Index Methodology

The Bloomberg Commodity Balanced WTI Crude Oil Index

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Indices

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Version Tracker

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Section 1: Index Overview

The Bloomberg Commodity Balanced WTI Crude Oil Index (ticker: **BCBCLI Index**) aims to track the performance of 3 separate contract schedules for WTI Crude Oil futures. One third of the index follows a monthly roll schedule, the second third of the index follows a June annual roll schedule, while the remaining third follows a December annual roll schedule, as defined in Table 3. The Bloomberg Commodity Balanced WTI Crude Oil Total Return Index (ticker: **BCBCLIT Index**) is calculated using the returns of the BCBCLI Index and the return of cash collateral invested in the 3-Month T-Bill.

The Index weights are equally reset semi-annually in the months of March and September on close of the first **Business Day**. 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 second and the third Business Day of each calendar month. An **Index Level** or Business Day is determined on a day in which NYMEX is open for trading.

The BCBCLI and the BCBCLI Index are denominated in U.S. dollars. The Indices have a **Base Date** of January 2nd, 2014 with a **Base Index Level** of 100. The **Index Commencement Date** is June 23rd 2020.

The Bloomberg Commodity Balanced WTI Crude Oil Indices are the intellectual property of UBS AG, acting through its London Branch (or any successor thereto) (in such capacity, the **"Index Owner"**). Bloomberg Index Services Limited (**BISL** and, collectively with its affiliates, Bloomberg) is the **Index Administrator** of the Bloomberg Commodity Balanced WTI Crude Oil Index Family.

Table 1: Contract Month Codes

Commodity	Bloomberg Code	Contract Schedule	Target Weight	Lot Size
Crude Oil (WTI)	CL	Monthly	33.33% or 1/3	1
Crude Oil (WTI)	CL	June	33.33% or 1/3	1
Crude Oil (WTI)	CL	December	33.33% or 1/3	1

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. For example, trading in futures contracts on physical commodities, including trading in the Index components, is speculative and can be extremely volatile. Market prices of the Index components and the underlying physical commodities may fluctuate rapidly 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 programs; domestic and foreign political and economic events and policies; disease; pestilence; technological developments; changes in interest rates, whether through government action or market movements; and monetary and other government 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 Balanced WTI Crude Oil 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 Bloomberg Commodity Balanced WTI Crude Oil 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 {INP <GO>}.

Section 3: Index Calculation

The Bloomberg Commodity Balanced WTI Crude Oil Index aims to track the performance of 3 separate contract schedules for WTI Crude Oil futures. One third of the index follows a monthly roll schedule, the second third of the index follows a June annual roll schedule, while the remaining third follows a December annual roll schedule, as defined in Table 3.

Index Rebalancing

The Index is rebalanced on the first Business Day in the months of March and September, where the weights are reset to their respective 33.33% weights amongst each contract schedule. Table 1, above, lists the WTI Crude Oil future contracts schedules and their **Target Weights**. The Index Base Date Commodity Index Multipliers (CIMs), and the ongoing CIMs are used maintain continuity in the Index.

CIM's are calculated using the following formulas:

Base Date CIM Calculation

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

Where:

CIM	is the Commodity Index Multiplier used to apply the Target Weight of the individual commodity futures contract, rounded to 8 decimal places.
ITW_i	is the Target Weight of commodity futures contract i for each **Rebalancing Day**.
$NCSP_t$	is the **Next Contract Settlement Price** on Business Day t.

CIM Calculation

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

Where:

CIM	is the Commodity Index Multiplier used to apply the Target Weight of the individual commodity futures contract, rounded to 8 decimal places.
ITW_i	is the 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 Roll In Settlement Price on Business Day t

Extraordinary Roll/Rebalance

BISL will conduct an index review if a WTI Crude Oil futures contract (CL-Monthly, CL-June, CL-December) trades or settles at or below $10, and determine if immediate action is required. Bloomberg may conduct an extraordinary roll/rebalance, where index weights are reset and the index futures contracts and length of roll will may be altered after a BISL review. All index determinations will be communicated through an index announcement.

Index Rolling

The Indices hold long positions in WTI Crude Oil commodity futures contracts traded on the Chicago Mercantile Exchange (CME). 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 Bloomberg Commodity Balanced WTI Crude Oil Indices follow the roll schedule based on the commodity contract calendar listed in Table 3. The mapping for the contract letters and months is defined in Table2.

Table 2: Contract Month Codes

Contract Code	Month
F	January
G	February
H	March
J	April
K	May
M	June
N	July
Q	August
U	September
V	October
X	November
Z	December

The Contract Calendar Table (Table 3) represents the **Lead Contract** on the first Business Day of each month.

Table 3: WTI Crude Oil Contract Calendar

Commodity	Exchange	Contract Schedule	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Crude Oil (WTI)	CME	CL-Monthly	H	J	K	M	N	Q	U	V	X	Z	F+1	G+1
Crude Oil (WTI)	CME	CL-June	M	M	M	M+1	M+1	M+1	M+1	M+1	M+1	M+1	M+1	M+1
Crude Oil (WTI)	CME	CL-December	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z+1	Z+1	Z+1

Each commodity future will roll from the **Lead Contract** to the **Next Contract** starting on the second business day rolling over the two **Business Days** of each month, at 50% each Business Day. If a **Market Disruption Event (MDE)** occurs during the roll period (Business Days 2 and 3), the roll weight will be "held". The roll weight will catch up on the next Business Day when a MDE is not present. Table 4 is an example of the rolling process during the March Roll Period of 2020.

Table 4: Rolling Example for Crude Oil (CL)

					Yesterday Roll Weight		Today Roll Weight	
Date	**Ticker**	**Day Count**	**Lead Contract**	**Next Contract**	**% Lead**	**% Next**	**% Lead**	**% Next**
3/2/2020	CL1	1	CLK0	CLM0	100.00%	0.00%	100.00%	0.00%
3/2/2020	CL2	1	CLM0	CLM1	100.00%	0.00%	100.00%	0.00%
3/2/2020	CL3	1	CLZ0	CLZ0	100.00%	0.00%	100.00%	0.00%
3/3/2020	CL1	2	CLK0	CLM0	100.00%	0.00%	50.00%	50.00%
3/3/2020	CL2	2	CLM0	CLM1	100.00%	0.00%	50.00%	50.00%
3/3/2020	CL3	2	CLZ0	CLZ0	100.00%	0.00%	50.00%	50.00%
3/4/2020	CL1	3	CLK0	CLM0	50.00%	50.00%	0.00%	100.00%
3/4/2020	CL2	3	CLM0	CLM1	50.00%	50.00%	0.00%	100.00%
3/4/2020	CL3	3	CLZ0	CLZ0	50.00%	50.00%	0.00%	100.00%
3/5/2020	CL1	4	CLK0	CLM0	0.00%	100.00%	0.00%	100.00%
3/5/2020	CL2	4	CLM0	CLM1	0.00%	100.00%	0.00%	100.00%
3/5/2020	CL3	4	CLZ0	CLZ0	0.00%	100.00%	0.00%	100.00%

Index Calculation

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

The BCBCLI (excess return) Index Level is calculated as follows:

$$IndexER = IndexER_{t-1} * (1 + \mathrm{DER})$$

Where:

$IndexER$ is the BCBCLI Index Level on Business Day t, rounded to 8 decimal places.

$IndexER_{t-1}$	is the BCBCLI Index Level on the Business Day immediately preceding Business Day t.
$\boldsymbol{DER}$	is the **Daily Excess Return** of the commodity futures contracts

The Daily Excess Return is calculated as:

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

Weighted Average Value ("WAV") is calculated as:

$$WAV = \sum_i CIM1 * YLRW * \frac{LCSP_t}{L} + CIM2 * YNRW * \frac{NCSP_t}{L}$$

Where:

$CIM1$	is the **Lead CIM**.
$YLRW$	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.**
$CIM2$	is the **Next CIM**.
$YNRW$	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**
L	is the lot size (defined in Table 1)
i	is the commodity futures contract

Previous Weighted Average Value l (PWAV) 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 Lead CIM
$YLRW$	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 Yesterday Settlement Price**
$CIM2_{t-1}$	is the Next CIM
$YNRW$	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 Yesterday Settlement Price**

L is the lot size (defined in Table 1)

BCBCLIT (total return) Index Level is calculated as follows:

$$\text{BCBCLIT t} = \text{BCBCLIT}_{t-1} \text{ x } \left(\frac{IndexER}{IndexER_{t-1}} + \text{IR}_{t}\right)$$

Where:

BCBCLIT t is the current Business Day Bloomberg Commodity Balanced WTI Crude Oil TR Index Level, rounded to 8 decimal places.

BCBCLIT_{t-1} is the Business Day immediately preceding Business Day Bloomberg Commodity Balanced WTI Crude Oil TR Index Level.

$IndexER$ is the IndexER Index Level on Business Day t.

$IndexER_{t-1}$ is the IndexER Index Level for Business Day immediately preceding Business Day t.

TBD_{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. weekend=3)

Section 4: Market Disruption Events

Market Disruption Events (MDE)
MDEs can occur in future contracts 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 an MDE occurs with respect to the Bloomberg Commodity Balanced WTI Crude Oil Index during the "Roll Period" for either the lead or next contract, the daily roll of the relevant futures contract will be held for that Business Day. On the following Business Day on which a Market Disruption Event does not occur, the roll weight will account for the current days roll weight and the previous Business Day (MDE's) roll weight.

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

The Indices are rules-based, and their construction is designed to consistently produce Index Levels without the exercise of discretion. The Indices are produced without the interpolation or extrapolation of input data.

In addition, the Index Administrator seeks to avoid contributions of input data that may be subject to the discretion of the source of such data and instead seeks to use input data that is readily available and/or distributed for a number of non-index or benchmark creation purposes. Accordingly, the Indices require no 'contributors' to produce and no codes of conduct with any such sources are required.

Benchmark Governance

Benchmark Governance, Audit and Review Structure

BISL uses two primary committees to provide overall governance and effective oversight of its benchmark administration activities:

- The Product, Risk & Operations Committee (**"PROC"**) provides direct governance and is responsible for the first line of controls over the creation, design, production and dissemination of benchmark indices, strategy indices and fixings administered by BISL, including the Indices.
- The oversight function is provided by Bloomberg's Benchmark Oversight Committee (**"BOC"**). The BOC is independent of the PROC and is responsible for reviewing and challenging the activities carried out by the PROC. In carrying out its oversight duties, the BOC receives reports of management information both from the PROC as well as Bloomberg Legal & Compliance members engaged in second level controls.

On a quarterly basis, the PROC reports to the BOC on governance matters, including but not limited to client complaints, the launch of new benchmarks, operational incidents (including errors & restatements), major announcements and material changes concerning the benchmarks, the results of any reviews of the benchmarks (internal or external) and material stakeholder engagements.

Internal and External Reviews

BISL's Index administration is also subject to Bloomberg's Compliance function which periodically reviews various aspects of its businesses in order to determine whether it is adhering to applicable policies and procedures, and assess whether applicable controls are functioning properly. In addition, Bloomberg may from time to time appoint an independent external auditor with appropriate experience and capability to review adherence to benchmark regulation. The frequency of such external reviews will depend on the size and complexity of the operations and the breadth and depth of the Index use by stakeholders.

Index and Data Reviews

The Index Administrator will review the Indices (both the rules of construction and data inputs) on a periodic basis, not less frequently than annually, to determine whether they continue to reasonably measure the intended underlying market interest, the economic reality or otherwise align with their stated objective. More frequent reviews may result from extreme market events and/or material changes to the applicable underlying market interests.

Criteria for data inputs include reliable delivery and active underlying markets. Whether an applicable market is active depends on whether there are sufficient numbers of transactions (or other indications of price, such as indicative quotes) in the applicable constituents (or similar underlying constituent elements) that a price (or other value, as applicable) may be supplied for such constituent(s).

Other than as set forth in this Methodology, there are no minimum liquidity requirements for Index constituents and/or minimum requirements or standards for the quantity or quality of the input data.

The review will be conducted by product managers of the Indices in connection with the periodic rebalancing of the Indices or as otherwise appropriate.

Any resulting change to the Methodology deemed to be material (discussed below) will be subject to the review of the PROC (defined below) under the oversight of the BOC (defined below), each of which committees shall be provided all relevant information and materials it requests relating to the change. Details regarding the PROC and BOC are described in Section 5 - Benchmark Governance.

Material changes will be reflected and tracked in updated versions of this Methodology.

BISL's Index administration is also subject to Bloomberg's Compliance function which periodically reviews various aspects of its businesses in order to determine whether it is adhering to applicable policies and procedures, and assess whether applicable controls are functioning properly.

Material changes related to the Indices will be made available in advance to affected stakeholders whose input will be solicited. The stakeholder engagement will set forth the rationale for any proposed changes as well as the timeframe and process for responses. The Index Administrator will endeavor to provide at least two weeks for review prior to any material change going into effect. In the event of exigent market circumstances, this period may be shorter. Subject to obligations of confidentiality, stakeholder feedback and the Index Administrator's responses will be made accessible upon request. Because the Indices are strategy indices and not widely-available benchmark indices, this stakeholder engagement will be conducted on a bespoke basis with the Index Owner, rather than a more open and public consultation that might be more appropriate for benchmark indices.

In determining whether a change to an Index is material, the following factors shall be taken into account:

- The economic and financial impact of the change;
- Whether the change affects the original purpose of the Index; and/or
- Whether the change is consistent with the overall objective of the Index and the underlying market interest it seeks to measure

Exchange Settlement Price Delays

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

Error Corrections/Restatement Policy

BISL strives to provide accurate calculation of its indices. However, to the extent a material error in index levels is uncovered following publication and dissemination, a notification will be sent to index owners alerting them of such error and the expected date of a revised publication, if warranted.

BISL considers the following factors to determine whether to restate. Not all conditions need to be present to warrant a restatement, and certain factors may be more determinative that others depending on the circumstances of the given error.

- The relative importance of the data field impacted by the error;
- When the error occurred and when it was discovered;
- The number of indices and sub-indices affected;
- Whether the impacted indices are linked to tradable products;
- The magnitude of the error;
- The burden of restatement on client re-processing relative to the impact of the error;
- The impact of the restatement on analytical tools.

Exchange Settlement Price Amendments

On the occasion when an exchange amends the Settlement Price of a contract used in the Bloomberg Commodity Balanced WTI Crude Oil 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.

Expert Judgment

BISL may use expert judgment with regards to the following:
• Index restatements
• Extraordinary circumstances during a market emergency

• Data interruptions, issues, and closures

When expert judgment is required, BISL undertakes to be consistent in its application, with recourse to written procedures outlined in this Methodology and internal procedures manuals. In certain circumstances exercises of expert judgment are reviewed by senior members of BISL management and Bloomberg Compliance teams, and are reported to the PROC. BISL also maintains and enforces a code of ethics to prevent conflicts of interest from inappropriately influencing index construction, production, and distribution, including the use of expert judgment.

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 stating Index Level of 100 for each of the Indices.

"BCBCLI Index" means the Bloomberg Commodity Balanced WTI Crude Oil Excess Return Index.

"BCBCLIT Index" means the Bloomberg Commodity Balanced WTI Crude Oil Total Return Index.

"BISL" means Bloomberg Index Services Limited.

"BOC" means the Benchmark Oversight Committee.

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

"**Commodity Index Multiplier (CIM)"** means the derived multiplier calculated to apply the Target Weights of each individual commodity futures contract to the Index as set out 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 23rd, 2020.

"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.

"Index Owner" means UBS.

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

"Lead CIM" means the lead contract's Commodity Index Multiplier as defined in Section3

"Lead Contract" means the rolling out commodity futures contract as defined in Table 3.

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

"Next CIM" means the next contract's Commodity Index Multiplier as defined in Section3

“Next Contract” means the rolling in commodity futures contract as defined in Table 3.

“Next Contract Settlement Price” means the official settlement prices provided by the exchange of the rolling in commodity futures contract defined in Table 3.

“Rebalancing Day” means the first Business day of March and September when the Index resets to its Target Weights, as defined in Table 1.

“Rolling” means the commodity futures contracts are ‘rolled’ during the Roll Period in increments of 50% 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 in respect of the Indices and the Lead Contract, the second through the third Business Day of each month.

“Settlement Price” means the official settlement prices provided by an exchange

“Target Weights” means the weighting (1/3) of each commodity futures contract, as defined in Table 1.

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

ACCESSING INDEX DATA

Bloomberg Terminal®	Bloomberg indices are the benchmarks of choice for capital markets investors. • IN <GO> - The Bloomberg Index Browser displays the latest performance results and statistics for the indices as well as history. IN presents the indices that make up Bloomberg's global, multi-asset class 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. • PORT <GO> - Bloomberg's Portfolio & Risk Analytics solution 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. • DES <GO> - The Index description page provides transparency into the current and projected Index universe including membership information, aggregated characteristics and returns, and historical data.
Bloomberg Indices Website https://www.bloomberg.com/professional/product/indices/	The index website makes available limited Index information including: • Index methodology and factsheets • Current performance numbers for select indices
Index Licensing	Bloomberg requires an index data license for services and products linked to the indices. Examples include: • Exchange-traded index products • OTC products • Index or constituent-level redistribution • Custom index solutions
Index Ticker	BCBCLI: Bloomberg Commodity Balanced WTI Crude Oil Excess Return BCBCLIT: Bloomberg Commodity Balanced WTI Crude Oil Total Return

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New York
+1-212-318-2000

London
+44-20-7330-7500

Singapore
+65-6212-1000

Hong Kong
+852-2977-6000

Tokyo
+81-3-3201-8900

Sydney
+61-2-9777-8600

indexhelp@bloomberg.net

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