

REFINITIV/CORECOMMODITY CRB[®] INDICES

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CONSULTATION ON REBALANCE DISRUPTIVE MARKET EVENTS AND RELATED EFFECTS ON CRB[®] INDEX

Refinitiv Benchmarks Services (UK) Limited (RBSL) as Refinitiv/CoreCommodity CRB[®] Indices administrator is committed to determining if there is a more appropriate approach in managing market disruptions when they coincide with the CRB[®] monthly rebalancing period and is continuing to consider updates to the Index [methodology](#). These considerations include how the management of rebalance disruption events should address not only exceptional events (such as the prolonged disruptions affecting LME Nickel during March 2022) but also partial exchange holidays and any settlement of individual contracts at a daily maximum or minimum price limit.

Details of proposed adjustment on rebalance disruptions

The Refinitiv/CoreCommodity CRB Commodity Segment Main and Forward indices are rebalanced monthly after the close of the 6th Business Day to reinstate the fixed weights allocations using the 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

$$PR_{i,t} = W_i \times ER_t \quad (1)$$

where W_i is the weight of the individual commodity in that Commodity Segment excess return index.

At the close on the monthly rebalance date, 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

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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:

$$PR_{k,t} = PR_{k,t-1} * \frac{CPS_{k,t}}{CPS_{k,t-1}} \quad (2)$$

where *CPS* is the price of the relevant futures contract.¹

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:

$$PR_{i,7} = W_i \times ER_6 \times \frac{CPS_{i,7}}{CPS_{i,6}} \quad (3)$$

¹ The definition of *CPS* is available in section 2.1 of the [methodology](#) for clarity.

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During a disruption, the excess return index is determined on and from the 7th business day until the disruption ends in accordance with equation 4:

$$ER_r = ER_{r-1} \times \left[1 + \left(\frac{\sum_{i=1}^n PR_{i,r} - \sum_{i=1}^n PR_{i,r-1}}{ER_{r-1}} \right) \right] \quad (4)$$

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 4 is over all n individual commodities belonging to the relevant Commodity Segment.

In equation 4, the percent returns for the disrupted commodity are calculated using equation 2 (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 1).

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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%:

$$R_k = \frac{\widehat{W}_{k,6}}{W_k} \quad (5)$$

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* 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

$$PW_{k,d} = \frac{\widehat{W}_{k,d}}{R_k} \quad (6)$$

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

*The constant monthly rebalancing weights are available in section 3.2 of the [methodology](#) for clarity

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

$$FW_{i,d} = \frac{DW_{i,d}}{\sum_{j=1}^n DW_{j,d}} \quad (7)$$

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:

$$PR_{i,d+1} = ER_d \times FW_{i,d} \times \frac{CPS_{i,d+1}}{CPS_{i,d}} \quad (8)$$

Feedback is on this proposed approach for handling disrupted commodities during the monthly rebalance is requested as expeditiously as possible and will be treated as confidential within Refinitiv Benchmarks Services (UK) Limited and the Refinitiv/CoreCommodity CRB[®] Oversight Committee and its advisers. This consultation period will end at 21:00 GMT dated 31 March 2023.

Feedback should be sent to index_queries@refinitiv.com and include 'CRB Consultation – Rebalance Disruption' in the email title.

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