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Index Methodology

Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index

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Version Tracker

Date	Update
7/18/2023	Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index
771072023	methodology written.
6/7/2024	Publication in new format

Section 1: Index Overview

The Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index aims to track the performance of holding a long position of commodities futures contracts equally (50%) divided into two BCOM sub-commodity groups (sectors). The weights within each of the two sub-commodity groups are proportional to BCOM weights. The two sub-commodity groups are Petroleum, and ex Petroleum. The index rebalances quarterly on the close of the fourth business day of January (using BCOM Target weights within the two sub-commodity groups), April, July, and October (using BCOM closing weights within the two sub-commodity groups), through the 5-business day roll period as described in Section 3. The Total Return version is calculated using the returns of the underlying excess return index and the return of cash collateral invested in the 3-Month T-Bill.

Table 1: Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index

Index Names Tic	ker	Currency	Index Commencement Date
Bloomberg Commodity 50/50 Petroleum & ex-Petroleum ER Index	ВСОМРХРЕ	USD	07/18/2023
Bloomberg Commodity 50/50 Petroleum & ex-Petroleum TR Index	BCOMPXPT	USD	07/18/2023

To maintain the long position of the basket, contracts are 'rolled' from the expiring futures contract to a new contract farther down the futures curve with a longer expiry date. All commodities will roll on the sixth through the tenth **Business Day** of each calendar month. An **Index Level** is determined on a day in which BCOM is calculated.

The Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index is denominated in U.S. dollars and have a **Base Date** of December 31st, 2007, with a **Base Index Level** of 100.

Section 2: Index Limitations

Though the Indices are designed to be representative of the markets they measure or otherwise align with their stated objective, they may not be representative in every case or achieve their stated objective in all instances. They are designed and calculated strictly to follow the rules of this Methodology, and any Index Level or other output is limited in its usefulness to such design and calculation.

Markets can be volatile, including those commodity market interests which the Indices intend to measure or upon which the Indices are dependent in order to achieve their stated objective. In particular, the Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index aims to track the performance of holding a long position of commodities futures contracts. Trading in futures contracts on physical commodities, including trading in the Index components, is speculative and can be extremely volatile. The Index is subject to risk of holding a commodity futures contract which may fluctuate rapidly and may be subject to temporary distortions or other market disruptions based on numerous factors, including changes in supply and demand relationships (whether actual, perceived, anticipated, unanticipated or unrealized), weather, agriculture, trade, fiscal, monetary and exchange control programmes, domestic and foreign political and economic events and policies, disease, pestilence, technological developments, changes in interest rates, whether through governmental action or market movements, and monetary and other governmental policies, action and inaction.

The current or "spot" prices of the underlying physical commodities may also affect, in a volatile and inconsistent manner, the prices of futures contracts in respect to the relevant commodity. These factors may affect the value of the Indices in varying ways, and different factors may cause the prices of the Index components, and the volatilities of their prices, to move in inconsistent directions at inconsistent rates.

In addition, market trends and changes to market structure may render the objective of the Index unachievable or to become impractical to replicate by investors.

Historical Index Levels published prior to the Index launch date are considered hypothetical. Historical Index Levels should not be considered as an indication of future performance.

The Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index is comprised of liquid commodity future contracts. If any commodity future contract is terminated or replaced in accordance with the rules of the Index methodology, a comparable commodity futures contract may be selected by BISL. The replacement of a commodity future contract may cause the level of the Index to change or be adjusted.

BISL may discontinue or suspend calculation or publication of the Indices defined in this methodology. If this happens, BISL shall use reasonable efforts to provide advance notice through an Index announcement made available via bloombergindices.com and on the Bloomberg Terminal via INP <GO>.

Section 3: Index Calculation

The Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index aims to track the performance of holding a long position of commodities futures contracts equally (50%) divided into two BCOM sub-commodity groups (sectors). The weights within each of the two sub-commodity groups are proportional to BCOM weights. The two sub-commodity groups are Petroleum, and ex-Petroleum (as described in Table 2). The index rebalances quarterly on the close of the fourth business day of January (using BCOM Target weights), April, July, and October (using BCOM closing weights), through the 5-business day roll period as described in Section 3. Target weights will be rounded to 8 decimal places.

Table 2: Commodity Groups

Sub-Commodity Groups	Ticker	Commodity	Sub-Group Weight
Petroleum	CL	WTI Crude Oil	
	НО	NY Harbor ULSD	
	XB	RBOB Gasoline	50%
	CO	Brent Crude Oil	
	QS	Low Sulfur Gas Oil	
	W	Chicago Wheat	
	KW	Kansas City Wheat	
	С	Corn	
	S	Soybeans	
	SM	Soybean Meal	
	ВО	Soybean Oil	
	СТ	Cotton	
	KC	Coffee	
ex-Petroleum	SB	Sugar	50%
ex-Petroleum	LC	Live Cattle	30%
	LH	Lean Hogs	
	NG	Natural Gas	
	HG	Copper	
	LA	Aluminum	
	LL	Lead	
	LN	Nickel	
	LX	Zinc	
	GC	Gold	
	SI	Silver	

Lead was added to BCOM during the 2023 Annual Rebalance

Annual Target Weight Calculation

The target weights for the Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index are derived from the Annual BCOM Target Weights each January. For each commodity group, on the close of the 4th business day of January, calculate the individual commodity index weights for each constituent by taking the BCOM Target weights of the individual constituent and dividing it by the sum of commodity constituent weights within the two groups, and multiply it by 50% as shown below:

$$PXPTW_i = \frac{BCOM_TW_i}{\sum_i BCOM_TW_i} * .5$$

Where:

 $PXPTW_i$ is the Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index

Target Weight of the individual commodity futures contract (i) for both the

Petroleum and ex-Petroleum sub groups, rounded to 8 decimal places.

 $BCOM_TW_i$ is the BCOM Annual Target Weight of commodity futures contract (i) for

both the Petroleum and ex-Petroleum sub groups.

Quarterly Target Weight Calculation

The target weights for the Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index are derived from the **BCOM Closing Weights**. For each commodity group, on the close of the 4th business day in April, July, and October, calculate the individual commodity index weights for each constituent by taking the closing BCOM weights of the individual constituent and dividing it by the sum of commodity constituent weights within each of the two groups, and multiply it by 50% as shown below:

$$PXPTW_i = \frac{BCOM_{CW_i}}{\sum_i BCOM_{CW_i}} * .5$$

*Preformed for each commodity group

Where:

*PXPTW*_i is the Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index

Target Weight of the individual commodity futures contract, rounded to 8

decimal places.

BCOM_CW_i is the BCOM closing weights of commodity futures contract i.

Index Rebalancing

The Indices are rebalanced quarterly after the close of business on the 4th business day in January, April, July, and October. The target weights are applied to the index by calculating index units call Commodity Index Multipliers (CIMs). The Index Base Date CIM and the ongoing CIMs are used maintain continuity in the Index.

CIM's are calculated using the following formulas:

Base Date CIM Calculation:

$$CIM = \frac{PXPTW_i * 100}{NCSP_t}$$

Where:

cim is the Commodity Index Multiplier used to apply the Target Weight of the individual commodity futures contract, rounded to 8 decimal places.

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 $PXPTW_i$ is the Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index Annual

Target Weight of commodity futures contract i.

 $NCSP_t$ is the **Next Contract Settlement Price** on 4th Business Day In January 2008,

using price conversion.

Quarterly CIM Calculation

$$CIM = \frac{PXPTW_i * 100}{NCSP_t} * AF$$

*Preformed for each commodity group

Where:

CIM is the Commodity Index Multiplier used to apply the Target Weight of the

individual commodity futures contract, rounded to 8 decimal places.

PXPTW_i is the Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index Target

Weight of commodity futures contract i for each Rebalancing Day.

NCSP_t is the Next Contract Settlement Price on Business Day t.

AF is the Adjustment Factor.

$$AF = \frac{\sum_{i} CIM_{r} * NCSP}{100}$$

Where:

 CIM_r is the previous Commodity Index Multiplier.

NCSP is the Next Contract Settlement Price on Business Day t.

Index Rolling

The Index hold a long position in commodity futures. To maintain a long position, contracts are 'rolled' from the expiring futures contract to a new contract farther down the futures curve with a longer expiry date. The calculation of the Index follows the BCOM roll schedule and the commodity contract calendar listed in Table 9 of the BCOM methodology.

The Index will roll from the Lead Contract to the Next Contract from the sixth to the tenth Business Day of each month at 20% (1/5) each Business Day.

If a Market Disruption Event ("MDE") occurs during the January Roll Period, the roll period will be extended for each commodity constituent, for which an MDE occurs. Each commodity constituent must roll over five BCOM Business Days, at a rate of 20% per day, and will not, for example, "double up" on the Business Day following a Market Disruption Event, following Section 3.3 Market Disruption Events in the BCOM methodology.

From February to December, if a Market Disruption Event occurs during the roll period (on Business Days 5 through 9), the roll weight will be "held". The roll weight will catch up on the next Business Day when a MDE is not present.

Index Calculation

Index Levels are determined on a day on which BCOM is open for business. If a commodity futures contract **Settlement Price** is unavailable on a Business Day when BCOM is open, the last available official Settlement Price will be used for the calculation of the Index. The official Index Level precision is eight decimal places.

The ER Index Level is calculated as follows:

$$IndexER_t = IndexER_{t-1} * (1 + DER)$$

Where:

 $IndexER_t$ is the ER Index Level on Business Day t, rounded to 8 decimal places. $IndexER_{t-1}$ is the ER Index Level on the Business Day immediately preceding

Business Day t.

DER is the Daily ER of the commodity futures contracts.

The Daily ER is calculated as:

$$DER = \left(\frac{WAV}{PWAV} - 1\right)$$

Total Return Index Level (leveraged, and inverse indices) is calculated as follows:

$$IndexTR_t = IndexTR_{t-1} \times (\frac{IndexER_t}{IndexER_{t-1}} + IR_t)$$

Where:

 $IndexTR_t$ is the Total Return Index Level on Business Day t, rounded to 8 decimal

places.

 $IndexTR_{t-1}$ is the Total Return Index Level on the Business Day immediately preceding

Business Day t.

 $IndexER_t$ is the ER Index Level on Business Day t.

 $IndexER_{t-1}$ is the ER Index Level on the Business Day immediately preceding Business

Day t.

 IR_t is the Treasury Bill Daily Return, calculated as

$$IR_{t} = \left[\frac{1}{1 - \frac{91}{360} \times TBR_{t-1}} \right]^{\frac{D}{91}} - 1$$

Where:

 TBR_{t-1} is the 13-week (3 -month) US Treasury Bill ("T-Bill") Rate, the rate used is the most recent weekly auctioned high discount rate (ticker: USB3MTA Index). D is the number of calendar days between Business Day t, and the previous Business Day (i.e. 3 for weekend)

Weighted Average Value ("WAV") on Business Day t is calculated as:

$$WAV = \sum_{i} CIM1 * YLRW * \frac{LCSP_{t}}{L} + CIM2 * YNRW * \frac{NCSP_{t}}{L}$$

Where:

cIM1 is the Commodity Index Multiplier for Lead Contract.

YLRW is the Yesterday Lead Roll Weight, i.e., the roll weight of commodity

futures contract i on the Business Day immediately preceding Business

Day t.

 $LCSP_t$ is the Lead Contract settlement price on Business Day t.

cim2 is the Commodity Index Multiplier for Next Contract.

YNRW is the Yesterday Next Roll Weight, i.e., the roll weight of commodity

futures contract i on the Business Day immediately preceding Business

Day t.

 $NCSP_t$ is the Next Contract settlement price on Business Day t.

L is the lot size of the futures contract.i designates each individual commodity

Previous Weighted Average Value ("PWAV") on Business Day t is calculated as:

$$PWAV = \sum_{i} CIM1_{t-1} * YLRW * \frac{LCSP_{t-1}}{L} + CIM2_{t-1} * YNRW * \frac{NCSP_{t-1}}{L}$$

Where:

 $CIM1_{t-1}$ is the Commodity Index Multiplier for Lead Contract on the Business

Day immediately preceding Business Day t.

YLRW is the Yesterday Lead Roll Weight, i.e., the roll weight of commodity

futures contract i on the Business Day immediately preceding Business

Day t.

 $LCSP_{t-1}$ is the Lead Contract settlement price on the Business Day immediately

preceding Business Day t using price conversion.

 $CIM2_{t-1}$ is the Commodity Index Multiplier for Lead Contract on the Business

Day immediately preceding Business Day t.

YNRW is the Yesterday Next Roll Weight, i.e., the roll weight of commodity

futures contract i on the Business Day immediately preceding Business

Day t.

 $NCSP_{t-1}$ is the Next Contract settlement price on the Business Day immediately

preceding Business Day t.

L is the lot size.

i designates each individual commodity

Section 4: Market Disruption Events

Market Disruption Events ("MDE") can occur to commodity futures for several reasons:

- a) The termination or suspension of, or material limitation or disruption in, the trading of any future contract used in the calculation of the Index on that day
- b) The settlement price of any such contract reflect the maximum permitted price change from the previous day's settlement price, based on limits set by commodity exchanges
- c) The failure of an exchange to publish settlement prices.

If a Market Disruption Event occurs during the January Roll Period, the roll period will be extended for each commodity constituent, for which an MDE occurs. Each commodity constituent must roll over five BCOM Business Days, at a rate of 20% per day, and will not, for example, "double up" on the Business Day following a Market Disruption Event, following Section 3.3 Market Disruption Events in the BCOM methodology.

From February to December, if a Market Disruption Event occurs during the roll period, the roll weight will be "held". The roll weight will catch up on the next Business Day when a MDE is not present.

If a MDE persists for four consecutive Index Business Days immediately following the original Index Business Day on which a MDE occurs, then the Index Administrator shall determine what further actions it may reasonably take.

If, on any Index Business Day, a MDE occurs or is occurring that the Index Administrator determines, in its sole discretion, materially affects the Index, the Index Administrator may defer or suspend the calculation and publication of the Index Value and any other information relating to the Index until the next Index Business Day on which such disruption event is not continuing.

Section 5: Benchmark Governance and Review

Data Providers and Data Extrapolation

Please refer to the BISL Benchmark Procedures Handbook available here.

Benchmark Governance, Audit and Review Structure

Please refer to the BISL Benchmark Procedures Handbook available here.

Internal and External Reviews

Please refer to the BISL Benchmark Procedures Handbook available here.

Index and Data Reviews

Please refer to the BISL Benchmark Procedures Handbook available here.

Exchange Settlement Price Delays

In the event an exchange delays the pricing of future settlements pertaining to the Bloomberg Representative Agriculture Index Indices, BISL will delay the publication of Index Levels to vendors and delivery of index data files.

Error Corrections/Restatement Policy

Please refer to the BISL Benchmark Procedures Handbook available here.

Exchange Settlement Price Amendments

On the occasion when an exchange amends the Settlement Price of a contract used in the Bloomberg Representative Agriculture Index Indices prior to 7 PM EST, BISL will send an index announcement following the discovery to inform all clients of the correction. BISL will then recalculate, republish, and redistribute end-of day files.

Real-time Distribution

BISL strives to provide accurate real-time calculation of its indices, however the following circumstances may occur during real-time dissemination hours.

- Incorrect index levels can be disseminated.
- Indices may stop disseminating.
- Indices may disseminate stale prices.

Expert Judgment

Please refer to the BISL Benchmark Procedures Handbook available here.

Reinvestment of Dividends and Coupons

Dividends and coupon payments play no direct role in this Index Methodology Handbook, and are therefore not accounted for by the Index.

Section 6: Index Terms

"Base Index Level" means the starting Index Level of 100 for each of the Indices.

"BCOM" means the <u>Bloomberg Commodity Index</u>

"BCOM Closing Weights" means the closing constituent weights of the Bloomberg Commodity Index (BCOM)

"BCOM Target Weights" the annual target weight of the Bloomberg Commodity Index (BCOM), otherwise known as Commodity Index Percentages in the BCOM methodology

"BISL" means Bloomberg Index Services Limited.

"PROC" means the Benchmark Oversight Committee.

"Business Day" means any day on which BCOM is open for business.

"Commodity Index Multiplier (CIM)" means the value of one as described in Section 3.

"Index Administrator" means BISL.

"Index Base Date" means the first date of the Index history as described in Section 1.

"Index Commencement Date" means the date each of the Indices is first made available on the relevant Bloomberg Page, i.e. June xxth, 2023.

"Index Level" means, in respect of the Index and a Business Day, the value of the Index on such Business Day, calculated in accordance with the methodology described in Section 3.

"PROC" means the Product, Risk and Operations Committee.

"Lead Contract" means the rolling out commodity futures contract as defined in Table 5.

"Lead Contract Settlement Price" means the official settlement prices provided by the exchange of the rolling out commodity futures contract defined in Table 5.

"Market Disruption Event (MDE)" has the meaning given to such term in Section 4.

"Next Contract" means the rolling in commodity futures contract as defined in Table 5.

"Next Contract Settlement Price" means the official settlement prices provided by the exchange of the rolling in commodity futures contract as defined in Table 5.

"Rolling" means the commodity futures contracts are 'rolled' during the Roll Period from the expiring futures contract (Lead Contract) to a new contract farther down the futures curve with a longer expiry date (Next Contract). After the Roll Period, the former Next Contract becomes the new Lead Contract.

"Roll Period" means the six to tenth Business Day of each month, at 20% (1/5) each Business Day.

"Settlement Price" means the official settlement prices provided by an exchange.

"Treasury Bill Daily Return" means the return of cash collateral invested in the 3-Month T-Bill.

Section 7: ESG Disclosures

benchmark methodology.

and reason for the update:

Date on which information has been last updated

EXPLANATION OF HOW ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY

ARE REFLECTED IN THE KEY EL	EMENTS OF THE BENCHMARK METHODOLOGY
1. Name of the benchmark administrator.	Bloomberg Index Services Limited ("BISL")
2 . Type of benchmark	Other
3 . Name of the benchmark or family benchmarks.	Bloomberg Commodity 50/50 Petroleum & ex-Petroleum Index
4 . Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	No
the benchmark methodology, taking into account the ESG	elow, for each family of benchmarks, those ESG factors that are taken into account in G factors listed in Annex II to Delegated Regulation (EU) 2020/1816. lection, weighting or exclusion of underlying assets. The ESG factors shall be level of the family of benchmarks.
a) List of environmental factors considered:	N/A
b) List of social factors considered:	N/A
c) List of governance factors considered:	N/A
value of the benchmark. Alternatively, all of this information may be provided in t	nt of the benchmark, but shall be disclosed at an aggregated weighted average he form of a hyperlink to a website of the benchmark administrator included in this sily available and accessible. Benchmark administrators shall ensure that information
a) List of environmental factors considered:	N/A
b) List of social factors considered:	N/A
c) List of governance factors considered:	N/A
7. Data and standards used.	
a) Data input. i) Describe whether the data are reported, modelled or, sourced internally or externally. ii) Where the data are reported, modelled or sourced externally, please name the third party data provider.	N/A
b) Verification of data and guaranteeing the quality of those data. Describe how data are verified and how the quality of those data is ensured.	N/A
c) Reference standards Describe the international standards used in the	N/A

July 2023. Initial Launch.

Accessing Index Data

Bloomberg ⁻	Terminal®
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Bloomberg indices are the benchmarks of choice for capital markets investors. The Bloomberg Index Browser IN <GO> displays the latest performance results and statistics for the indices as well as history. IN presents the indices that make up Bloomberg's global, cross-asset Index families into a hierarchical view, facilitating navigation and comparisons. The "My Indices" tab allows a user to focus on a set of favorite indices. Bloomberg's Portfolio & Risk Analytics solution (PORT <GO>) includes tools to analyze the risk, return, and current structure of indices. PORT includes tools to analyze performance of a portfolio versus a benchmark as well as models for performance attribution, tracking error analysis, value-at-risk, scenario analysis, and optimization.

Bloomberg Website

The index website makes available limited Index information including:

- Index methodology and factsheets
- Current performance numbers for select indices

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