



CMBI Total Market Series Methodology

Version 1.1

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1 Introduction

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.

1.1 Description

The CMBI Total Market Series reflects the returns an investor would expect by purchasing all of the cryptoassets at the corresponding weights for each index. Index levels are quoted in real-time and assets are rebalanced at 16:00 ET on the first business day of every month to account for the inflation rate of each asset, changes in estimated supply, changes in market pricing, and the addition or deletion of index constituents.

Coin Metrics conducts a comprehensive assessment of all cryptoassets to ensure that the indexes represent the full breadth of investment opportunities in the global cryptoasset market. Coin Metrics formally defines a cryptoasset as any digital asset that exhibit the following characteristics:

1. The use of a distributed ledger to allow remote peer-to-peer transfer of native units of the cryptoasset
2. The state of the distributed ledger is maintained by distributed consensus and does not require a central authority or trusted intermediary to function
3. Ownership of native units of the cryptoasset can be proven by cryptography

Provided these requirements are met, the cryptoasset can be issued on any underlying blockchain architecture and use any distributed consensus mechanism.

Given the early stages and financial immaturity of the cryptoasset market, there is not enough sophisticated trading infrastructure, custody solutions, liquidity or other financial services to support the long tail of cryptoassets. Many of these factors have gone into the design of CMBI

products and the methodology outlined below so as to create a suite of truly investable indexes. As the ecosystem evolves and becomes more sophisticated it may be deemed that other indexes become investable.

Index levels are available through the Coin Metrics website (<https://indexes.coinmetrics.io/>), major financial quote vendors and print and electronic media outlets.

1.2 Administration

Coin Metrics serves as the administrator for CMBI products and has primary responsibility for all aspects of the index construction process, including development, definition, determination, dissemination, operation, and governance. All aspects of index production are carried out by Coin Metrics; however, Coin Metrics may rely on 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.

2 Other Documents

The CMBI Indexes are collectively governed by policies described in [CMBI Index Policies](#), which outline the administration, oversight, conflicts of interest, significant changes and terminations, recalculations, internal controls, complaints, record retention, and compliance policies.

The CMBI Indexes are supervised by the [CMBI Governance Committee Charter](#), which defines the roles and responsibilities of the Oversight Committee and the Index Committee.

3 Data Inputs

3.1 Coin Metrics Prices

Constituent price data for CMBI Multi Asset Indexes is sourced from Coin Metrics Reference Rates. Refer to the [CM Prices Methodology](#) for more information on hourly/end-of-day and real-time pricing.

3.2 Estimated Market Capitalization

Market capitalization data from which constituent weights are derived, as defined in [Coin Metrics Network Data](#). Estimated Circulating Supply is sourced from third party APIs. This supply data is reported by the projects themselves and collected by CoinGecko. Estimated Market Capitalization uses end of day pricing sourced from Coin Metrics Hourly Reference Rates.

3.3 Eligibility Criteria

3.3.1 Datonomy

The CMBI Total Market Series leverages the [Datonomy](#) to establish its market universe. All assets in the Datonomy that meet the following eligibility criteria are included in the CMBI Total Market Index and are eligible to be included in the CMBI Sector Even Indexes and CMBI Sub-Sector Even Indexes. The Oversight Committee will review quarterly the assets that are added to Datonomy for inclusion in the CMBI Total Market Series.

The Oversight Committee will also review quarterly changes to the Sector and Sub-Sector categorization. To be eligible for an index, a Sector or Sub-Sector must include at least eight unique cryptoassets.

3.3.2 Pricing

Cryptoassets are required to meet the following price criteria to ensure there are reliable and robust sources and trade pairs on which to derive an asset's fair price.

- Cryptoassets must trade on at least one active market on an eligible exchange where the quote asset is the U.S. Dollar, Bitcoin, or Ethereum.
- Cryptoassets with extremely low prices are susceptible to liquidity and investability issues if the minimum price fluctuation of a cryptoasset represents a meaningful percentage of its price. For this reason, cryptoassets are required to meet a minimum price requirement. A cryptoasset's median price over the past 30 days denominated in Bitcoin must exceed 0.0000001 BTC, as measured by Coin Metrics Hourly Reference Rates, to be eligible for inclusion.
- Cryptoassets must have a free floating price (i.e., not pegged to any underlying real or digital asset).

3.3.3 Volume

Cryptoassets are required to meet minimum liquidity requirements to ensure that a given cryptoasset has appropriate liquidity to facilitate trading and portfolio management with acceptable levels of market impact. Liquidity is measured by the 30-day and 180-day annualized traded value ratio (ATVR). The ATVR is designed to measure normal levels of liquidity and is robust to outliers where extremely high or low levels of volume may be observed on a given day. The 30-day ATVR and 180-day ATVR are used to evaluate a cryptoasset's liquidity over a short-term and intermediate-term period.

The ATVR is calculated for a given cryptoasset using the following steps:

1. For each day, the daily traded value is first calculated as the sum of the number of units traded of the given cryptoasset from markets traded on the set of eligible exchanges where the base asset is the given asset and the quote asset is the U.S. dollar, Bitcoin or Ethereum multiplied by the price in U.S. dollars of the given cryptoasset at the end of the daily interval. The price in U.S. dollars is obtained from the Coin Metrics Reference Rates.
2. For each day, the daily traded value ratio is calculated as the daily traded value divided by the asset's free float market capitalization.
3. The annualized traded value ratio is calculated as the median of the daily traded value ratios over the given time window and annualizing this figure by multiplying it by 365.

A cryptoasset is required to have a 30-day ATVR and 180-day ATVR of over 5 percent to be eligible for inclusion as an index constituent.

4 Index Calculation Methodology

4.1 Approach

There are two steps involved in calculating the CMBI Total Market Series: reconstitution and rebalancing. Reconstitution is the process by which crypto assets are re-evaluated for inclusion in market indexes, and subsequently added or removed. Rebalancing is the method by which index constituent weights are reset to their benchmark weight.

Total Market Series indexes are rebalanced monthly at 16:00 ET on the first business day of the month (“Effective Date”). The rebalancing reference date (“Reference Date”) is three business days prior to the rebalancing day at midnight UTC. Business days are defined as Monday through Friday excluding public holidays, as defined by the New York Stock Exchange (NYSE) holidays and trading hours calendar.

Total Market Series indexes are reconstituted quarterly in March, June, September, December at 16:00 ET on the corresponding Reference Date. At each reconstitution, all cryptoassets that meet the criteria outlined above are selected as the possible investment universe of CMBI Total Market Series products.

4.2 Market Capitalization Indexes

4.2.1 CMBI Total Market Index

The rebalancing process is as described below:

1. Universe: The total market universe comprises all assets included in the Datonomy.
2. Constituent Selection: Eligible index members are Datonomy assets not classified as On-Chain Derivatives. This effectively excludes stablecoins and asset-backed tokens (“wrapped coins”).
3. Weighting: Constituents are weighted by their Estimated Market Capitalization. No additions or deletions are made to the index between rebalancings, except in scenarios as articulated in the CMBI Index Policy.

4.3 Equal-weighted Indexes

4.3.1 CMBI Market Sector Even Indexes

CMBI Market Sector Even Indexes leverage the Layer 2 Sectors as described in the Datonomy. For a sector to be eligible for an index, it must include a minimum of eight unique assets.

The rebalancing process is as described below:

1. Universe: CMBI Market Sector Even Indexes include all assets in the Layer 2 Sector of the Datonomy.
2. Constituent Selection: All assets in a Sector of the Datonomy.
3. Weighting: Constituents for each CMBI Market Sector Even Index are assigned an equal weight at each rebalance.

No additions or deletions are made to the index between rebalances, except in scenarios as articulated in the CMBI Index Policy.

4.3.2 CMBI Market Sub-Sector Even Indexes

CMBI Market Sub-Sector Even Indexes leverage the Layer 2 Sectors as described in the Datonomy. For a Sub-Sector to be eligible for an index, it must include a minimum of eight unique assets.

The rebalancing process is as described below:

1. Universe: CMBI Market Sub-Sector Even Indexes include all assets in the respective Layer 3 Sub-Sector of the Datonomy.
2. Constituent Selection: All assets in a Sub-Sector of the Datonomy.
3. Weighting: Constituents for each CMBI Market Sub-Sector Even Index are assigned an equal weight at each rebalance.

No additions or deletions are made to the index between rebalances, except in scenarios as articulated in the CMBI Index Policy.

4.4 Calculation Algorithm

The calculation algorithm for market capitalization weighted indexes is described below

$$IndexLevel_t = \frac{\sum_{i=1}^n P_{i,t} * ES_i}{IndexDivisor}$$

Where,

$IndexLevel_t$ = Index level on day t

$P_{i,t}$ = CM Price for index constituent i on day t

ES_i = Estimated Supply of index constituent i

4.4.1 Index Divisor

Core to maintaining the integrity and accuracy of the index is adjusting the index divisor. Changes to the circulating supply and constituents of indexes should not impact an index's Level. If an index closes at a level of 100, and subsequently a constituent's float increases or the constituents of an index change, the price of the index should open at a level of 100. To determine the required divisor adjustment, asset prices and circulating supply need to remain static during the calculation. As such, it will be assumed that prices and circulating supply at time t-1 and time t remain constant until the new divisor has been determined. To achieve this, adjustments to the divisor are required as described below.

$$IndexDivisor_0 = \frac{P_{i,0} * ES_i}{IndexBase} \quad (1)$$

Suppose a constituent is replaced during the monthly rebalance. Expanding the previous equation (Equation 1) to show the removed constituent, m , from the index:

$$IndexLevel_{t-1} = \frac{(\sum_i P_i * ES_{i,t-1}) + P_m * ES_m}{IndexDivisor_{t-1}} \quad (2)$$

Once constituent m is replaced by constituent n :

$$IndexLevel_t = \frac{(\sum_i P_i * ES_{i,t}) + P_n * ES_n}{IndexDivisor_t} \quad (3)$$

By definition, $IndexLevel_{t-1} = IndexLevel_t$, therefore:

$$IndexDivisor_t = IndexDivisor_{t-1} * \frac{(\sum_i P_i * ES_{i,t}) + P_n * ES_n}{(\sum_i P_i * ES_{i,t-1}) + P_m * ES_m} \quad (4)$$

5 Appendix A: Coverage Universe (Sectors)

The following table lists the current coverage universe for CMBI Market Sector Even Indexes.

Index Name	Index Ticker
CMBI Application Utilities Sector Even Index	CMBIAUE
CMBI Business Services Sector Even Index	CMBIBSE
CMBI Blockchain Utilities Even Sector Index	CMBIBUE
CMBI Decentralized Finance Sector Even Index	CMBIDFIE
CMBI Intermediated Finance Sector Even Index	CMBIIFE
CMBI Information Technology Sector Even Index	CMBIITE
CMBI Metaverse Sector Even Index	CMBIMTAE
CMBI Media Services Sector Even Index	CMBIMSE
CMBI Specialized Coins Sector Even Index	CMBISCE
CMBI Smart Contract Platforms Sector Even Index	CMBISCPE
CMBI Value Transfer Coins Sector Even Index	CMBIVTCE

6 Appendix B: Coverage Universe (Sub-Sectors)

The following table lists the current coverage universe for CMBI Market Sub-Sector Even Indexes.

Index Name	Index Ticker
CMBI Decentralized Exchanges Sub-Sector Even Index	CMBIDEXE
CMBI NFT Ecosystem Sub-Sector Even Index	CMBINFTE
CMBI Network Scaling Sub-Sector Even Index	CMBINSE

7 Change Log

1. **Version 1.1 on October 2, 2023:** Annual Methodology Review.
2. **Version 1.0 on November 22, 2022:** Finalized CMBI Total Market Series Methodology.