

COINMETRICS

**CMBI MOMENTUM
SERIES
METHODOLOGY**

Version 1.0

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1 COIN METRICS BLETCHLEY INDEXES

Coin Metrics' mission is to provide transparent and actionable cryptoasset market and network (on-chain) data. As one of the early providers of both market and network data, Coin Metrics is uniquely positioned to provide investors with a high quality suite of crypto indexes.

The Coin Metrics Bletchley Indexes ("CMBI") are designed to provide cryptoasset markets with a diverse range of market capitalization-weighted, equal-weighted and network data-weighted indexes to measure performance of the largest and most utilized global cryptoassets. CMBI products are operated and calculated by Coin Metrics and are designed to serve as an independent, transparent, and comprehensive measure of cryptoasset market performance.

Indexes are weighted and calculated using a robust and resilient methodology that is resistant to manipulation and adheres to international best practices for financial benchmarks, including the International Organization of Securities Commissions' (IOSCO) Principles for Financial Benchmarks. The Coin Metrics Oversight Committee (the "Oversight Committee") protects the integrity of CMBI and ensures the indexes serve as a source of transparent and independent benchmarking.

This document is intended to be read in conjunction with other Coin Metrics methodologies that inform the data inputs. These include the CM Real-Time Reference Rates Methodology and CM Reference Rates Methodology.

2 DESCRIPTION

Coin Metrics Momentum Indexes aim to reflect the performance of the momentum factor for a variety of CMBI Parent Indexes (“Parent Indexes”). A Parent Index is any CMBI Single Asset Series or CMBI Multi Asset Series Index.

Constituents are selected based on the eligibility criteria of the Parent Index as defined in its methodology. The weight of each cryptoasset within the index is dynamic and based on the momentum scores of the asset during the momentum observation period.

There are two measures of momentum that determine how constituents are selected and weighted in Coin Metrics momentum strategies:

1. The total market’s momentum during the observation period. This is defined as the sum of the momentum scores across the index constituents during the observation period and defines how much of the index is weighted to crypto assets and cash for each strategy. The calculation of the Momentum Score is defined in Section 4.2.1.
2. Each individual constituent’s momentum score, which defines how much of an index’s total allocation is assigned to a specific constituent.

In the highly volatile and new asset class of cryptoassets, short term momentum durations (i.e. 5-30 days) have empirically provided a more prominent momentum signal than longer term momentum (>30 days). High momentum cryptoassets have demonstrated continuance of trend over the very near term (<30 days).

Index prices are quoted in real-time (every 15 seconds) and assets are rebalanced as defined in Section 4.4 to account for the changing Momentum Scores of each constituent and the addition or deletion of index constituents.

Given the early stages and financial immaturity of the cryptoasset market, there is insufficient trading infrastructure, custody solutions, liquidity, or other financial services to support the long tail of cryptoassets. These factors have gone into the design of CMBI products and the methodology outlined below so as to create a suite of investable indexes. As the ecosystem evolves and becomes more sophisticated, it may be deemed that other indexes become investable.

3 ELIGIBILITY CRITERIA

The investment universe of the CMBI Momentum Indexes include all of the existing constituents of the underlying CMBI Parent Index.

3.1 CMBI 10 14D MOMENTUM INDEX ELIGIBILITY

The eligible universe is represented by the constituent assets selected in the CMBI 10 (CMBI10) monthly rebalances. All other digital assets that are not included in the CMBI 10 are excluded.

4 INDEX CONSTRUCTION AND MAINTENANCE

4.1 APPROACH

CMBI Momentum Series constituent selection is defined by its respective Parent Index, as outlined in Section 3 Eligibility Criteria.

Cryptoassets are traded 24 hours a day, 7 days a week, 365 days a year. The CMBI Momentum Series has one official close that is subject to human review at 16:00 ET.

Constituents eligible for a CMBI Momentum Series' Parent Index are typically rebalanced monthly on the first business day of the month at 16:00 ET (the "Parent Index Effective Date"). Whilst the eligible constituents for a CMBI Momentum Series' Parent Indexes are determined on the first business day of the month, constituent composition for a CMBI Momentum Series product is only changed upon the subsequent Momentum Index rebalancing as defined in Section 4.4.

Business days are defined as Monday to Friday, excluding public holidays, as defined by the New York Stock Exchange (NYSE) holidays and trading hours calendar.

To the extent that a forked asset meets the Coin Metrics definition of 'legitimate' (as defined in the CMBI Fork Legitimacy Policy), a liquidation event will occur during index rebalancing. Coin Metrics does not deem airdrops as eligible for a liquidation event in the CMBI Momentum Series. When there is no liquidation event for any fork, the rebalance process will still be conducted but will result in no change to an index.

4.2 MOMENTUM WEIGHTING

The cryptoasset market has historically been highly correlated in price movements. As such, Coin Metrics' Momentum Indexes strive to capture both market momentum and specific asset momentum in the determination of asset weighting across indexes.

4.2.1 Constituent Momentum Score

The momentum score is defined by its return over the observation period.

$$\text{Observation Period Momentum Score} = (P_{T-1} / P_{T-(O+1)}) - 1$$

Where;

P_{T-1} = Constituent's CM Reference Rate one calendar day prior to the rebalancing date (T)

O = Observation Period as defined for each index in Section 4.4 (days)

$P_{T-(O+1)}$ = Constituent's Coin Metrics Reference Rate (O+1) days prior to the rebalancing date (T)

The momentum score is computed excluding the most recent day of cryptoasset performance.

4.2.2 Momentum Hurdle Level

The momentum hurdle is defined as the level at which a constituent is considered to have sufficient momentum and be included during the following rebalance for an index. For example, if an asset's Momentum Score is higher than the Momentum Hurdle Level, it is defined as having momentum and warrants an allocation as defined in Section 4.4. However, if an asset's Momentum Score is lower than the Hurdle Rate, it is not considered during the upcoming momentum index rebalance.

The Momentum Hurdle Level varies between indexes and is defined in each index's construction parameters in Section 4.4.

4.2.3 Constituent Momentum Factor

Constituents are considered to exhibit the Constituent Momentum Factor if their Constituent Momentum Score, as defined in Section 4.2.1, exceeds the index's Momentum Hurdle Level, as defined in Section 4.2.2.

Each eligible constituent's Momentum Factor is measured independently in a binary nature, as follows. Each constituent is:

- Assigned a Constituent Momentum Factor of 1 if their Constituent Momentum Score is greater than the index's Momentum Hurdle Level as defined in Section 4.4.
- Assigned a Constituent Momentum Factor of 0 if their Constituent Momentum Score is less than or equal to the index's Momentum Hurdle Level as defined in Section 4.4.

4.2.4 Constituent Total Momentum Score

An index's Constituent Total Momentum Score is the sum of Constituent Momentum Factors within the index. An index's Constituent Total Momentum Score has:

- a minimum score of 0, when the sum of an index's Constituent Momentum Factors are 0 (i.e. no constituent has a Momentum Score greater than the Momentum Hurdle Level).
- A maximum score equal to the number of constituents in the index, when all constituents have a Momentum Factor of 1.

CMBI Momentum Indexes are not necessarily fully allocated to cryptoassets. Indexes can allocate up to 100% of its weight to cash if there is no momentum in any of the constituent assets. The total weight allocated to cash into a momentum strategy is dependent on the Market Momentum Score, as defined for each specific index in section 4.4.

4.3 WEIGHTING SCHEME

For any given rebalance effective date, cryptoassets eligible for inclusion in a CMBI Momentum Index are defined by the Parent Index Constituents. The index weighting assigned to cryptoassets and cash is determined by each specific Index's Constituent Total Momentum Score and the Individual Constituent Weighting schemas outlined in Section 4.4.

4.4 CMBI MOMENTUM INDEXES

4.4.1 CMBI 10 14d Momentum Index

The CMBI 10 14d Momentum Index is rebalanced weekly at 12:00 UTC on the first business day of the week ("Effective Date"). The rebalancing reference date ("Reference Date") is one calendar day prior to the rebalancing day at 12:00 UTC. Business days are defined as Monday - Friday excluding public holidays, as defined by the New York Stock Exchange (NYSE) holidays and trading hours calendar. Calendar days are defined as every day of the year (including weekends and public holidays).

The rebalancing process is as described below:

1. Constituents: The eligible constituents during any rebalance are those of the CMBI 10.
2. Observation Period: 14 days
3. Momentum Hurdle Level: 8%
4. Constituent Total Momentum Score: The Total Momentum Score is between zero and ten, with ten being equal to the maximum number of index constituents.
5. Total Constituent/Cash Weighting: If the Index's Constituent Total Momentum Score determines the total weighting of the index that is held in cryptoassets or cash. A Constituent Total Momentum Score of:
 - a. 0 indicates a 100% allocation to cash.
 - b. 1 indicates 28% of total assets are allocated to constituents and 72% remains in cash.

c. 10 indicates 100% of total assets are allocated to constituents and 0% remains in cash.

If there is more than one constituent but less than ten with a Momentum Factor of 1, the total assets allocated to constituents increases linearly between 28% and 100% depending on the number of constituents with a Momentum Score greater than the 8% Hurdle Level.

6. Individual Constituent Weight: Constituents with a Momentum Factor of 1 are equally weighted within the total cryptoasset weighting. For example, if 52% of the total level is weighted to cryptoassets, and four constituents have momentum, then each constituent receives a weight of 13.0% ($\frac{52\% \text{ Total Cryptoasset Weighting}}{4 \text{ Constituents}}$).

No additions or deletions are made to the index between rebalancings.

4.5 CURRENCY OF CALCULATION

Products within the CMBI Momentum Series are quoted in U.S. dollars and Bitcoin. For real-time index pricing, the CM Real-Time Reference Rates are used. For end of day pricing, the CM Reference Rates are used. Both the CM Real-Time Reference Rates and CM Reference Rates are quoted in U.S. dollars and can be converted to be quoted in Bitcoin.

4.6 HISTORICAL AVAILABILITY AND BASE VALUES

Index history availability and values are shown in the table below.

Name	Ticker	Return Type	Launch Date	First Value Date	Base Date	Base Value (USD)	Base Value (BTC)
CMBI 10 14d Momentum	CMBI10M	Price return	2021-07-06	2017-01-09	2017-01-09	100	0.110363

5 INDEX DATA

5.1 DATA SOURCES

CMBI leverages both Coin Metrics products and external data sources as a means of constructing the indexes and calculating the index level of CMBI products.

5.1.1 Real-Time Index Pricing

Real-time input price data for CMBI products is sourced from Coin Metrics Real-Time Reference Rates. Refer to the Coin Metrics Real-Time Reference Rates Methodology for more information.

5.1.2 End of Day Index Pricing

End of day input price data for CMBI products is sourced from Coin Metrics Reference Rates. Refer to the Coin Metrics Reference Rates Methodology for more information.

6 INDEX GOVERNANCE

The Coin Metrics Oversight Committee (the "Oversight Committee") and Coin Metrics Index Committee (the "Index Committee") oversee the integrity of the CMBI products.

6.1 ADMINISTRATION

Coin Metrics serves as the administrator for CMBI products and has primary responsibility for all aspects of the index construction processes, including development, definition, determination, dissemination, operation, and governance. All aspects of index production are carried out by Coin Metrics, however, Coin Metrics relies on a few third party agreements to obtain data inputs for index calculation.

Coin Metrics ensures that transparency in relation to significant decisions and associated rationale are published and made available to external stakeholders. Data contingency and exclusion rules are in place to handle certain extraordinary circumstances and external factors beyond the control of Coin Metrics.

6.2 INDEX COMMITTEES

6.2.1 Coin Metrics Oversight Committee

The Oversight Committee provides independent oversight over the production of CMBI products. The Oversight Committee's responsibilities include regular reviews of the CMBI production process, the CMBI methodologies, the selection of data sources and data inputs, any uses of expert judgment or non-standard procedures, conflicts of interest, the addition or termination of CMBI products, reviewing the results of external and internal audits, and complaints or questions regarding the

indexes from external stakeholders. Additional information regarding the responsibilities and membership of the Oversight Committee can be found in the Coin Metrics Governance Committee Charter.

6.2.2 Coin Metrics Index Committee

The Index Committee maintains all products administered and calculated by CMBI. Committee members are Coin Metrics employees. The committee meets monthly to review any significant market events, revise index policies as required and review any ongoing consultation results. In the daily maintenance of the CMBI Momentum Series, the Index Committee reserves the right to apply exceptions and make expert judgements as required to maintain the integrity of the indexes. In such an instance where index determination deviates from the standard methodology or policies as defined in this document or supplemental documents, clients will receive sufficient notice when possible.

At a minimum, the Index Committee will review the CMBI Momentum Series Methodology annually to ensure that indexes that follow the process and policies stated within this document continue to achieve their stated objectives.

Coin Metrics considers the content discussed at monthly Index Committee meetings to be potentially market moving or material and as such treats minutes as confidential.

For information on expert judgement, please refer to the CMBI Policy Documentation.

7 INDEX POLICY

7.1 ANNOUNCEMENTS

Index constituent data is analyzed for completeness daily. In the case of any significant foreseeable event for any index constituent, an announcement will be distributed via a monthly index report distributed to all clients. For any anomalies that are detected during the daily quality review process, Coin Metrics will develop a plan to notify, solicit comments from, and consult with external stakeholders via email or another pre-defined communication channel.

Press releases such as new index creation or significant changes to existing index construction will be released on the Coin Metrics blog (<https://coinmetrics.io/blog/>).

7.2 HOLIDAY SCHEDULE

The CMBI Momentum Series are calculated 24 hours a day, 7 days a week, 365 days a year.

Rebalances are conducted on business days, Monday to Friday, except for holidays as defined by the New York Stock Exchange (NYSE) holidays and trading hours calendar.

A complete holiday schedule is available on request.

7.3 RESTATEMENT POLICY

For information on the Restatement Policy, please refer to the CMBI Policy Documentation.

7.4 REAL-TIME PRICING

Real-time index pricing does not update an index's level every time a trade occurs, but rather sources data from CM Real-Time Reference Rates whose methodology stipulates that an asset's price is determined using a weighted-median of the most recent trade from each of the constituent markets. Further, index real-time levels will be produced on a predetermined fixed interval (e.g. 15 seconds). At each interval, the CM Real-Time Reference Rates will produce pricing for each constituent asset of an index which will inform index level determination. Real-time intraday index price is provided 24 hours a day, 7 days a week, 365 days a year.

7.5 END OF DAY PRICING

End of day index pricing sources data from CM Reference Rates, which produce 24 rates daily per asset, one rate at the start of every hour. CMBI Momentum Series products utilize the 16:00 ET rate for determination of the end of day index level. The CM Reference Rate Methodology stipulates that an asset's price is determined utilizing a time-weighted, volume-weighted median over a 61 minute window of trade data. The 16:00 ET end of day rate is subject to human review.

Index licensees may select to utilize and reference an alternate hourly CM Reference Rate for the end of day price of their product, that may not be subject to human review.

7.6 CALCULATION AND PRICING DISRUPTIONS

7.6.1 Real-Time Index Calculation

The CM Real-Time Reference Rates Methodology outlines management of special situations where data is delayed, missing, or unavailable due to periods of illiquidity, extraordinary market circumstances, or outside factors beyond the control of Coin Metrics.

7.6.2 End of Day Index Calculation

The CM Reference Rates Methodology outlines management of special situations where data is delayed, missing, or unavailable due to periods of illiquidity, extraordinary market circumstances, or outside factors beyond the control of Coin Metrics.

7.7 UNEXPECTED EXCHANGE CLOSURES

For information on the treatment of unexpected exchange closures, please refer to the CMBI Policy Documentation.

7.8 TREATMENT OF FORKS

For detailed information on the treatment of forks, please refer to the CMBI Fork Legitimacy Policies.

Coin Metrics do not deem airdrops as eligible for a liquidation event in any product within the CMBI Momentum Series.

7.9 RECORD RETENTION

For information on record retention, please refer to the CMBI Policy Documentation.

7.10 MATERIAL CHANGES OR TERMINATION

For information on material changes to indexes or termination of indexes, please refer to the CMBI Policy Documentation.

7.11 CONFLICTS OF INTEREST

For information on Conflicts of Interest, please refer to the Coin Metrics Conflicts of Interest Policy.

7.12 COMPLAINTS

Complaints about the calculation methodology of the Indexes or the price of a CMBI product should be submitted in writing to cmbi@coinmetrics.io. Coin Metrics will investigate any complaints and respond to the complainant in a fair and timely manner. Any investigation of the complaint will adhere to the following procedures:

1. The personnel receiving and investigating the complaint will be independent of any personnel who may have been involved in the subject of the complaint.
2. All records and documents submitted by the complainant and related to the investigation into the complaint will be retained for a period of at least five years and submitted to the Oversight Committee for review.

7.13 INTERNAL CONTROLS

Coin Metrics has implemented internal controls to protect the integrity of CMBI products. These controls cover the selection of input data sources, the collection of data from input data sources, and maintaining the integrity of collected data. Staff involved with the design, calculation and dissemination of Indexes have been trained in the proper usage of the data and maintain proper segregation of responsibilities. Any exercise of non-standard procedures is subject to dual approval by staff members, and is logged and reported to the Oversight Committee which periodically reviews any incidents. In addition, Coin Metrics maintains a whistleblowing mechanism to facilitate the reporting of any potential misconduct.

8 CHANGE LOG

RELEASE	DATE	CHANGES
Version 1.0	June 30, 2021	Finalized CMBI Momentum Series Methodology

9 CONTACT INFORMATION

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