

Bloomberg Galaxy Bitcoin Index Methodology

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Introduction

The Bloomberg Galaxy bitcoin Index ("Index") is designed to measure the performance of a single bitcoin traded in USD. The index is owned and administered by Bloomberg Index Services Limited ("BISL" or "Administrator").

The Index can be accessed on the Bloomberg Terminal® via ticker BTC Index <GO>.

BISL administers the Index according to three guiding principles:

1. Data Integrity	Digital Asset Research (DAR) is the source of daily pricing, classification, and market value of the underlying asset. DAR maintains high quality data with processes in place to detect manipulation. Price sources are subjected to a rigorous vetting process and multiple quality control tests to avoid exchanges involved in market manipulation. (See DAR Vetting and Pricing methodology)
2. Representative	The Index seeks to provide a proxy for the bitcoin market.
3. 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.

Prior to November 20th, 2023, Bloomberg's CFIX rate fixings (16:15:00) were used for end of day pricing.

Section 1: Index Distribution

The closing Index Level is calculated using DAR pricing and is published after review and quality checks. Intraday Index levels will be calculated and published on the Bloomberg Terminal from 18:15:00 ET to 16:15:00 ET (22 hours).

Section 2: Index Construction

Input Data

Input data for this index is sourced from Digital Asset Research, (DAR). BISL utilizes the DAR Close Price as the input data used in the calculation.

DAR takes pricing from eligible exchanges based on the [DAR exchange vetting Methodology](#).

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 Exchange Vetting Methodology is reviewed quarterly and updated as required to reflect the maturing digital asset marketplace and the needs of its participants.

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. The specified close time is 4pm and is calculated as per the DAR close price and Hourly Price Methodology:

Further details on the Input Data calculation and methodology surrounding the DAR closing price can be found [here](#).

Currency

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

Index Calculation

The Index level is calculated using the following formula:

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

Where

$Index_t$ = Index level on day t

P_t = Intraday BGN price or end of the day DAR price for a bitcoin on day t, expressed in USD

D_t = Index Divisor (starting value of 1, divisor adjustment are described in the following section)

An indicative intraday level for the Index is published every 15 seconds. This level uses intraday BGN pricing.

The Base Level for the Index was set at 1000 on May 1, 2018.

Divisor Adjustment

In a situation where there are changes to bitcoin protocol and/or network or the methodology of how the BGN 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 scenarios may require a Divisor adjustment.

1. 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.

2. Change in BGN Pricing calculation - In circumstances where is a change in the BGN pricing methodology, the divisor adjustment will be used to maintain the continuity of the index levels.

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.

Section 3: Publication

End-of-Day 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.

Intraday Index Level

The intraday Index Level is calculated using Bloomberg BGN bitcoin price. The BGN is a pricing algorithm that produces accurate indications of bid and ask quotes that are derived from multiple approved Cryptocurrency Pricing Sources.

BGN prices are designed to track executable bid and ask input rates from a select subset of Bloomberg's bitcoin pricing sources, which have met selection criteria such as pricing consistency, frequency, and quality. Pricing sources are anonymous to users and the sources themselves and the pricing sources change from time-to-time depending on the quality of data they provide. Each source is assigned a quality score based on numerous factors including update frequency and spike frequency. Price inputs are not limited to quotes from market making firms; rather, price inputs include quotes from any market participant whose quotes are executable on a pricing source's market.

Bloomberg undertakes a periodic review of the appropriateness of specific data used in the calculation and validation of the BGN rates.

This review is intended, among other things to assist in ensuring the BGN rates are based on reliable and observable market data that reflect the economic reality of a given market.

The BGN construction is designed to consistently produce levels without interpolation or extrapolation of input data. In addition, as noted above, sources are anonymous to users and the sources themselves at each pricing point and the data received is ancillary to the source's primary purpose of soliciting bitcoin transactions from the market.

Approved bitcoin pricing sources have, at a minimum, represented to Bloomberg that they have documented compliance programs that include, but are not limited to, Anti-Money Laundering (AML) and Know Your Customer (KYC) policies, and have provided Bloomberg with an organizational and/or ownership chart. Errors related to intraday levels will not be restated, as real time levels are considered indicative only. Intraday index levels are calculated from 18:15:00 ET to 16:15:00 ET on every Index Business Day.

Back-fill Pricing Methodology

For Index Levels prior to May 1, 2018, calculations have been performed using BGN bitcoin prices rather than CFIX. When no price was available, the previously available BGN price was used.

Index Publication Days

The Index is published on New York Stock Exchange trading days¹, also referred to as Index Business Days.

¹ <https://www.nyse.com/markets/hours-calendars>

Stress Events

If a DAR price is unavailable due to unforeseen events, the Index will be calculated using the last available DAR price. If a DAR price is unavailable for more than three consecutive Index Business Days, escalation to the PROC will be made to determine the publication of index levels.

Section 4: Risks and limitations

Limitations of the index

Though the Indices are designed to be representative of the markets they measure or otherwise aligns with their stated objective, they may not be representative in every case or achieve their stated objective in all instances. The Index is 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 market interests which the Indices intend to measure or upon which the Indices are dependent in order to achieve their stated objective. For example, illiquidity can have an impact on the quality or amount of data available to the Index Administrator for calculation and may cause the Indices to produce unpredictable or unanticipated results.

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.

Specifically, the Index measures the performance of the Solana token priced on the 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 others 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 valuations. This is an additional operational risk as the quality of Constituent valuation is predicated upon receiving accurate or timely pricing.

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 a 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 of the Index.

Section 5: Benchmark Oversight and Governance

Benchmark governance, audit and review structure

Please refer to the "Governance Structure" section in BISL Benchmark Procedures Handbook available [here](#).

Index and data reviews

Please refer to the "Index and Data Reviews" section in BISL Benchmark Procedures Handbook available [here](#).

Cessation Policy

Please refer to the "Cessation Policy" section in BISL Benchmark Procedures Handbook available [here](#)

Expert judgement & Discretion

Please refer to the "Expert Judgement and Discretion" section in BISL Benchmark Procedures Handbook available [here](#)

Conflicts of interest

Please refer to the "Conflicts of Interest" section in BISL Benchmark Procedures Handbook available [here](#).

Restatement policy

Please refer to the "Restatement Policy" section in BISL Benchmark Procedures Handbook available [here](#)

Methodology Book Changes

Date	Update
20 November 2023	The end-of-day pricing source for both the Bloomberg Galaxy Bitcoin Index changed from Bloomberg CFIX rate fixings to Digital Asset Research (DAR) fixings.

Glossary

Base Date: An Index's Base Date is the day the Base Level is assigned.

Base Level: An Index's Base Level is an arbitrary Index Level (typically 100 or 1,000) assigned to the Base Date, from which Index Levels are calculated going forward and back filled.

BGN: BGN refers to Bloomberg Generic price. The BGN is a sophisticated pricing algorithm that produces accurate indications of quotes that are derived from multiple quality sources.

- For a BGN to be computed for a Cryptocurrency, the Cryptocurrency must be priced by at least two approved Pricing Sources
- The BGN algorithm calculates the BGN median bid and median ask prices for the Cryptocurrency
- The BGN mid-price is the average of the BGN bid and BGN ask prices
- Data from Pricing Sources are the executable bid and ask prices - not executed trade prices.

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

Bloomberg Index Services Limited or BISL: Index provider and administrator.

Bloomberg: Bloomberg L.P. and its affiliates, including BISL.

BOC: Benchmark Oversight Committee.

Cryptocurrency Pricing Sources: Pricing Sources are trading platforms 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. Many of the U.S.-based digital Cryptocurrency trading platforms have elected to be state-regulated "money-transmission services". Traditionally, from an oversight perspective, these predominantly state-regulated payment services have not been subject to direct oversight by the SEC or the CFTC.

Hard Fork: A hard fork occurs when a Blockchain protocol is radically changed, such that it becomes incompatible with older versions. In effect, participants taking part in transactions on the old Blockchain must upgrade to the new one in order to continue validating transactions in the new Blockchain. However, participants that do not upgrade may continue to support and validate transactions on the old Blockchain protocol separately. The result: a Blockchain splits into two - 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 an amount of new coins on the altered Blockchain. This new Cryptocurrency has essentially been derived from an older Cryptocurrency as well as its associated Blockchain's transaction history. 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).

Index Level: The level of the Index determined in accordance with the methodology set forth under "INDEX CALCULATION".

Liquid: A liquid asset can be converted into cash with minimal impact to the price received in the open market. Liquidity is measured by 30-day median daily value traded in USD.

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