CMBI Adjusted Free Float Methodology

Version v1.1

Last Revised: October 6, 2023

0 Change Log

Release	Date	Changes
Version 1.0	June 24, 2019	Finalized v1.0 of the CMBI Adjusted Free Float Methodology
Version 1.1	October 6, 2023	Annual Methodology Review

1 Introduction

In the nascent cryptoasset industry, the pace of innovation for decentralized networks is high. As a result, there is no standard token distribution or tokenomics model, nor are there strict and legally binding reporting requirements, like those present in traditional capital markets. To overcome the different models and varying degrees of reporting quality, Coin Metrics has created a set of supply metrics to better reflect the market dynamic and the liquidity profile of cryptoassets. These supply metrics include:

- Current Supply - which represents the total supply of a cryptoasset that is visible on the ledger.
- Free Float Supply - which better reflect cryptoasset supply that is available to the market through removing categories of asset holders whose tokens are deemed to be restricted to the market and/or increasingly likely to be held for long-term and strategic purposes.
- Adjusted Free Float Supply - Applies a banding approach to Free Float Supply to achieve the same outcome but overcome the discrepancies in chain auditability and known unknown gaps in some asset's coverage.
- Expected 10-Year Future Supply - Accounts for the future expected supply of cryptoassets that arise from programmatic inflation and/or future potential activity of currently restricted supply.

Free Float Supply is utilized by CMBI to determine the weights of constituents in the CMBI Multi Asset Series to create investable products that accurately represent cryptoasset market dynamics. By considering the entirety of an asset's on-chain value in an index, a liquidity mismatch between what is available in the market and what can be observed on-chain is created that can impact the valuation, investability and market relevance.

Free Float Supply can overcome the imbalance between supply and demand by reducing the weight of a constituent to account for supply that is either restricted, not freely available for purchase or increasingly unlikely to be available to the market. Free float adjustment excludes native units of a cryptoasset that are closely held by controlling groups, government agencies, directors, founders and founder family holdings, investors with vesting schedules and long-term strategic investors (defined herein as holders of tokens that have not moved on-chain in over 5 years).

To the maximum extent possible, Coin Metrics has created a free float adjustment methodology that can be applied consistently, uniformly and objectively across all of our indexes.

This document is intended to be read in conjunction with other Coin Metrics documentation that inform the data inputs. These include the CM Network Data Pro File Spec and the CM Network Data Pro Encyclopedia.

2 Description

As a cryptoasset network and market data provider, Coin Metrics is uniquely positioned to bring transparency and traditional capital market discipline to cryptoassets, particularly in regards to the supply of cryptoassets. To provide a holistic view of the cryptoasset market, Coin Metrics has determined it critical to calculate and maintain the future supply ("Expected 10-Year Future Supply"), on-chain supply ("Current Supply") and publicly available supply ("Free Float Supply") of cryptoassets.

These measures of supply have an important role in financial markets to aid asset managers, index administrators and investors to better understand market liquidity dynamics and manage portfolios. Further, they act as key inputs for other financial products such as market capitalization weighted indexes.

2.1 Expected 10-Year Future Supply

The Expected 10-Year Future Supply is defined as the number of tokens that a foundation or company is allowed to issue over the next 10 years without adjustments to the protocol layer. This includes all tokens that vest in the next 10 years, unissued tokens that are created in Initial Coin Offerings (ICOs), Token Generation Events (TGEs), or any other sale or launch mechanisms, as well as the projected new supply of tokens as programmatically defined by the codebase as it currently stands. It does not include tokens that are burned or provably lost as defined in *Section 3 Float Adjustment Rules*.

2.2 Current Supply

Current Supply is defined as the total number of tokens that have been issued by the protocol, including all vesting and non vesting team tokens, all vesting and non vesting foundation or company tokens, tokens held by investors and users of the network, lost tokens and all burned tokens that remain on-chain. Future expected issuance and token options issued by foundation or company addresses are not included in Current Supply until they are present and visible on the ledger.

2.3 Free Float Supply

Free Float Supply excludes tokens held closely by company insiders, controlling investors and long term strategic holders. This includes company, foundation and team member tokens that may or may not be subject to escrows. Further, Free Float Supply also excludes large token burn addresses and funds that have been provably lost. For more detail on excluded tokens please refer to *Section 3 Float Adjustment Rules*.

2.4 Adjusted Free Float Supply

The Adjusted Free Float Supply is an approximation of the amount of a cryptoasset's native units that are considered to be available to the market. In the absence of a regulated definition of supply and accurate, reliable, and timely reporting from all cryptoasset companies/foundations, applying a standardized adjustment to all cryptoassets helps to overcome discrepancies in reporting standards and on-chain transparency. Coin Metrics have adopted a banding approach to make adjustments to an asset's Current Supply. Such an approach increases the investability of indexes by reducing the turnover and trading costs associated with index tracking.

3 CMBI Expected 10-Year Future Supply Rules

The purpose of determining the Expected 10-Year Future Supply is to account for a cryptoasset's future changes in supply when selecting index constituents. Doing so will prevent unnecessary index turnover that results solely as a result of predictable and programmatic changes to supply.

A cryptoasset's supply typically follows one of two models:

1. A programmatic inflation schedule as defined by the consensus rules of a cryptoasset
2. A fixed supply after the initial issuance of tokens

Coin Metrics' Expected 10-year Future Supply takes a conservative approach to forecasting future issuance by only considering inflation from programmatic issuance and token vesting. The Coin Metrics Expected 10-year Future Supply does not account for:

- Future changes to an asset's issuance schedule that are not visible in a cryptoasset's consensus rules and accompanying source code as they are subject to changes, delays and other uncertainties
- Future token burns as they are at the discretion of network users and can change without notice
- Future token escrows as they are at the discretion of network users and can change without notice

The Expected 10-year Future Supply is considered to represent cryptoasset investor forecasts of future issuance schedules in their valuations of token prices.

4 Float Adjustment Rules

The purpose of adjusting the float of a cryptoasset is to distinguish between the supply that is not considered to be available for trading on market (e.g. long-term, strategic, insider holdings) with the supply held by token holders who are considered to provide short to mid term liquidity to the market.

Given the often opaque nature of a cryptoasset's registry, token holders are grouped into the groups defined below based on their characteristics. This reduces the subjective determination that Coin Metrics would need to conduct for each individual holder, in favor of grouping token holders objectively by their characteristics to determine whether or not to include or exclude them from the float.

Types of token holders that are considered to reduce a protocol's supply of tokens that are available to the market include, but are not limited to:

- Foundation tokens that are held and controlled by a centralized or decentralized organization directly associated with the protocol
- Founding team tokens that are publicly disclosed or can be determined from genesis block forensic investigations
- Venture capital and early investor tokens that are subject to a vesting schedule
- Company employee token holdings and token plans that are subject to a vesting schedule
- Tokens staked in a smart contract to partake in governance and long-term strategic outcomes of a network without any direct monetary incentive to do so
- Burned tokens[1]
- Provably lost[2] tokens
- Any tokens that have been inactive on-chain for 5 or more years
- Forked tokens that have never been active on the forked chain[3]

1 - Burned Tokens

Tokens can be burned in one of two ways, both resulting in the tokens being removed from circulation:

1. Tokens can be burned and removed from the blockchain ledger
2. Tokens can be sent to an unrecoverable address, effectively removing them from the liquid supply

Since the tokens under scenario 1 cannot be observed on-chain and are thus accurately reflected in Free Float Supply, only the tokens in burn addresses from Scenario 2 that represent over 0.1% of total circulating supply are removed as part of the free float calculations.

2 - Provably Lost Tokens

Provably lost tokens are considered to be those that have been lost through a smart contract failure and represent over 0.1% of total circulating supply.

3 - Forked Tokens that have never been activated

Forked coins carry the history of their parent chain. However, coins that have never been activated (i.e. moved after the date of the fork) on the forked chain are not considered to be a part of the public float.

The following token holders are considered to be part of the public float:

- Pension funds
- Asset Management Funds, Investment Funds, Mutual funds and ETF providers
- Exchanges
- Custodians with tokens less than 5 years old

5 Adjusted Free Float in the CMBI Multi Asset Series

The float adjustment methodology described herein applies to the market capitalization weighted indexes within the CMBI Multi Asset Series.

5.1 CMBI Bitcoin and Ethereum

Bitcoin's launch is considered one of the most equitable launches in the cryptoasset ecosystem, there was no pre-mine, no foundation/founder allocation and no investor or advisor allocation. Ethereum on the other hand was launched with a foundation and an allocated team supply. However, despite this, the auditability of its supply is relatively straightforward as these allocations were transparently disclosed.

As such, Coin Metrics have deemed the supply auditability and transparency of both of these assets to meet high enough standards that their adjusted free float supply will be determined by rounding up to the closest 1%.

5.2 CMBI 10 and CMBI 10 Excluding Bitcoin

Since information flow in cryptoasset markets can so often be opaque and sometimes misrepresented, Coin Metrics has determined that a banding approach would be effective to reduce the number of weight adjustments in the short term as new tokens enter into the liquid market, reduce monthly turnover, and reduce ambiguity that may arise in applying the free float methodology. Another key consideration favoring the use of supply banding is that publicly available information required for determination of accurate free float is of variable quality and transparency, and companies or investors are not yet required by global regulatory bodies to report token holdings.

To address these issues, Coin Metrics has introduced bands of 10 percentage points. Projects with a calculated free float lower than 15% are deemed to be uninvestable within an index due to their limited tradeable supply. Bands have been designed as follows:

Calculated Free Float (%)	Adjusted Free Float within CMBI Indexes (%)
Under 15	0
15 – 20	20
20 – 30	30
30 – 40	40
40 – 50	50
50 – 60	60
60 – 70	70
70 – 80	80
80 – 90	90
Over 90	100

Around each band, a two percentage point buffer is introduced to reduce unnecessary volatility and index turnover that can occur from small changes in float that can arise from issuer releases of tokens for operational purposes, tokens becoming vested, burns and other token mechanics.

6 Calculation of Adjusted Free Float Indexes

For each cryptoasset in the CMBI Multi Asset Series, the Free Float Supply is determined as defined in *Section 2*. This supply can be represented as follows:

Non forked blockchains:

$$Free\ Float\ Supply\ = On\ Chain\ Supply\ - (Foundation\ +\ Team\ +\ Inactive\ (>\ 5\ years)\ +\ Vesting\ +\ 'Burned'\ +\ Provably\ Lost)$$

Forked blockchains:

$$Free\ Float\ Supply\ = On\ Chain\ Supply\ - (Foundation\ +\ Team\ +\ Inactive\ (>\ 5\ years)\ +\ Inactive\ since\ Fork\ +\ Vesting\ +\ 'Burned'\ +\ Provably\ Lost)$$

Utilizing the Free Float Supply, each cryptoasset in the CMBI Multi Asset Series is then placed into a supply band as defined in *Section 5*.

The Adjusted Free Float weighted index is then calculated as follows:

$$Index\ Level_t = \frac{\sum_{i=1} p_{i,t} \times (SplyCur_{i,t} - SplyLost_{i,t}) \times AFFBand_{i,t}}{Index\ Divisor}$$

Where,

$P_{i,t}$	=	The price of cryptoasset i at time t
$SplyCur_{i,t}$	=	The Current Supply of cryptoasset i at time t
$SplyLost_{i,t}$	=	The Lost Supply of cryptoasset i at time t
$AFFBand_{i,t}$	=	The Adjusted Free Float as defined in *Section 3* of cryptoasset i at time t
Index Divisor	=	Divisor of the index as defined in the CMBI Multi Asset Indexes Methodology

7 Adjusted Free Float Maintenance

As each measure of supply for cryptoassets is a fluid metric that is susceptible to daily change, a structured and repeatable approach to updating supply is required. Supply will be updated in accordance with the below.

7.1 Expected 10-Year Future Supply

To maintain the integrity and accuracy of Expected 10-Year Future Supply, Coin Metrics will conduct the following checks daily:

- The Current Supply of tokens is checked against the previous day's value to determine the outstanding realized inflation rate against expectations. This check provides insight into whether or not the inflation rate used to forecast the Expected 10-Year Future Supply requires updating.
- Programmatic inflation adjustments need to be reflected as they occur. It is not uncommon for changes to protocol layers to be made that impact the inflation schedule of cryptoassets.

Unfortunately, a blockchain operator may change the protocol in a way that can impact the future supply of their cryptoasset without communicating it to community spectators through a central communications channel or explicitly announcing the changes. As a result, Coin Metrics may miss the announcement of future protocol changes that impact the Expected 10-Year Future Supply. In such an instance, Coin Metrics will make the necessary update as soon as practicably possible once becoming aware of the changes.

7.2 Current Supply

To maintain the integrity and accuracy of Current Supply, Coin Metrics will conduct the following operation daily:

- Query Coin Metrics node and database infrastructure to obtain the number of native units that are visible on the ledger.
- Daily reporting will account for new supply that has been issued as the result of inflation from mining, new foundation token creation/burn events and/or protocol changes.

7.3 Free Float Supply

Beyond the checks required to maintain the Current Supply, to maintain the integrity and accuracy of Free Float Supply, Coin Metrics will conduct the following checks daily:

- Query Coin Metrics node and database infrastructure to calculate the number of accounts that have not spent any of their owned token in over 5 years.
- Query Coin Metrics node and database infrastructure to calculate the number of tokens in on-chain escrow accounts.
- Query Coin Metrics node and database infrastructure to determine if any tagged company, foundation, team, lost, or governance addresses have conducted any transactions over the previous 24 hours. Manually review the ten largest company, foundation, team, lost, or governance account transactions. If the tenth is still significant, further manual review will take place.
- Determine if there is any information that may indicate tokens have been burned but remain visible on ledger.
- Determine if there is any information that may indicate tokens have been provably lost.

Each CMBI constituent's Free Float Supply is manually reviewed semi-annually to reflect the most recent publicly available data and on-chain information.

7.4 Adjusted Free Float Supply

An adjustment, in the form of the banding described in *Section 5*, is applied based on the Free Float Supply, the Current Supply and the Lost Supply of a cryptoasset. This metric is currently determined and maintained for the purposes of calculating the CMBI Multi Asset Series.

The Adjusted Free Float Supply metric is reflected during the rebalancing period for each relevant CMBI product. Please refer to the CMBI Rebalance Calendar for details on index rebalancing schedules.

If changes in an asset's Free Float Supply that result from corporate actions, token burns, or other reasons exceed three percentage points of total Current Supply, the new supply will be reflected in an emergency rebalance that is conducted immediately.

8 Governance

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

8.1 Index Committees

8.1.1 Coin Metrics Oversight Committee

The Oversight Committee provides independent oversight over all CMBI products. The Oversight Committee's responsibilities relating to the determination of the supply metrics include regular reviews of the CMBI Adjusted Free Float Methodology, review of the process for maintaining and administering supply metrics, the selection of data sources and data inputs, any uses of expert judgment or non-standard procedures, conflicts of interest and complaints handling from external stakeholders. Additional information regarding the responsibilities and membership of the Oversight Committee can be found in the Coin Metrics Governance Committee Charter.

8.1.2 Coin Metrics Index Committee

The Index Committee is responsible for interpretation of data in relation to the determination of cryptoasset free float and for applying the methodology herein to determine each CMBI constituent's free float. In the daily maintenance of CMBI products, the Index Committee reserves the right to apply exceptions and make expert judgment when applying the methodology described herein if and when the need arises. In such an instance where an exception from the standard methodology as defined in this document, clients will receive sufficient notice when possible.

Committee members are Coin Metrics employees. The committee meets monthly to review any significant market events, significant changes to an asset's float and other index related subjects.

At a minimum, the Index Committee will review the CMBI Float Adjustment Methodology annually to ensure that float determination continues 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 judgment, please refer to the CMBI Policy Documentation.

9 Contact Information

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