April 2024

FTSE/CORECOMMODITY CRB® INDEX

METHODOLOGY

FTSE RUSSELL
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Introduction

1.1 FTSE/CoreCommodity CRB® Indices

This Methodology contains the rules for calculating the FTSE/CoreCommodity CRB Indices. This Methodology and all information contained herein is the exclusive property of LSEG, or its affiliates, and CoreCommodity Indexes, LLC, or its affiliates ("CoreCommodity"). as applicable. LSEG and CoreCommodity shall have no liability to any person or entity for the accuracy or completeness of the information contained herein. The Indices are administered by Refinitiv Benchmark Services (UK) Limited ("RBSL").

FTSE/CoreCommodity CRB Indices are calculated for the following segments ("Commodity Segments"):

- the Primary CRB index comprising 19 individual commodities,
- the Non-Energy CRB index which excludes energy commodities and comprises 15 individual commodities, and
- the Non-Agri and Livestock CRB index which excludes both agricultural and livestock commodities and comprises 9 individual commodities.

The commodities belonging to each Commodity Segment are shown in section 3.2 below.

For each Commodity Segment, four types of indices are calculated:

- an excess return index based on the front futures expiration month for each commodity (the "Main" excess return index),
- an excess return index based on the futures expiration months for each commodity that are 3 months behind the front expiration months (the "Forward" excess return index),
- a total return index derived from the Main excess return index and based on 3-Month US Treasury Bill,
- a total return index derived from the Main excess return index and based on US Fed published overnight rate,
- a total return index derived from the Forward excess return index and based on 3-Month US Treasury Bill, and
- a total return index derived from the Forward excess return index and based on US Fed published overnight rate.

In addition, a euro denominated and currency hedged index is calculated for the Primary CRB index using 1 month FX forwards with a daily adjusted notional. The total return index for this euro denominated and currency hedged index is calculated both using the 3-Month US Treasury Bill and using the US Fed published overnight rate.

1.2 Intended Readership

This document supports data use by FTSE Russell Indices clients. Clients receive the data as part of their desktop license or may be licensed to use FTSE Russell Indices in a separate licensing agreement.

1.3 Document Publication

This document is available on the FTSE Russell website and on request.

2. Calculation Methodology

2.1 Individual Commodity Percent Return

An individual commodity "Percent Return" is calculated for each commodity in each Commodity Segment Main index and Forward index. The futures contract expiration months used in the Main Commodity Segment Main indices and the Forward indices are shown in section 3.3 below.

Each Percent Return on business day t, PR_t, is calculated with reference to the previous business day $t-1$ as

$$PR_t = PR_{t-1} * \frac{CPS_t}{CPS_{t-1}} \quad (1)$$

where CPS is the price of the front expiration month of the relevant futures contract or, if day t falls within the four day roll period then CPS shall be the weighted average price of the front and immediate back expiration months (see below).

If day t falls outside the roll period, CPS is calculated on day t as

$$CPS_t = FP_t \quad (2)$$

Similarly, CPS is calculated on day $t-1$ as

$$CPS_{t-1} = FP_{t-1} \quad (3)$$

where FP_t is the futures price of relevant futures contract on day t.

The roll from the front expiration month to the immediate back expiration month of the relevant futures contract takes place over the first four business day period of each calendar month. Exposure is rolled in equal amounts of 25% on each day during the roll period such that by the fourth day of the roll period, 100% of the weight is in the immediate back expiration month.

If day t falls during a roll period, CPS is calculated on day t as

$$CPS_t = \sum_{i=1}^{2} DW_t^i * FP_t^i \quad (4)$$

where the summation is over the front expiration month of the relevant futures contract ($i = 1$) and the immediate back month ($i = 2$). DW_t^i is the daily roll weight for expiration month 'i' on day t and FP_t^i is the futures price of expiration month 'i' on day t. Similarly, CPS is calculated on day t $-$ 1 as

$$CPS_{t-1} = \sum_{i=1}^{2} DW_t^i * FP_{t-1}^i \quad (5)$$

where FP_{t-1}^i is the futures settlement price of expiration month 'i' on day t $-$ 1

Once the four day roll period is complete, the immediate back month during the roll becomes the relevant futures contract and equations 2 and 3 are then used until the start of the next roll period.

All values throughout this Methodology are rounded to six decimal places.

2.2 Commodity Excess Return Indices

The FTSE/CoreCommodity Commodity Segment Main and Forward excess return indices are calculated using the individual commodity percent returns calculated in accordance with equation 1 for the relevant Main or Forward index.

Each Commodity Segment excess return index on day t, denoted as ER_t, is calculated as

$$ER_t = \sum_{i=1}^{n} PR_t^i \tag{6}$$

The summation is over all n individual commodities belonging to the relevant Commodity Segment Main or Forward index. For each Commodity Segment,

- n = 19 for FTSE/CoreCommodity CRB index,
- n = 15 for Non-Energy, and
- n = 9 for Non-Agri and Livestock versions.

The same values apply for n for both the Main and the Forward excess return indices for each particular Commodity Segment.

2.3 Commodity Total Return Indices based on 3 Month US Treasury Bill

Total return indices are calculated for each Commodity Segment Main and Forward index. Each total return index, TR_t, replicates the total return of a portfolio of futures and a cash investment. It is calculated using the futures daily returns plus the daily interest from the cash investment as follows

$$TR_t = TR_{t-1} \times \left(\frac{ER_t}{ER_{t-1}} + TBR_t\right) \times (1 + TBR_t)^{d-1} \tag{7}$$

where d is the number of calendar days between the current and previous business days, and TBR_t is the daily interest from the cash investment calculated as

$$\mathrm{TBR_t} = \left(\frac{1}{1 - \frac{91}{360} \times \mathrm{TB_{t-1}^{3mo}}}\right)^{\frac{1}{91}} - 1 \tag{8}$$

Each Total Return Index, TR_t, is calculated in USD and $\mathrm{TB_{t-1}^{3mo}}$ is the 3 month US Treasury Bill high rate for the previous day.

2.4 Commodity Total Return (Overnight Rate) Indices based on US Fed published Overnight Rate

Additional Total return indices are calculated for each Commodity Segment Main and Forward index. Each total return (Overnight Rate) index, TRs_t, replicates the total return of a portfolio of futures and a cash investment. It is calculated using the futures daily returns plus the daily interest from the cash investment as follows

$$TRs_t = TRs_{t-1} \cdot \left[\frac{ER_t}{ER_{t-1}} \cdot \left(1 + (d-1) \cdot \frac{SOFR_{t-1}}{360}\right) + \left(\frac{SOFR_{t-1}}{360}\right)\right] \quad (9)$$

where d is the number of calendar days between the current and previous business days, and $SOFR_{t-1}$ is overnight rate published by US Fed on next morning.

Total Return (Overnight Rate) index version published on 10th October 2022 with index calculation start date from 9th September 2022.

2.5 Commodity Euro Daily Hedged Indices

The FTSE/CoreCommodity CRB Total Return Euro Daily Hedged Index TH_t is a euro denominated index that combines the FTSE/CoreCommodity CRB Total Return Index with the return from a one month FX forward purchase of euros and sale of US dollars. The notional of the FX forward is adjusted on a daily basis.

$$\frac{TH_t^{EUR}}{TH_0^{EUR}} = \frac{FX_t}{FX_0} \cdot \frac{TR_t^{USD}}{TR_0^{USD}} + \sum_{i=1}^{t} \left\{ \frac{TR_{i-1}^{USD}}{TR_0^{USD}} \cdot \frac{\left[\widehat{FX}_{i-1}^{T} - \widehat{FX}_i^{T}\right]}{FX_0} \right\} \quad (10)$$

Where:

TH_t^{EUR} = FTSE/CoreCommodity CRB Total Return Euro Daily Hedged Index

TR_t^{USD} = FTSE/CoreCommodity CRB Total Return Index based on 3 month US Treasury Bill in US dollars

FX_t = Spot Forex rate (on a "USD1 <-> EUR x.xx" basis) at the time t

Similarly

$$\frac{THs_t^{EUR}}{THs_0^{EUR}} = \frac{FX_t}{FX_0} \cdot \frac{TRs_t^{USD}}{TRs_0^{USD}} + \sum_{i=1}^{t} \left\{ \frac{TRs_{i-1}^{USD}}{TRs_0^{USD}} \cdot \frac{\left[\widehat{FX}_{i-1}^{T} - \widehat{FX}_i^{T}\right]}{FX_0} \right\} \quad (11)$$

Where:

THs_t^{EUR} = FTSE/CoreCommodity CRB Total Return Euro Daily Hedged (Overnight Rate) Index

TRs_t^{USD} = FTSE/CoreCommodity CRB Total Return (Overnight Rate) Index based on US Fed published Overnight rate

The one month FX forward contract will expire and be replaced at the close of the 6th US business day of each month (i.e. at the monthly rebalance). The date and time of the last rebalance is denoted $t = 0$ and the date and time of the next rebalance is denoted T. The forward rate $\widehat{FX}_t^T$ used during the month on day t (where $0 < t \leq T$) for maturity at T is derived using an interpolation:

$$\widehat{FX}_t^T = FX_t + \left(\widehat{FX}_t^{1Month} - FX_t\right) \cdot \frac{n(t,T)}{n(t,t+1Month)} \quad (12)$$

where:

$\widehat{FX}_t^{1Month}$ = One Month Forward Rate on day t for maturity one month from t

$n(t,T)$ = Actual number of days from t to T

$n(t,t+1Month)$ = Actual number of days from t to $t + 1$ month

$t-1$ = Previous Business Day

3. Weights, Futures Expiries and Rebalances

3.1 Monthly Rebalance

The FTSE/CoreCommodity CRB Commodity Segment Main and Forward indices are rebalanced monthly after close of 6th Business day to reinstate the fixed weights allocations from 2005 revision. This is done by rescaling the percent return for individual commodities ($PR_{i,t}$) belonging to each Commodity Segment Main and Forward excess return index (ER_t) as follows

$$PR_{i,t} = W_i \times ER_t \tag{13}$$

where W_i is the weight of the individual commodity in that Commodity Segment excess return index. Note that weights of individual commodities are the same in both the Main index and the Forward index for each Commodity Segment.

The consequence of the monthly rebalance is that by the end of the seventh business day, each individual percent return for a particular Commodity Segment Main and Forward index is equal to

$$PR_{i,r} = ER_{r-1} \times W_i \times \frac{CPS_{i,r}}{CPS_{i,r-1}} \tag{14}$$

where r is defined as the seventh business day.

3.2 Index Weights

The weight of individual commodities within each Commodity Segment index is as follows. Note that the weights of individual commodities are the same in both the main index and the 3-month forward index for any particular Commodity Segment.

	Commodity	Index Weight			Contract Months	Exchange
		CRB	Non-Energy	Non-Agri		
	WTI Crude Oil	23.00%	-	23.00%	Jan-Dec	NYMEX
Group I	Heating Oil	5.00%	-	5.00%	Jan-Dec	NYMEX
	Unleaded Gas	5.00%	-	5.00%	Jan-Dec	NYMEX
	Total	**33.00%**	-	**33.00%**		
	Natural Gas	6.00%	-	15.00%	Jan-Dec	NYMEX
	Corn	6.00%	9.84%	-	Mar, May, Jul, Sep, Dec	CBOT
	Soybeans	6.00%	9.84%	-	Jan, Mar, May, Jul, Nov	CBOT
Group II	Live Cattle	6.00%	9.84%	-	Feb, Apr, Jun, Aug, Oct, Dec	CME
	Gold	6.00%	9.84%	15.00%	Feb, Apr, Jun, Aug, Dec	COMEX
	Aluminum	6.00%	9.84%	15.00%	Mar, Jun, Sep, Dec	LME
	Copper	6.00%	9.84%	15.00%	Mar, May, Jul, Sep, Dec	COMEX
	Total	**42.00%**	**59.04%**	**60.00%**		
	Sugar	5.00%	8.20%	-	Mar, May, Jul, Oct	NYBOT
Group III	Cotton	5.00%	8.20%	-	Mar, May, Jul, Dec	NYBOT
	Cocoa	5.00%	8.20%	-	Mar, May, Jul, Sep, Dec	NYBOT
	Coffee	5.00%	8.20%	-	Mar, May, Jul, Sep, Dec	NYBOT
	Total	**20.00%**	**32.80%**	-		
	Nickel	1.00%	1.64%	3.50%	Mar, Jun, Sep, Dec	LME
	Wheat	1.00%	1.64%	-	Mar, May, Jul, Sep, Dec	CBOT
Group IV	Lean Hogs	1.00%	1.64%	-	Feb, Apr, Jun, Jul, Aug, Oct, Dec	CME
	Orange Juice	1.00%	1.60%	-	Jan, Mar, May, Jul, Sep, Nov	NYBOT
	Silver	1.00%	1.64%	3.50%	Mar, May, Jul, Sep, Dec	COMEX
	Total	**5.00%**	**8.16%**	**7.00%**		

The historic CRB Index has undergone 9 previous weighting revisions since its inception to ensure market representative and the current model is a continuation from 2005 revision.

	1957	1961	1967	1971	1973	1974	1983	1987	1992	1995	2005
Number of Futures Markets	26	25	26	27	28	27	27	21	21	17	19
Number of Spot Markets	2	2	2	2	0	0	0	0	0	0	0
Markets in Index	28	27	28	29	28	27	27	21	21	17	19
Markets Removed		1	0	10	1	1	4	6	1	5	1
Markets Added		0	1	9	2	0	4	0	1	1	3
Forward Averaging Window (months)	12	12	12	12	12	12	12	9	9	6	Rolling Nearby
Averaging technique	◄ Geometric ►										Arithmetic Monthly Rebalancing

3.3 Futures Contract Expiration Months by Calculation Month

The calendar below shows the relevant futures contract expiration months used during each calendar month prior to the roll over period.

Commodity	Exchange	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WTI Crude Oil	NYMEX	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Heating Oil	NYMEX	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Unleaded Gas	NYMEX	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Natural Gas	NYMEX	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Corn	CBOT	Mar	Mar	May	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar
Soybeans	CBOT	Mar	Mar	May	May	Jul	Jul	Nov	Nov	Nov	Nov	Jan	Jan
Live Cattle	CME	Feb	Apr	Apr	Jun	Jun	Aug	Aug	Oct	Oct	Dec	Dec	Feb
Gold	COMEX	Feb	Apr	Apr	Jun	Jun	Aug	Aug	Dec	Dec	Dec	Dec	Feb
Aluminum	LME	Mar	Mar	Jun	Jun	Jun	Sep	Sep	Sep	Dec	Dec	Dec	Mar
Copper	COMEX	Mar	Mar	May	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar
Sugar	NYBOT	Mar	Mar	May	May	Jul	Jul	Oct	Oct	Oct	Mar	Mar	Mar
Cotton	NYBOT	Mar	Mar	May	May	Jul	Jul	Dec	Dec	Dec	Dec	Dec	Mar
Cocoa	NYBOT	Mar	Mar	May	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar
Coffee	NYBOT	Mar	Mar	May	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar
Nickel	LME	Mar	Mar	Jun	Jun	Jun	Sep	Sep	Sep	Dec	Dec	Dec	Mar
Wheat	CBOT	Mar	Mar	May	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar
Lean Hogs	CME	Feb	Apr	Apr	Jun	Jun	Jul	Aug	Oct	Oct	Dec	Dec	Feb
Orange Juice	NYBOT	Mar	Mar	May	May	Jul	Jul	Sep	Sep	Nov	Nov	Jan	Jan
Silver	COMEX	Mar	Mar	May	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar

Exceptional Roll schedule for 2020 to address exceptional market conditions, including the negative settlement price of the WTI Crude Oil May 2020 futures contract.

Commodity	Exchange	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WTI Crude Oil	NYMEX	Feb	Mar	Apr	May	Jun	Sep	Sep	Sep	Oct	Nov	Dec	Jan

The Forward index expiration months used during each calendar month are as follows.

Commodity	Exchange	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WTI Crude Oil	NYMEX	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Heating Oil	NYMEX	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Unleaded Gas	NYMEX	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Natural Gas	NYMEX	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Corn	CBOT	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar	Mar	Mar	May
Soybeans	CBOT	May	Jul	Jul	Nov	Nov	Nov	Nov	Jan	Jan	Mar	Mar	May
Live Cattle	CME	Jun	Jun	Aug	Aug	Oct	Oct	Dec	Dec	Feb	Feb	Apr	Apr
Gold	COMEX	Jun	Jun	Aug	Aug	Dec	Dec	Dec	Dec	Feb	Feb	Apr	Apr
Aluminum	LME	Jun	Jun	Sep	Sep	Sep	Dec	Dec	Dec	Mar	Mar	Mar	Jun
Copper	COMEX	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar	Mar	Mar	May
Sugar	NYBOT	May	Jul	Jul	Oct	Oct	Oct	Mar	Mar	Mar	Mar	Mar	May
Cotton	NYBOT	May	Jul	Jul	Dec	Dec	Dec	Dec	Dec	Mar	Mar	Mar	May
Cocoa	NYBOT	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar	Mar	Mar	May
Coffee	NYBOT	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar	Mar	Mar	May
Nickel	LME	Jun	Jun	Sep	Sep	Sep	Dec	Dec	Dec	Mar	Mar	Mar	Jun
Wheat	CBOT	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar	Mar	Mar	May
Lean Hogs	CME	Jun	Jun	Jul	Aug	Oct	Oct	Dec	Dec	Feb	Feb	Apr	Apr
Orange Juice	NYBOT	May	Jul	Jul	Sep	Sep	Nov	Nov	Jan	Jan	Mar	Mar	May
Silver	COMEX	May	Jul	Jul	Sep	Sep	Dec	Dec	Dec	Mar	Mar	Mar	May

Exceptional 2020 WTI Crude Oil roll schedule for 2020 forward index expiration months

Commodity	Exchange	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WTI Crude Oil	NYMEX	May	Jun	Jul	Aug	Sep	Dec	Dec	Dec	Jan	Feb	Mar	Apr

4. Data Sources and Index Publication

4.1 Data Source

All commodity prices used in the FTSE/CoreCommodity CRB indices are taken from commodity futures contract prices published by the CME Group (COMEX, NYMEX, CBOT and CME) and London Metal Exchange (LME). CME Group of exchanges (COMEX, NYMEX, CBOT and CME) and London Metal Exchange (LME) regulated global market place and a well established platform for commodity futures price discovery. 3-month US Treasury bill rates are based on previous day high value. US Fed published overnight rates are based upon previous day's rate.

4.2 Index Dissemination

Each of the FTSE/CoreCommodity CRB Indices is published at the close of business day on which US futures market NYMEX is open for business.

4.3 Index Publication

The FTSE/CoreCommodity CRB Indices are published on LSEG Workspace with the following RICs:

FTSE/CoreCommodity CRB® Excess Return Index	.TRCCRB
FTSE/CoreCommodity CRB® Total Return Index	.TRCCRBTR
FTSE/CoreCommodity CRB® Total Return (Overnight Rate) Index	.TRCCRBTS
FTSE/CoreCommodity CRB® Total Return Euro Daily Hedge Index	.TRCCRBTH
FTSE/CoreCommodity CRB® Total Return Euro Daily Hedge (Overnight Rate) Index	.TRCCRBHS
FTSE/CoreCommodity CRB® 3-Month Forward Excess Return Index	.TRCCTBER
FTSE/CoreCommodity CRB® 3-Month Forward Total Return Index	.TRCCTBTR
FTSE/CoreCommodity CRB® 3-Month Forward Total Return (Overnight Rate) Index	.TRCCTBTS
FTSE/CoreCommodity CRB® Non-Energy Excess Return Index	.TRCCRBNEER
FTSE/CoreCommodity CRB® Non-Energy Total Return Index	.TRCCRBNETR
FTSE/CoreCommodity CRB® Non-Energy Total Return (Overnight Rate) Index	.TRCCRBES
FTSE/CoreCommodity CRB® 3-Month Forward Non-Energy Excess Return Index	.TRCCTXER
FTSE/CoreCommodity CRB® 3-Month Forward Non-Energy Total Return Index	.TRCCTXTR
FTSE/CoreCommodity CRB® 3-Month Forward Non-Energy Total Return (Overnight Rate) Index	.TRCCTXTS
FTSE/CoreCommodity CRB® Index Non-Agriculture and Livestock Excess Return Index	.TRCCRBNALER
FTSE/CoreCommodity CRB® Index Non-Agriculture and Livestock Total Return Index	.TRCCRBNALTR
FTSE/CoreCommodity CRB® Index Non-Agriculture and Livestock Total Return (Overnight Rate) Index	.TRCCRBAS
FTSE/CoreCommodity CRB® 3-Month Forward Index Non-Agriculture and Livestock Excess Return Index	.TRCCAXER
FTSE/CoreCommodity CRB® 3-Month Forward Index Non-Agriculture and Livestock Total Return Index	.TRCCAXTR
FTSE/CoreCommodity CRB® 3-Month Forward Index Non-Agriculture and Livestock Total Return (Overnight Rate) Index	.TRCCAXTS

5. Quality Control

5.1 Quality Control

FTSE Russell has quality control procedures in place to monitor any prices, whether they are obtained from a regulated exchange or other market, prior to calculation of indices as well as prior to publication.

5.2 Re-Fix Policy

A retrospective recalculation will only be made when a manifest and material error has been identified. Any retrospective recalculation will be notified to users via the alert system on LSEG Workspace.

5.3 Whistleblowing Policy

FTSE/CoreCommodity CRB indices are subject to RBSL's Whistleblowing arrangements where RBSL maintains an independent whistleblowing hotline for all benchmarks it administers, which can be accessed on its public website.

5.4 Insufficient Data and Market Disruptions

RBSL endeavours to develop and publish indices only where RBSL has a high level of confidence of long-term availability and access to the necessary data to administer the indices.

A "Market Emergency" is herein defined as any unscheduled and extraordinary condition in which liquidity in the markets used to source input data is interrupted (such as an event resulting in the unscheduled closing of futures exchanges). Should a Market Emergency occur, RBSL reserves the right to take such action with respect to the FTSE/CoreCommodity CRB Indices as it deems appropriate given the circumstances and after consulting with the Index Oversight Committee as appropriate (see section 6).

RBSL will attempt to notify interested parties of any such actions as well in advance as is practicable. There is no assurance, however, that following a Market Emergency, the actions taken in response to such Market Emergency, or any other force majeure event, will not have an adverse effect on the value of the FTSE/CoreCommodity CRB Indices or the manner in which they are calculated.

5.4.1 Monthly Rollover Disruptions

A "Rollover Disruption Event" is defined as any day on which a commodity is scheduled to roll, on which either: a) the front month or back month contracts for the commodity settle at the daily maximum or minimum price as determined by the rules for the relevant exchange, or b) the exchange fails to publish an official settlement price for the commodity, or c) the exchange on which the commodity trades is not scheduled to be open. If a Rollover Disruption Event occurs for any commodity, that portion of the rollover for that commodity only which was scheduled to occur on that day will be deferred until the next business day upon which no Rollover Disruption Event occurs for that commodity.

5.4.2 Monthly Rebalance Disruptions

At the close on the monthly rebalance date[1], if any one or more of the commodities is disrupted due to the unavailability of official closing settlement prices or partial exchange holidays or any settlement of individual commodity futures contracts at a daily maximum or minimum price limit, then the rebalance will be halted for the disrupted commodity and all other undisrupted commodities will process the rebalance as per the normal schedule. This step will result in the total index weights being greater than or less than 100% after the close of 6th Business Day (which, if applied to a replication portfolio would be akin to having a portfolio that is either leveraged or under-invested, respectively).

Under this process, the percent return of the disrupted commodity "k" will be calculated in the usual daily manner as described in the methodology until the disruption ends:

$$PR_{k,t} = PR_{k,t-1} * \frac{CPS_{k,t}}{CPS_{k,t-1}} \quad (15)$$

where CPS is the price of the relevant futures contract.[2]

Please note that the approach above for the disrupted commodity is applied after the market close on the 6th business day to derive that commodity's percent return on the 7th business day after a partial (i.e. disrupted) rebalance. This is repeated for each subsequent business day until the disruption has ended. (Note that as a consequence, the excess return index on 6th business day is not affected by the approach described above.)

For non-disrupted commodities, the usual rebalance procedure described in the methodology is followed. So, for example, on the 7th business day, the rebalanced commodity percent return for all non-disrupted commodities ("i") will be:

$$PR_{i,7} = W_i \times ER_6 \times \frac{CPS_{i,7}}{CPS_{i,6}} \quad (16)$$

During a disruption, the excess return index is determined on and from the 7th business day until the disruption ends in accordance with equation 17:

$$ER_r = ER_{r-1} \times \left[1 + \left(\frac{\sum_{i=1}^{n} PR_{i,r} - \sum_{i=1}^{n} PR_{i,r-1}}{ER_{r-1}}\right)\right] \quad (17)$$

Where r is greater than or equal to 7 (i.e. denotes business days on and from the 7th business day). Note that when $r-1$ refers to the 6th business day, the percent returns $PR_{i,r-1}$ used for non-disrupted commodities are those determined by the rebalance after the market close.

The summation in equation 17 is over all n individual commodities belonging to the relevant Commodity Segment.

In equation 17, the percent returns for the disrupted commodity are calculated using equation 15 (i.e. are not rebalanced on the 6th business day). The percent returns for non-disrupted commodities are based on rebalanced percent returns (where the rebalance on the 6th business day is in accordance with equation 13).

[1] Rebalance Details are available in section 3.1, page 8. [2] The definition of CPS is available in section 2.1, page 4.

Adjustment on the day when the disruption ends and undisrupted settlement values are available

On the resumption day the weight of the disrupted commodity will be adjusted using a ratio R_k to restore the total index weight to 100%:

$$R_k = \frac{\widehat{W}_{k,6}}{W_k} \tag{18}$$

where $\widehat{W}_{k,6}$ is the non-rebalanced weight for the disrupted commodity "k" at the close of the 6th business day and W_k represents the constant monthly rebalancing weight[3] for the same commodity.

The additional adjustment ratio will be used to determine the target weight of the disrupted commodity on resumption and an ad-hoc rebalance to normalise the change impact.

The preliminary target weight $PW_{k,d}$ for the disrupted commodity "k" on the resumption day d is

$$PW_{k,d} = \frac{\widehat{W}_{k,d}}{R_k} \tag{19}$$

And $\widehat{W}_{k,d}$ represents the non-rebalanced disrupted commodity weight on the resumption day d.

To normalise the weights to 100% on the resumption day, an additional ad-hoc rebalance of commodities is applied to derive the final weights $FW_{i,d}$

$$FW_{i,d} = \frac{DW_{i,d}}{\sum_{j=1}^{n} DW_{j,d}} \tag{20}$$

where for the non-disrupted commodities, $DW_{i,d}$ is the weight on the resumption day i.e. $DW_{i,d} = \widehat{W}_{i,d}$. For the disrupted commodity "k", $DW_{k,d}$ is the preliminary target weight derived in equation 6, i.e. $DW_{k,d} = PW_{k,d}$.

On the first business day $d + 1$ after the resumption date d, following the ad-hoc rebalance, the percent return for each commodity "i" is calculated as:

$$PR_{i,d+1} = ER_d \times FW_{i,d} \times \frac{CPS_{i,d+1}}{CPS_{i,d}} \tag{21}$$

Please note if on the resumption day if another commodity will face market disruption, then the same process will repeat for the disruptive commodity/es. If in any scenario the rebalance disruption extends beyond the month-end and enters into the start of the next month roll period then the equations 18 to 21 will not be in effect, Section 5.4 above will apply, and RBSL standard Benchmark Methodology Change Policy will be followed, which includes consultations with users when practicable on any proposed methodology change and an established review and approval process, in the event a change to the methodology is proposed.

[3] The constant monthly rebalancing weights are available in section 3.2, page 9

6. FTSE/CoreCommodity CRB® Indices Governance

6.1 Overview

The FTSE/CoreCommodity CRB Indices are administered by Refinitiv Benchmark Services (UK) Limited ("RBSL") and as administrator, RBSL is responsible for the maintenance, calculation and distribution of the FTSE/CoreCommodity CRB Indices in accordance with EU Benchmark Regulations. RBSL is incorporated in the United Kingdom ("UK") and is a wholly owned subsidiary of Refinitiv. RBSL is authorised and regulated in the UK by the Financial Conduct Authority ("FCA"), FCA Reference Number 610678.

6.2 CC/CRB Oversight Committee

The CC/CRB Oversight Committee is responsible for overseeing the provision of the FTSE/CoreCommodity CRB Indices, including reviewing the benchmark definition and methodology at least annually, overseeing any changes to the benchmark methodology or cessation of the benchmark, and overseeing the administrator's control framework, management and operation of the benchmark. The CC/CRB Oversight Committee shall include at least two representatives from CoreCommodity Indexes, LLC and one representative from RBSL.

6.3 Benchmark Manager

A Benchmark Manager is appointed by RBSL from time to time. The Benchmark Manager is a subject matter expert and is responsible for the integrity and quality of the Index which includes the following specific responsibilities:

- Interpreting the Index Methodology and implement the change procedure (if any)
- Reviewing feedback received from the Index stakeholders and the CC/CRB Oversight Committee.
- Developing and implementing changes to the Index Methodology pursuant to feedback from Index stakeholders or in response to market events, subject to Section 7.1 below and in accordance with the RBSL Benchmark Change and Cessation Policy
- Managing interaction with Index stakeholders

6.4 Index Stakeholder Feedback

The Benchmark Manager may seek the views of market participants and other Index stakeholders on a bilateral basis from time to time or through one or more Index Advisory Groups. Issues on which the Benchmark Manager may consult Index stakeholders include conditions in the underlying markets that the Index represents, the representativeness of the input data used in the determination of the Index, the performance of the index with respect to the underlying markets that it represents, potential changes to the index calculation methodology, the constituents of index baskets, the weight calculation algorithm and exceptional market events. RBSL welcomes feedback and comments from Index stakeholders.

6.5 Enquiries

RSBL welcomes feedback and any queries or questions regarding this Methodology should be sent to LSEG at index_queries@lseg.com or CoreCommodity Indexes at Indexes@CoreCommodityllc.com.

7. Methodology Reviews and Change Procedures

7.1 Review of the Methodology

The FTSE/CoreCommodity CRB Indices Methodology is reviewed once per year and, if required by market events, more frequently. Any potential changes to the Methodology are reviewed by the CC/CRB Oversight Committee and are subject to the RBSL Benchmark Change and Cessation Policy.

All reasonable efforts will be made to provide at least one month's notice of any changes to the Methodology prior to their implementation.

The FTSE/CoreCommodity CRB® Primary Index segment (with 19 commodity futures) has been back-tested (both excess returns and total returns versions) from 1st April 2023 till end of 31st Mar 2024 and no discrepancies from published index values for the same time period have been found.

7.2 Cessation of An Index

Cessation of Index as defined in this methodology will follow the RBSL Benchmark Change and Cessation Policy as published on FTSE Russell website.

8. ESG Disclosures - Low Carbon benchmarks regulation (2019/2089)

EXPLANATION OF HOW ESG FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY	
Item 1. Name of the benchmark administrator.	Refinitiv Benchmark Services (UK) Limited
Item 2. Type of benchmark or family of benchmarks.	Commodity
Item 3. Name of the benchmark or family of benchmarks.	FTSE/CoreCommodity CRB® Indices
Item 4. Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	☐ Yes ☒ No

Disclaimer

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