Index is constructed based on the allocations in the Base Index, as of each Index Selection Day, and is calculated on all Index Business Days as follows:

$$ILS(t) = ILS(t-1) + \sum_{i=1}^{13} (ILo(t,i) - ILo(t-1,i)) * Us(t-1,i)$$

Where:

t	=	Any Index Business Day t
i	=	Corresponds to the commodities listed in Table
s	=	Any Index Selection Day s
$ILS(t)$	=	Index level of the Short Index in respect of t
$ILS(t-1)$	=	Index Level of the Short Index in respect of the Index Business Day immediately preceding t (or, if none, 100)
$ILo(t,i)$	=	Index level of the S&P GSCI 3m Forward Index in respect of t corresponding to commodity i

$ILo(t-1,i)$	=	Index level of the S&P GSCI 3m Forward Index in respect of the Index Business Day immediately preceding t corresponding to commodity i
$Us(t-1,i)$	=	Notional Holdings of the S&P GSCI 3m Forward Index corresponding to commodity i in the Short Index on the Index Business Day immediately preceding t (or, if none the initial Notional Holdings of such S&P GSCI 3m Forward Index) determined pursuant to sub-section "Index Rebalancing" immediately below
$w_S(s,i)$	=	Weight of the S&P GSCI 3m forward Index corresponding to commodity i in the Short Index, determined on s, as determined in the sub-section "Index Selection" below

Index Rebalancing

If t is an Index Rebalancing Day, the Notional Holdings of the S&P GSCI 3m Forward Index corresponding to commodity i in the Short Index, is calculated as follows,

$$Us(t,i) = w_S(s,i) * \frac{ILS(t)}{ILo(t,i)}$$

On any other Index Business Day t the Notional Holdings in the Short Index remains constant:

$$Us(t,i) = Us(t-1,i)$$

The initial Notional Holdings in the Long Index applicable on the Index Inception Day are given under the Annex in Table 6.

Index Selection

Short Index Weights

On every Index Selection Day, the Short Index Weights to be allocated to the 13 S&P GSCI 3m Forward Indices in the Short Index are determined in the following steps:

Step 1 -

The negative weights are segregated from the Base Index Weights, such that the underlying commodity i with a positive weight is assigned zero weight and rest are denoted in their absolute form. We denote the Segregated Short Weights by $w^-(s,i)$ and determine them as follows:

$$w^-(s,i) = -\min(w(s,i),0)$$

Where,

$w(s,i)$ is the Base Index Weight of the S&P GSCI 3m Forward Index corresponding to commodity i, determined under the sub section **Base Index Weights**, on any Index Selection Day s;

$w^-(s,i)$ is the Segregated Short Weight of the S&P GSCI 3m Forward Index corresponding to commodity i; and

Min function selects the minimum between the Base Index Weight $w(s,i)$ and zero for each underlying commodity i.

Step 2 -

The Segregated Short Weights under each component is added to a Leverage Weight equal to 1.25/9 such that the Leverage Weight added to the Segregated Short Weights in the Oil Component is equally distributed among the 5 commodities com prising the Oil Component. The below mathematically describes the allocation of the Leverage Weight to the Segregated Long Weights across the commodities:

(i) Oil Component: Brent Crude, WTI Crude Oil, Heating Oil, RBOB Gasoline and Gas Oil

$$w_S(s,i) = w^-(s,i) + LW/5$$

(ii) Other components,

$$w_S(s,i) = w^-(s,i) + LW$$

Where,

$w_S(s,i)$ is the Short Index Weight of the S&P GSCI 3m forward Index corresponding to commodity i, and is used to determine the Notional Holdings in the Short Index, as given in the sub-section "Index Rebalancing" above; and
LW is the Leverage Weight which is equal to 1.25/9.

DB Commodity Momentum Alpha Short EUR ER Index

The DB Commodity Momentum Alpha Short EUR ER Index is the Euro hedged version of the Short Index and is calculated on all Index Business Days as follows:

$$ILS_{EUR}(t) = \left(1 + \mathrm{Re}\,tILer(t) + \mathrm{Re}\,tILer(t) * FXr(t)\right) * ILS_{EUR}(r)$$

Where:

t	=	Any Index Business Day t
r	=	Previous Index Rebalancing Day which is the last Index Business Day of the previous month (or, if none, then the Index Inception Day)
$ILS_{EUR}(t)$	=	Index level of the Short EUR Index in respect of t
$ILS_{EUR}(r)$	=	Index level of the Short EUR Index in respect of the Index Business Day immediately preceding t (or, if none, 100)

$$\mathrm{Re}\,tILer(t) = \frac{ILS(t)}{ILS(r)} - 1$$

$ILS(t)$	=	Index level of the Short Index in respect of t
$ILS(r)$	=	Index level of the Short Index in respect of the Index Business Day immediately preceding t (or, if none, 100)

$$FXr(t) = \frac{FX(t)}{FX(r)} - 1$$

$FX(t)$		FX spot rate as published on Reuters screen USDEURFIX=WM at approximately 4 PM London Time on t (or, if not available, as determined by the Index Administrator by reference to such sources it deems appropriate)
$FX(r)$	=	FX spot rate as published on Reuters screen USDEURFIX=WM at approximately 4 PM London Time on r (or, if not available, as determined by the Index Administrator by reference to such sources it deems appropriate)

Disruption Events

(a) General

Disruption Event, in respect of an Index Business Day, means an event that would require the Index Administrator to calculate an Index Level on an alternative basis were such event to occur or exist on such day, all as determined by the Index Administrator in its sole and absolute discretion.

Without limitation, each of the following may be a Disruption Event if so determined by the Index Administrator in its sole and absolute discretion:

(i) the Relevant Exchange fails to calculate and announce the relevant Settlement Price in respect of the relevant futures contract in respect of a relevant S&P GSCI 3m Forward Index, invested in the S&P GSCI 3m Forward Index as per the contract schedule given in the S&P GSCI 3m forward Methodology on the relevant Index Business Day;

(ii) the relevant index sponsor (howsoever described) in respect of an S&P GSCI 3m Forward Index, fails to calculate and announce the relevant level in respect of the relevant S&P GSCI 3m Forward Index on the relevant Index Business Day;

(iii) trading in the relevant futures contract or options in respect of such futures contract, in each case, in respect of a relevant S&P GSCI 3m Forward Index is subject to material suspension or material limitation or the Relevant Exchange or relevant index sponsor (howsoever described) in respect of an S&P GSCI 3m Forward Index, in respect of such futures contract or options in respect of such futures contract is not open for trading for any reason (including a scheduled closure);

(iv) the permanent discontinuation of trading in the relevant futures contract or options in respect of such futures contract, in each case, in respect of a relevant S&P GSCI 3m Forward Index;

(iv) the permanent discontinuation publication of relevant S&P GSCI 3m Forward Index;

(v) any event in connection with which the Index Administrator is (or would be) unable to calculate the relevant Index level after using commercially reasonable efforts;

(vi) in respect of a relevant underlying commodity and the relevant exchange in respect of such underlying commodity, means a suspension or limitation imposed on trading by such exchange or otherwise including, without limitation, where such suspension or limitation is imposed by reason of movements in price reaching or exceeding limits permitted by such exchange, as determined by the Index Administrator (a "**Limit Event**"); or

(vii) Price Source Disruption:

(a) the relevant price source in respect of relevant futures contract or underlying commodity is temporarily or permanently discontinued, unavailable or not announced or published thereby preventing or restricting the availability of the information necessary for determining the relevant Index; or

(b) following the application of the processes in relation to any data obtained from the relevant price source in respect of relevant futures contract or underlying commodity, the Index Administrator determines in good faith and a commercially reasonable manner that such data does not accurately and reliably represent the interest purported to be measured by that data.

(b) Consequences of Limit Event Disruption

If a Limit Event in respect of a relevant futures contract in respect of a relevant S&P GSCI 3m Forward Index occurs on any Index Business Day, the Index Administrator may make the following adjustments and/or determinations in relation to the calculation of the relevant Index level in respect of such Index Business Days,

(i) the relevant Index level will be calculated using published levels of the relevant future prices and or the relevant S&P GSCI 3m Forward Index on such Index Business Days; and/or

(ii) if an Index Rebalancing Day has occurred with respect to the relevant Index during such Limit Event and if at least one of the disrupted futures contract is invested in the relevant S&P GSCI 3m Forward Index, following the end of the Limit Event the relevant S&P GSCI 3m Forward Index level will be recalculated using the Settlement Price immediately following the Limit Event of the relevant futures contract in respect of the relevant S&P GSCI 3m Forward Index. Index levels and corresponding Notional Holdings in the relevant Index from (and including) the Index Business Day immediately following such a Limit Event will be based on the recalculated levels of the relevant S&P GSCI 3m Forward Index.

(c) Consequences of Disruption Events that are not Limit Events

If a Disruption Event in respect of a S&P GSCI 3m Forward Index occurs or subsists on an Index Business Day, that in the determination of the Index Administrator prevents or otherwise affects its determinations with respect to the S&P GSCI 3m Forward Index Level in respect of such S&P GSCI 3m Forward Index or any other relevant value that requires determination or calculation by the Index Administrator in relation to such Index Business Day, then, subject as provided in sub-paragraph (f) below:

(i) first, the Index Administrator may make such adjustments and/or determinations in relation to the Index (including, but not limited to, this Index Guide) and any relevant value as it may determine, in its sole and absolute discretion, appropriate to facilitate the calculation and publication of the relevant Index Level in respect of such Index Business Day;

(ii) secondly, if the Index Administrator determines that any such adjustment or determination referred to in sub-section (i) above cannot be made on such Index Business Day, then the Index Administrator may defer calculation and publication of the relevant Index Level until the next Index Business Day on which the Index Administrator determines, in its sole and absolute discretion, that no Disruption Event exists provided that where any such deferral of calculation and publication continues for a period of ten consecutive Index Business Days, then the Index Administrator may:

(a) calculate and publish the relevant Index Level relating to each Index Business Day falling in or after such period having regard to the then prevailing market conditions, the last reported price, value, rate or level of any instrument relating to the Index or any S&P GSCI 3m Forward Index and such other factor(s) and condition(s) that the Index Administrator considers relevant for the purpose of determining such Index Levels including, but not limited to, any modifications that the Index Administrator determines to be appropriate in relation to reconstitution relating to the Index; and/or

(b) permanently cease to calculate and publish the relevant Index Level as of the later of (x) the date when such Disruption Event commenced or (y) the Index Business Day following the last Index Business Day for which the Index Administrator calculated and published the relevant Index Level in accordance with sub-section (i) above (if any) and, in each case, as applicable, the Index shall terminate.

(d) Force Majeure Event

An event or circumstance (including, without limitation, a systems failure, natural or man-made disaster, act of God, armed conflict, act of terrorism, riot or labour disruption or any similar intervening circumstance) that is beyond the reasonable control of the Index Administrator and that the Index Administrator determines affects the Index, the Index Commodity in respect of such Index, any S&P GSCI 3m Forward Index or an exchange instrument in respect of any such S&P GSCI 3m Forward Index.

If a Force Majeure Event occurs on an Index Business Day, and subject as provided in sub-paragraph (f) below, the Index Administrator may, in its sole and absolute discretion:

(i) make such determinations and/or adjustments to the terms contained in this Index Guide as it considers appropriate to determine the relevant Index Level in respect of such Index Business Day; and/or

(ii) defer publication of the relevant Index Level in respect of such Index Business Day until the next Index Business Day on which it determines that no Force Majeure Event exists; and/or

(iii) permanently cancel publication of the relevant Index Level.

(e) Hedging Disruption Event

If the Index Administrator determines that it and/or any of its affiliates would be unable, after using commercially reasonable efforts, to: (a) acquire, establish, re-establish, substitute, maintain, unwind or dispose of any transaction(s) or asset(s) it deems necessary to hedge its position in relation to any securities issue, financial instrument or other relevant financial transaction relating to or calculated by reference to an Index; or (b) realise, recover or remit the proceeds of any such transaction(s) or asset(s).has occurred or exists on an Index Business Day, and subject as provided in sub-paragraph (f) below, the Index Administrator may, in its sole and absolute discretion:

(i) make such determinations and/or adjustments to the terms contained in this Index Guide as it considers appropriate to determine the relevant Index Level in respect of such Index Business Day; and/or

(ii) defer publication of the relevant Index Level in respect of such Index Business Day until the next Index Business Day on which it determines that no Hedging Disruption Event exists; and/or

(iii) permanently cancel publication of the relevant Index Level.

(f) Compliance with the Overview

Any such adjustments and/or determinations or decisions to permanently cease to calculate and publish an Index Level in respect of the Index pursuant to sub-paragraphs (c), (d) and (e) above shall be made by the Index Administrator as far as reasonably practicable in accordance with Section 10 (*Changes to and Retiring a Benchmark*) of the Overview.

Change in methodology

The Overview sets out the process for making changes to its benchmarks as a general matter and the internal oversight and approval processes which DBIQ will go through. It also sets out DBIQ's procedures for consulting on and notifying changes. Any such modification or change in methodology described in this Index Guide in accordance with the below shall be made in accordance withy Section 10.1 (*Change to a Benchmark*) of the Overview.

In calculating and determining the value of the Index, the Index Administrator will, subject as provided below, employ the methodology described in this Index Guide and its application of such methodology shall be conclusive and binding. While the Index Administrator currently employs the above described methodology to calculate the Index, no assurance can be given that market, regulatory, judicial, financial, fiscal or other circumstances (including, but not limited to, any changes to or any suspension or termination of any constituent of the Index or any other events affecting transactions on the same or similar terms to any described in this Index Guide) will not arise that would, in the view of the Index Administrator, necessitate or make desirable a modification of or change to such methodology.

Accordingly:

(i) The Index Administrator shall be entitled to make such modifications and/or changes as it in its reasonable discretion deems appropriate, including (without limitation):

(a) to correct any manifest error or proven error contained in this Index Guide; and/or

(b) to cure, correct or supplement any defective provision contained in this Index Guide; and/or

(c) if market, regulatory, juridical, financial, fiscal or other circumstances arise, and such circumstances would, in the determination of the Index Administrator, necessitate or make desirable such a modification or change of the methodology described in this Index Guide (including, but without limitation, a change in the frequency of calculation of any Index Level) in order for the Index to continue being calculated and determined notwithstanding the relevant circumstances. In deciding what is necessary the Index Administrator will consider and/or take into account what the Index Administrator determines to be the intended commercial purposes of the Index and/or any hedging transactions entered into by Deutsche Bank AG and/or any of its affiliates in relation to any financial transaction linked to the Index;

(ii) Further, and without limitation to the above provisions, the Index Administrator shall be entitled to make such modifications and/or changes as it in its reasonable discretion deems appropriate:

(a) to preserve the intended commercial purpose of the Index, where such modification and/or change is of a formal, minor or technical nature; and/or

(b) if market, regulatory, juridical, financial, fiscal or other circumstances arise, and in the determination of the Index Administrator, such modifications and/or changes would assist in maintaining the intended commercial purpose of the Index and/or would ensure that the Index can continue to be calculated and determined by the Index Administrator in light of such circumstances. In making such determination, the Index Administrator may consider and/or take into account any hedging transactions entered into by Deutsche Bank AG and/or any of its affiliates in relation to any financial transaction linked to the Index.

In making such modifications however the Index Administrator will:

(i) ensure that such modifications or changes pursuant to (i) or (ii) above will result in a methodology that is consistent in its intended commercial purpose with the methodology described in this Index Guide; and

(ii) limit any such modification or change to the terms of the Index and/or method of calculating the Index Level.

The Index Administrator may, in its discretion, at any time and without notice, terminate the calculation and publication of the Index pursuant to Section 10.2 (*Benchmark Retirement*) of the Overview.

The Index Administrator has no legal obligation to consult or inform any person about such modification or change. Any such modification or change will be published by means of a revised Index Guide or other notice, on the DBIQ website, https://index.db.com in accordance with Section 10.1 (*Change to a Benchmark*) of the Overview.

Glossary

"*Base Index Weight*" means, the weight, in respect of each S&P GSCI 3m Forward Index, generated under the Index Selection of the Base Index

"*Long Index Weight*" means, the weight, in respect of each S&P GSCI 3m Forward Index, generated under the sub-section "Index Selection" of the Long Index

"Notional Holdings in the Long Index" means, Notional Holdings of the underlying of the DB Commodity Momentum Alpha Long USD ER Index as mathematically formulated under the sub-section "Index Rebalancing" of the Long Index

"Notional Holdings in the Short Index" means, Notional Holdings of the underlying of the DB Commodity Momentum Alpha Short USD ER Index as mathematically formulated under the sub-section "Index Rebalancing" of the Short Index

"Relevant Exchange" means, in respect of a commodity, the entity that publishes the Settlement Prices of the futures contracts

"*Settlement Price*" means, in respect of a commodity and an Index Business Day, the official settlement price of the futures contract in respect of such commodity on such Index Business Day as published by the Relevant Exchange in respect of such futures contract, as determined by the Index Administrator.

"*Short Index Weight*" means, the weight, in respect of each S&P GSCI 3m Forward Index, generated under the sub-section "Index Selection" of the Short Index

"***Successor Source***" means, in relation to any display page, other published source, information vendor or provider:

(i) the successor display page, other published source, information vendor or provider that has been officially designated by the sponsor of the original page or source; or

(ii) if the sponsor of the original page or source has not officially designated a successor display page, other published source, service or provider (as the case may be), the successor display page, other published source, service or provider, if any designated by the relevant information vendor or provider (if different from such sponsor).

Annex

Table 5: Initial Notional Holdings in the Long Index

Commodity Name	S&P GSCI 3m forward Index Reuters RIC	Initial Notional Holdings
WTI Crude Oil	.SG3MCLP	0.027778
Brent Crude	.SG3MBRP	0.027778
Heating Oil	.SG3MHOP	0.138889
Natural Gas	.SG3MNGP	0.027778
RBOB Gasoline	.SG3MHUP	0.104701
Gas Oil	.SG3MGOP	0.027778
Aluminium	.SG3MIAP	0.138889
Copper	.SG3MICP	0.138889
Nickel	.SG3MIKP	0.138889
Zinc	.SG3MIZP	0.138889
Lead	.SG3MILP	0.215812
Gold	.SG3MGCP	0.138889
Silver	.SG3MSIP	0.138889

Source: DBIQ

Table 6: Initial Notional Holdings in the Short Index

Commodity Name	S&P GSCI 3m forward Index Reuters RIC	Initial Notional Holdings
WTI Crude Oil	.SG3MCLP	0.104701
Brent Crude	.SG3MBRP	0.027778
Heating Oil	.SG3MHOP	0.215812
Natural Gas	.SG3MNGP	0.027778
RBOB Gasoline	.SG3MHUP	0.027778
Gas Oil	.SG3MGOP	0.104701
Aluminium	.SG3MIAP	0.215812
Copper	.SG3MICP	0.138889
Nickel	.SG3MIKP	0.138889
Zinc	.SG3MIZP	0.215812
Lead	.SG3MILP	0.207414
Gold	.SG3MGCP	0.138889
Silver	.SG3MSIP	0.138889

Source: DBIQ

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