

# Index Methodology

Bloomberg Galaxy Crypto Indices

July 2024

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## INTRODUCTION

The Bloomberg Galaxy Crypto Index family includes both a composite Bloomberg Galaxy Crypto Index (the "Composite Index") and single Cryptocurrency indices ("Sub-Indices", and, together with "Composite Index", the "Index"). The Composite Index is designed to measure the performance of the largest Cryptocurrencies traded in USD. Sub-Indices are designed to measure the performance of the individual Cryptocurrencies (Bitcoin, Ethereum and Solana) traded in USD. The Index is owned and administered by Bloomberg Index Services Limited ("BISL" or the "Administrator") and is co-branded with Galaxy Digital Capital Management LP ("Galaxy").

BISL administers the Index according to four guiding principles:

1. Data Integrity	<a href="#">Digital Asset Research ("DAR")</a> is the source of daily pricing, classification, and market value. DAR was chosen because DAR maintains high quality data with processes in place to detect manipulation. DAR's underlying Pricing Sources are subjected to a vetting process and multiple quality control tests to avoid exchanges involved in market manipulation. (See DAR <a href="#">Vetting</a> and <a href="#">Pricing</a> methodologies)
2. Diversified	No single constituent can exceed 35% or contribute below 1% of the Market Capitalization of the Index.
3. Representative	The Index seeks to be representative of the relevant Cryptocurrency market.
4. Continuity	The Index is intended to be responsive to the changing nature of the market in a manner that does not completely reshape the character of the Index from year to year.

## SELECTION OF CONSTITUENTS

The Index systematically determines a Cryptocurrency's eligibility in the Index based on the following:

Rules	
<b>1.</b>	Trades in USD
<b>2.</b>	It is not deemed a security by the US Security Exchange Commission. In addition, Exchange Tokens, Privacy Coins, Stable Coins, Wrapped Tokens, and Meme Coins will be excluded <sup>1</sup> .
<b>3.</b>	Priced by DAR from a minimum of two underlying Pricing Sources with no priority given to different types of input data
<b>4.</b>	Top 25 coins by market cap (determined by multiplying the circulating supply by the last price based on DAR.
<b>5.</b>	For Index inclusion, a potential Index member (including an asset previously removed) must pass all rules for three consecutive monthly rebalance periods.  For removal, an existing Index member must fail one of the inclusion rules (excluding rule 4 above.) during a monthly rebalance or either: <ul style="list-style-type: none"> <li>• Fail rule 4 for three consecutive months;</li> <li>• Or fall out of the top 30 coins by market cap once</li> </ul>

<sup>1</sup> Exchange Tokens: issued by an exchange (Tokens used as trading pairs, liquidity providers, IEO and/or listing gateways for centralized and decentralized digital asset spot exchanges); Privacy Coins: digital currency protocols where private transactions occur by default; Stable Coins: typically pegged to a fiat currency or a commodity, generally designed to track a non-digital asset; Wrapped Tokens: smart contracts used to create property on a blockchain, with a value linked to an exogenous digital asset; Meme Coins: not introducing concrete technological innovation solving actual industry issues; in each case, as determined by BISL. Please see Expert Judgment and Discretion section below for further details.

<b>6.</b>	In the event DAR pricing was no longer available for a given constituent, the latest business day's closing price will be used, or a new source will be obtained if DAR pricing is unavailable for an extended period of time to determine the fair price for the constituent on a daily basis until the next rebalancing.
<b>7.</b>	Hard Forks are considered under the same criteria as any established cryptocurrency.
<b>8.</b>	The Index is limited to the largest twelve eligible Cryptocurrencies by Market Capitalization. In case the last two Cryptocurrencies have the same Market Capitalization, the Cryptocurrency with higher median dollar trading volume will be selected. The top twelve Cryptocurrencies are measured by their average Market Capitalization over the last five Index Days up to, and including, the Rebalance Announcement Day. The application of these rules will generate the Constituents of the Index.  In addition, any single digital asset Index member has a minimum weight of 1% and an overall cap of 35%.
<b>9.</b>	Investable for institutional buyers, with ability to conduct block trades and manage custody of the Cryptocurrency with US-regulated entities. This will be based on the data provided by Galaxy.

## WEIGHTING SCHEME

1. Constituents are all initially weighted by their Market Capitalization based on the Circulating Supply. Weight caps and floors are then applied to the Constituents to promote diversification and avoid overweighting and underweighting. The maximum Weight for any Constituent is 35% (Cap) of the Index's float-adjusted Market Capitalization and the minimum 1% (Floor).
2. If a Constituent Weight exceeds the Cap, it must be lowered down to the level of the Cap and the excess Weight is then redistributed across all other non-capped Constituents in proportion to their Weight.
3. Following the capping, Constituents contributing less than the Floor must be rounded up, with the increase subtracted from the balance of all other non-capped Constituents proportional to their Weights.
4. This process is repeated until none of the Constituents have Weights exceeding the Cap or fall short of the Floor.

Weights are calculated using end-of-day prices from DAR four Index Business Days prior to the end of the month. Once the Cap and Floor Weights are applied, any subsequent price changes will move the Weights away from their Cap or Floor.

## RECONSTITUTION AND REBALANCE SCHEDULE

The Index is reconstituted (changing of Constituents) and rebalanced (changing of Constituent weights) monthly. Index weights and Constituents are calculated and announced four Index Business Days prior to end of month ("Rebalance Announcement Day") and implemented on the first Index Business Day of the next month ("Rebalance Implementation Day"). Cryptocurrencies that meet eligibility criterion for three consecutive monthly rebalances will be added and those that fall short of eligibility requirements for three consecutive monthly rebalances will be removed.

The number of Constituents in the Index cannot exceed twelve. In the event that the number of eligible Cryptocurrencies exceeds twelve, only the largest twelve, as ranked by their average Market Capitalization, will be included. Average Market Capitalization is defined as the average over the five Index Business Days leading up-to and including the Rebalance Announcement Day.

No new Constituents will be added, or existing Constituents removed from the Index intra-month.

## COMPOSITE INDEX CALCULATION

The Composite Index is calculated using the following formula:

$$Index_t = \frac{\sum_{i=1}^x P_{i,t} \times CS_{i,m} \times CF_{i,m}}{D}$$

Where

Composite Index<sub>t</sub> = Index level on day t

P<sub>i,t</sub> = end of the day price for Constituent i on day t, expressed in Cryptocurrency per index currency (e.g. Bitcoin per USD)

CS<sub>i,m</sub> = Circulating Supply of Constituent i in month m of the current year

CF<sub>i,m</sub> = Cap/Floor factor for a Constituent i in month m of the current year

D = Index Divisor

x = Number of constituents

The base level for the Index was set at 1000 on May 3, 2018.

Cap/Floor factor is calculated as:

$$CF_{i,m} = \frac{W_{i,c}}{W_{i,i}}$$

Where

W<sub>i,c</sub> = Capped/Floor Weight on rebalance day r

W<sub>i,i</sub> = Initial Weight on rebalance day r

Initial Divisor is calculated as:

$$D_0 = \frac{\sum_{i=1}^x P_{i,0} \times CS_{i,0} \times CF_{i,0}}{1000}$$

Where

D<sub>0</sub> = Divisor on May 3, 2018

P<sub>i,0</sub> = price for Constituent i on May 3, 2018, expressed in Cryptocurrency per Index currency (e.g. Bitcoin per USD).

CS<sub>i,0</sub> = Circulating Supply of Constituent i on May 3, 2018

CF<sub>i,0</sub> = Cap/Floor factor for Constituent i on May 3, 2018

x = Number of constituents

## DIVISOR ADJUSTMENTS

Changes in the Circulating Supply, addition or deletions of Constituents should not change the level of the Index. If the Index closes at a level of 1000 and after the market close a Constituent is replaced by another Constituent, the Index will still open at the 1000 level. This is accomplished by adjusting the Index divisor. Any changes to the Constituent that alter the total market value of the Index while holdings Constituent prices constant, require a divisor adjustment. The Composite Index divisor is simply a scaled representation of the adjusted Market Capitalization of the Index.

$$D_{new} = D_{old} * \frac{\sum_{i=1}^x P_{i,t} \times CS_{i,m} \times CF_{i,m}}{\sum_{i=1}^n P_{i,t} \times CS_{i,r} \times CF_{i,r}}$$

Where

- $P_{i,t}$  = Constituent i on day t, expressed in Cryptocurrency per Index currency (e.g. Bitcoin per USD)
- $CS_{i,m}$  = Circulating Supply of Constituent i in month m of the current year
- $CF_{i,m}$  = Cap/Floor factor for a Constituent i in month m of the current year
- $CS_{i,r}$  = Circulating Supply of Constituent i in month m-1 of the current year
- $CF_{i,r}$  = Cap/Floor factor for a Constituent i in month m-1 of the current year
- $D_{old}$  = Old Index Divisor in month m-1 of current year
- $x$  = New number of Constituents in month m
- $n$  = Old number of Constituents in month m - 1

The following scenarios may trigger a divisor adjustment. Given that the digital assets space is still a developing asset class, we suspect there may be other scenarios, aside from the ones listed directly below, that could also lead to an adjustment:

1. Hard Fork - Digital asset forks are defined as changes in the underlying protocol of a digital asset network or as the situations that occur "when two or more blocks have the same block height". A fork impacts the validity of the rules. Forks are typically conducted in order to add new features to a Blockchain, unwind the impact of a hack or fix catastrophic bugs. The adjustment factor for a Hard Fork is to be derived based on the analysis of the changes to the Blockchain and the value of the original and post-fork digital asset.
2. Change in pricing calculation - when a change in pricing methodology occurs, including splits or reverse splits, a divisor adjustment must be used to enforce the continuity of the index levels (i.e. prevent a gap in index levels on the day of the change).

**SUB-INDICES**

The following are the details for each Sub-Index:

Sub- Indices	
Bloomberg Galaxy Bitcoin Index	BTC
Bloomberg Galaxy Ethereum Index	ETH
Bloomberg Galaxy Solana Index	SOL

**SUB-INDEX CALCULATION**

The Sub-Index level for each Sub-Index is calculated using the following formula:

$$Index_t = \frac{P_t}{D_t}$$

Where

- Sub-Index<sub>t</sub> = Index level on day t
- $P_t$  = End of the day DAR price for Constituent i on day t, expressed USD
- $D_t$  = Index Divisor (starting value of 1, divisor adjustment is described in the following section)

**Divisor Adjustment**

In a situation where there are changes to bitcoin protocol and/or network or the methodology of how the DAR bitcoin prices used in the calculation of this Index are being determined, a Divisor adjustment may be needed to maintain the continuity of the Index.

$D_t = D_{(t-1)} * \text{Adjustment Factor}$

The following scenario may require a Divisor adjustment:

Hard Fork - Bitcoin forks are defined as changes in the protocol of the bitcoin network or as the situations that occur "when two or more blocks have the same block height". A fork influences the validity of the rules. Forks are typically conducted in order to add new features to a Blockchain, to reverse the effects of hacking or catastrophic bugs.

The adjustment factor for a Hard Fork will be derived based on the analysis of the changes to the Blockchain and the value of the original and post-fork cryptocurrencies.

Given that Cryptocurrencies are still a young and fairly immature asset class, we anticipate that other scenarios requiring a Divisor adjustment beyond the ones listed above may be identified by BISL over time. BISL will exercise its discretion in determining whether a Divisor adjustment is required. Any divisor adjustment will be made in line with the procedures followed in the Discretion and Expert Judgement section below.

## INPUT DATA

Input data for the Index is sourced from DAR. BISL utilizes the DAR Close Price as the input data used in the calculation.

DAR is responsible for assessing and selecting exchange platforms whose prices will be eligible to be used the calculation of its prices. This process aims to identify trustworthy exchange platforms and encourage best practices by gathering, recording, and comparing a series of quantitative and qualitative data points. DAR's team of researchers and technical experts work closely with exchanges, regulators, and investors to collect public and non-public data points that are used to reach a reasoned determination on each of the methodology's criterion. The DAR Vetting methodology is reviewed quarterly and updated as required to reflect the maturing digital asset marketplace and the needs of its participants. For full details, please see the DAR Vetting methodology which is available on DAR's website [here](#).

DAR is responsible for calculating and providing BISL with the DAR close price using the data sources eligible per the vetting process described above. The DAR close price is a time-weighted average price ("TWAP") derived from eligible, non-outlier trades that occur within a 30-minute window prior to the specified close time. DAR. The specified close time is 4pm. For further details on the methodology and trade data quality controls, please see the [DAR Close Price and Hourly Price Methodology](#).

## CURRENCY

Input data is priced and calculated in US Dollars (USD).

## ROUNDING OF INPUT DATA

The following rounding protocols are used for the Index calculation:

- Index Divisor is rounded to four decimal places
- Weighting Cap/Floor factors are rounded to twelve decimal places

## END-OF-DAY INDEX LEVEL

The official end-of-day Index level is calculated based on the time-weighted average pricing of the underlying assets from 15:30:00 ET to 16:00:00 ET and is disseminated promptly thereafter, using a two decimal place rounding.

## BACK FILL METHODOLOGY

The following summarizes the back fill methodology to August 2, 2017:

- Constituent selection was done four Index Business Days prior to end of month with the exception of August 2, 2017, which was done on August 2
- Liquidity and Seasoning screens were not applied
- Constituent pricing used a price source waterfall:
  1. CFIX
  2. Bloomberg Generic (BGN) prices
  3. Average of multiple Pricing Sources
  4. Single Pricing Source
- The April 2018 rebalancing Constituents and weights were used through 5/2/18
- Mosaic was the data source for Circulating Supply

## INDEX PUBLICATION DAYS

The Index is published on Index Business Days.

## STRESS EVENTS

In the event DAR pricing was no longer available for a given constituent, the latest business day's closing price will be used, or a new source will be obtained if DAR pricing is unavailable for an extended period of time to determine the fair price for the constituent on a daily basis until the next rebalancing.

## RISKS AND LIMITATIONS OF THE INDEX

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 detailed in the methodology, and any Index level or other output is limited in its usefulness to such design and calculation.

Markets can be volatile, including those Digital Asset markets which the Indices intend to measure. For example, illiquidity can have an impact on the quality or amount of data available to BISL (or its underlying sources of data) for calculation and may cause the Indices to produce unpredictable or unanticipated results. In the event DAR pricing was no longer available for a given constituent, the latest business day's closing price will be used, or a new source will be obtained if DAR pricing is unavailable for an extended period of time to determine the fair price for the constituent on a daily basis until the next rebalancing.

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

In particular, the Indices measure the performance of Digital Assets through prices sourced by DAR from vetted exchanges. The Index is therefore subject to the volatility and illiquidity of certain Digital Assets. The sector has tended to be more volatile over both the long-term and the short-term compared to other sectors with index presence including, but not limited to, fixed income and equities. In addition, prices are gathered through third-party sources for the purpose of establishing index constituent official closing prices. This is an additional operational risk as the quality of constituent pricing is predicated upon receiving accurate or timely input data.

In addition, Digital Assets' pricing sources face heightened risks relative to traditional stock and commodity exchanges, including but not limited to, cyber-attacks, errors resulting from the lack of standards and naming convention for symbols, and other risks stemming from complex technological and legal environments (causing changes in fee structure, blocking of funds withdrawal, etc.). Suspension or disruption of market trading in digital assets may adversely affect the value and/or representativeness of the Index.

#### **BENCHMARK OVERSIGHT AND GOVERNANCE**

For more details see please see the BISL Benchmark Procedures Handbook [here](#).

#### **INDEX DATA REVIEWS, MATERIAL CHANGES AND CESSATION**

For more details see please see the BISL Benchmark Procedures Handbook [here](#).

#### **EXPERT JUDGEMENT AND DISCRETION**

For more details see please see the BISL Benchmark Procedures Handbook [here](#).

#### **RESTATEMENT POLICY**

For more details see please see the BISL Benchmark Procedures Handbook [here](#).

## GLOSSARY OF TERMS

Blockchain: Blockchain is a digitized, decentralized, public ledger of all Cryptocurrency transactions.

Circulating Supply: Circulating Supply, or available supply, is the best approximation of the number of coins that are circulating in the market and are available for trade.

Constituent: Cryptocurrency that is a member of the Index.

Cryptocurrency: A Cryptocurrency is a digital asset designed to work as a medium of exchange that uses cryptography to secure its transactions, to control the creation of additional units, and to verify the transfer of assets.

Hard Fork: A hard fork occurs when a Blockchain protocol is changed and becomes incompatible with older versions. A Blockchain splits into two paths - hence the name "hard fork". If there are nodes permanently supporting the new chain, then the two chains will co-exist. Users that once held digital assets on an older Blockchain before the protocol change at a pre-specified Blockchain length will now also hold a number of new coins on the altered Blockchain. As per the Index methodology, hard forks are considered to be new Constituents.

Index Business Day: Days on which the Index is published (New York Stock Exchange trading days<sup>2</sup>).

Weight: The percent weight of an individual Constituent in the Index. The sum of all Index weights adds to 100%.

Market Capitalization: Market capitalization, measured in USD, is calculated as the product of each Cryptocurrency's Circulating Supply and CFI.

Pricing Sources: Pricing Sources are trading platforms from which DAR sources raw Cryptocurrency transaction data that facilitate buying and selling Cryptocurrencies online. Many Pricing Sources refer to themselves as "exchanges," which can give the misimpression that they are regulated or meet regulatory standards of a national securities exchange.

PROC: Product, Risk & Operations Committee.

Rebalance Announcement Day: Four Index Business Days prior to the end of every month wherein Constituents that will represent the Index in the following month are determined and announced.

Rebalance Implementation Day: First Index Business Day of every month wherein the results announced on the Rebalance Announcement Day are implemented.

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<sup>2</sup> <https://www.nyse.com/markets/hours-calendars>

## ESG Disclosure

<b>EXPLANATION OF HOW ESG FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY</b>	
<b>Item 1.</b> Name of the benchmark administrator.	Bloomberg Index Services Limited
<b>Item 2.</b> Type of benchmark or family of benchmarks. <i>Choose the relevant underlying asset from the list provided in Annex II to Commission Delegated Regulation (EU)2020/1816.</i>	Other
<b>Item 3.</b> Name of the benchmark or family of benchmarks.	Bloomberg Galaxy Crypto Index family
<b>Item 4.</b> Does the benchmark methodology for the benchmark or family of benchmarks take into account ESG factors?	No
<p><b>Item 5.</b> Where the response to Item 4 is positive, please list below, for each family of benchmarks, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets.</p> <p>The ESG factors shall be disclosed at an aggregated weighted average value at the level of the family of benchmarks.</p>	
(a) List of environmental factors considered:	Not applicable
(b) List of social factors considered:	Not applicable
(c) List of governance factors considered:	Not applicable
<p><b>Item 6.</b> Where the response to Item 4 is positive, please list below, for each benchmark, those ESG factors that are taken into account in the benchmark methodology, taking into account the ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816, depending on the relevant underlying asset concerned.</p> <p>Please explain how those ESG factors are used for the selection, weighting or exclusion of underlying assets.</p> <p>The ESG factors shall not be disclosed for each constituent of the benchmark, but shall be disclosed at an aggregated weighted average value of the benchmark.</p> <p>Alternatively, all of this information may be provided in the form of a hyperlink to a website of the benchmark administrator included in this explanation. The information on the website shall be easily available and accessible. Benchmark administrators shall ensure that information published on their website remains available for five years.</p>	
(a) List of environmental factors considered:	Not applicable
(b) List of social factors considered:	Not applicable
(c) List of governance factors considered:	Not applicable
Hyperlink to the information on ESG factors for each benchmark:	
<b>Item 7.</b> Data and standards used	
(a) Data input. <i>(i) Describe whether the data are reported, modelled or sourced internally or externally.</i> <i>(ii) Where the data are reported, modelled or sourced externally, please name the third party data provider.</i>	Not applicable
(b) Verification and quality of data. <i>Describe how data are verified and how the quality of those data is ensured.</i>	Not applicable
(c) Reference standards <i>Describe the international standards used in the benchmark methodology.</i>	Not applicable
<b>Date on which information has been last updated and reason for the update:</b>	July 2024

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