coinbase

INDEX GUIDE

COINBASE 50 Europe Index

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coinbase

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1 Introduction

In accordance with IOSCO Principle 9 (Transparency of Benchmark Determination), this document provides the rules for establishing, calculating and maintaining the Coinbase Indexes.

1.1 About Coinbase, Inc.

Coinbase, Inc., branded Coinbase (the "Index Owner"), is an American publicly traded company that operates a cryptocurrency exchange platform.

1.2 About MarketVector Indexes GmbH

MarketVector Indexes GmbH (the "Index Administrator") develops, monitors and markets the MarketVector™ Indexes, a focused selection of pure-play and investable indexes designed to underlie financial products. MarketVector™ is a registered trademark of Van Eck Associates Corporation and therefore protected globally against unlawful usage.

1.3 Approval of Index Methodologies

The Index Owner has established the index and its individual methodology covered in this Index Guide. A detailed written "Procedure for Index Development" describes the steps and approvals required to develop, document and approve an index and its methodology. The intention of the Procedure for Index Development is to ensure that the methodology of an index meets the requirements of IOSCO Principle 12 (Quality of the Methodology) and is approved and implemented according to a robust and reliable process.

The methodology for the index covered in this Index Guide has been analysed by the Index Administrator's Index Operations department in order to ensure that it is robust and reliable, has clear rules on use of discretion, allows sustainable validation (based on reasonable back testing) and is traceable and verifiable. Furthermore, the size, liquidity and transparency of the underlying market for the methodology have been tested and particular circumstances for each relevant market have been taken into account.

The index methodology and the related detailed analysis were presented by the Index Operations Department to the Independent Oversight Function ("IOF") for its approval. Based on the aforementioned approval process and its documentation, the index methodology was presented to the Management Board (Geschäftsführer) of the Index Administrator for final approval.

1.4 Review of this Index Guide

According to IOSCO Principle 10 (Periodic Review), the Index Administrator reviews this Index Guide on an annual basis and immediately in case of special circumstances that require a review. The review takes place in meetings attended by the Independent Oversight Function and the Management Board of the Index Administrator. If changes to this Index Guide are considered necessary, the process described in Section *5.7* applies.

2 General Definitions

2.1 Review Schedule

The index is rebalanced quarterly in November, February, May and August.
The reviews for the index are based on the opening data (adjusted for reviewed amount outstanding) on the fourth but last business day in November, February, May and August ("Cutoff Date"). If a digital asset does not trade on a business day, then the last available price for this digital asset will be used.

A "business day" for the purposes of the review means any day (other than a Saturday or Sunday) on which commercial banks and foreign exchange markets settle payments in Frankfurt, Germany.

Adjustments to constituents will be announced only to the Index Owner on the fourth from the last business day in November, February, May and August at 23:00 CET/CEST.

The index is rebalanced at 17:00:00 CET/CEST of the last business day of November, February, May and August.

A "business day" for the purposes of the rebalance means any day (other than a Saturday or Sunday) on which commercial banks and foreign exchange markets settle payments in New York.

2.2 Pricing Source

For each component price in the MarketVector™ Indexes, the respective BITA Cryptocurrency Real-Time Rates by BITA GmbH (https://www.bitadata.com/) is used. The close price is a Volume Weighted Average Price (VWAP) calculation with data from whitelisted exchanges. More details can be found in the BITA Exchange Ranking Methodology guidebook.

Values are not backadjusted.

2.3 Weighting Schemes

Coinbase Indexes can use cap-factors to guarantee diversification and avoid overweighting. Please refer to the individual index description in section 4 for the capping scheme used. Index weightings are reviewed on a quarterly basis.

Weighting Scheme: 50%-Cap

The 50%-cap ensures diversification by assigning weights to components which cannot exceed 50% but still ensures bigger sizes of bigger components.
All components are ranked by their market capitalization. The maximum weight for any component is 50%. If a constituent exceeds the maximum weight, the weight will be reduced to the maximum weight and the excess weight shall be redistributed proportionally across all other index components. This process is repeated until no components have weights exceeding the respective maximum weight.

3 Index Universe

3.1 Index Universe

The total index universe includes all digital assets traded spot on Coinbase Exchange with at least one USD, USDC, or USDT denominated pair and are covered by the BITA pricing provided by BITA GmbH.

3.2 Fundamental Criteria

In addition, the following fundamental criteria apply:

- **Token Economics**: This refers to the economic design structure of the token. Assets pegged to other digital assets, a fiat currency, a group of those currencies, or any hard asset are disallowed. Exchange coins are also disallowed. Assets must also have most of their token supply in public circulation.
- **Blockchain Architecture**: This refers to the inherent design of the blockchain. Critical features that categorize a network as a public blockchain must be adhered to. These include transparency, immutability, cryptographic algorithm, permissionless consensus, pseudonymity, and peer-to-peer network status.
- **Security**: Only digital assets with no known security vulnerabilities, including critical bugs, undue exposure to 51% where applicable, or other factors, are allowed. Assets must also fulfill the availability of custodians approved by the Index Owner.

The fundamental criteria should be fulfilled in the current rebalancing period in order to qualify for the eligible index universe.

A digital asset should have at least 360 days since its Token Generation Event (TGE) in order to qualify for an index.

4 Indexes

The following sections define relevant index parameters, including:

- Review: Selection and weightings,
- Dissemination: Times, currencies and identifiers.

4 INDEXES

4.1 Coinbase 50 Europe Index

The objective of the Coinbase 50 Europe Index is to track the performance of the components of the Coinbase 50 index, which are eligible by the respective European regulatory body and are supported by the industry including market makers, custodians, and regulated exchanges[1]. The 50% capping scheme as described in section 2.3 is applied.

Review Procedure:
The index universe is defined as the components of the Coinbase 50 Index (COIN50).

The assets in the index universe are screened in accordance with the custodian specifications applicable to the client and the index does not include crypto assets that are not accepted by Deutsche Börse AG as an underlying. Information is provided by the respective 3rd party partners of the client.

For all events that result in a deletion from the index, the deleted component will be replaced with the highest ranked non-component at the latest review. The replacement will be added with the same weight as the deleted component. In case of a hard fork, which results in several active lines, section 5.2 applies. In case of an airdrop, section 5.3 applies. If an event causes the number of components to be greater than 50, the smallest components by market capitalization will be removed one day after the increase is effective (when a price and the main net is available), until the number of components is 50 again.

The index is calculated with the constituent prices converted to USD, on a daily basis between 00:00 and 24:00 (CET/CEST). Dissemination is in USD. Real-time index values are calculated with the latest available prices each 1 second. The closing value is calculated at 17:00:00 CET/CEST with fixed 17:00:00 CET/CEST exchange rates.

The Coinbase 50 Index has the following identifiers:

Index Type	ISIN	SEDOL	WKN	Bloomberg	Reuters
Price Return Index	DE000A4ANEZ2	BQ71Y61	A4ANEZ	COIN50E	.COIN50E

The index was launched on 08 May 2025 with a base index value of 100.00 as of 31 December 2020. The Fundamental data utilized for back-testing the index was derived from data as of May 2024.

[1]This covers specific regulatory or listing criteria applicable to each exchange on which the corresponding ETP is currently listed or planned to be listed. The index will dynamically adjust (even between official review dates) to the most restrictive common set of eligible assets, enabling future exchange inclusions without triggering non-compliance from any existing listings.

5 Ongoing Maintenance

5.1 Changes in Amount Outstanding

Changes in the amount outstanding will not be adjusted between the quarterly reviews, but with the next quarterly review.

5.2 Changes due to Forks

In case of a hard fork, the forked digital asset is not added to the index. It may be included in the index universe in the future if it fits the criteria specified in section 3.2.

5.3 Airdrops

Because most airdrops are of de minimis value and are illiquid or unlisted, the index does not incorporate their values into the calculation of the index.

5.4 Changes to Pricing (BITA)

In case an exchange is added to BITA or removed from it, the index divisor will not be adjusted.

5.5 Index Corrections

- Index corrections distinguish between calculation errors and incorrect input data.
- Calculation errors detected within a trading day are corrected immediately. Intraday tick data are not corrected retrospectively.
- Calculation errors that are older or based on erroneous input data are corrected if technically possible and economically viable. If significant differences exist, index values can also be corrected retrospectively.

5.6 Review of Index Concept

Due to a very dynamic market of digital assets and tokens the index methodology, parameters and thresholds will be reviewed at least once a year. Market participants feedback will be considered in the process whether or not to make amendments to the methodology and the data sourcing process. Any changes will be communicated by Coinbase and MarketVector Indexes with a 30-day lead time to enable customers to adjust their processes.

5.7 Changes to the Index Guide

Any changes to the Index Guide will be reviewed and approved by the Index Owner and MarketVector Indexes' Legal and Compliance Department. Legal and Compliance may also request a conclusive description and further information on any change and may consult the operations department on such changes. The key elements to be analysed in this phase of the change process are robustness, transparency, reliability and integrity. The result of the review will be communicated to the operations department. The email will be archived by the operations department.

5 ONGOING MAINTENANCE

In case of changes that might immediately change the composition of an index or must be considered material for any other reason also need to be approved by the Independent Oversight Function prior to their publication and implementation.

In case of material changes an advance notice will be published and provided to users. MarketVector Indexes will generally disseminate a notification related to an Index Guide change 30 days prior to the change. A shorter period of time may be applied at MarketVector Indexes' discretion if the relevant index has not been licensed for a financial product to a third party. The notice will describe a clear time frame that gives the opportunity to analyse and comment upon the impact of such proposed material change. Any material comments received in relation to the Index Guide change and MarketVector Indexes' response to those comments will be made publicly accessible after any consultation, except where confidentiality has been requested by the originator of the comments.

5.8 Discretion regarding the Use of Input Data and Extraordinary Events

Pursuant to IOSCO Principle 8 (Hierarchy of Data Inputs), MarketVector Indexes has established the following rules identifying how and when discretion may be exercised in the administration of an index. In case input data are or appear to be qualitatively inferior or different sources provide different data, an extraordinary event, or a situation is not covered by the index rules, MarketVector Indexes may use or change data/index composition at its own discretion according to the following discretion policy after a plausibility check. Regarding input data, this may include:

- Liquidity and size data,
- Event information,
- Other secondary data.

Regarding extraordinary events, this may include:

- Trading stops,
- Regulatory actions,
- Hacks,
- Detection of fraud,
- Changes in custodian coverage,
- Etc.

Any changes must subject to reasonable discretion. The decision on any change must be required, appropriate, commensurable and in line with the respective index scope and objective and must reasonably consider in a balance weight the interest of Users, investors in related products and the integrity of the market.

Index operations ensures consistency in the use of discretion in its judgement and decision. Employees involved in the operations team must have shown the respective experience and skills. Significant decisions are subject to sign-off by a supervisor. In case of material changes to data the relevant situation will be analyzed in detail, described and presented to the IOF and discussed and reviewed with the IOF.

The broad range of possible data quality problems does not allow to define specific steps for each possible instance. MarketVector Indexes will always weight the different interest of the index users, the integrity

of the market and other involved parties and determine the least disadvantageous measure that equally considers the relevant interests best.

In order to avoid individual decisions in similar cases for the future an update of the index rules can be taken into consideration if applicable. Regarding the use of data, other possible mitigation measures are the change of input data sources or providers and/or own data research where possible and reasonable.

Records are kept about material judgement or discretion by MarketVector Indexes and will include the reasoning for said judgement or discretion.

5.9 Input Data and Contributor Selection

According to the input data requirements under IOSCO Principle 7 (Data Sufficiency) the, following shall apply with regard to the input data used for the management and provision of an index and the relevant input data providers ("Contributors"):

- the input data shall be sufficient to represent accurately and reliably the market or economic reality that the benchmark is intended to measure;
- the input data shall be transaction data, if available and appropriate. If transaction data is not sufficient or is not appropriate to represent accurately and reliably the market or economic reality that the index is intended to measure, input data which is not transaction data may be used, including estimated prices, quotes and committed quotes, or other values;
- the input data shall be verifiable;
- clear guidelines regarding the types of input data, the priority of use of the different types of input data and the exercise of expert judgement, to ensure compliance with the Index Guide and index methodology and the aforementioned requirements are defined in the Code of Conduct for Contributors; and
- where an index is based on input data from Contributors, MarketVector Indexes will obtain, where appropriate, the input data from a reliable and representative panel or sample of Contributors so as to ensure that the resulting index is reliable and representative of the market or economic reality that the index is intended to measure.

In order to control the quality of Contributors, MarketVector Indexes will conduct the following controls:

- Evaluate market share, reputation, quality and cost of possible input data sources and providers before selecting them on the basis of the gathered information and data;
- Compare the input data of one Contributor with the input data from one or more other Contributors in order to ensure the integrity and accuracy of the input data and in case of bad quality replace a Contributor with another Contributor.

MarketVector Indexes will not use input data from a Contributor if it has any indication that the Contributor does not adhere to its Code of Conduct for Contributors and in such a case shall obtain representative publicly available data.

6 Calculation

6.1 Index Formula

The index is calculated using the Laspeyres' formula:

$$\textit{Index Value}_i = \frac{\sum_{i=1}^{n} p_i * q_i * cf_i * fx_i}{D} = \frac{M}{D}.$$

Where (for all tokens (i) in the index):

p_i = price,
q_i = amount outstanding,
cf_i = weighting cap/floor factor (if applicable, otherwise set to 1),
fx_i = exchange rate (index currency to USD),
M = market capitalization of the index,
D = divisor.

6.2 Input Data

The following rounding procedures are used for the index calculation:

- Rounding to 6 decimal places:
  - index values,
- Rounding to 6 decimal places:
  - divisors (D),
- Rounding to 18 decimal places:
  - prices (p_i),
  - exchange rates (fx_i),
  - weighting cap/floor factors (cf_i).

6.3 Divisor Adjustments

Index maintenance - reflecting changes in amount outstanding, events, addition or deletion of tokens to the index - should not change the level of the index. This is accomplished with an adjustment to the divisor. Any change to the tokens in the index that alters the total market value of the index while holding token prices constant will require a divisor adjustment.

$$Divisor_{new} = Divisor_{old} * \frac{\sum_{i=1}^{n} p_i * q_i * cf_i * fx_i \pm \Delta MC}{\sum_{i=1}^{n} p_i * q_i * cf_i * fx_i}.$$

$\Delta MC =$ Difference between closing and adjusted closing market capitalization of the index.

6.4 Data Correction and Disruptions

MarketVector Indexes will usually receive information about errors or disruption from calculation agent, Index Owner, client, internal systems (IT) or by monitoring the respective output.

Incorrect or missing input data will be corrected immediately:

- The error is immediately communicated to the calculation agent, if applicable.
- Calculation agent will be asked to investigate the reason for the error.
- An email will be sent to all affected clients to inform them about the error; this includes the reason for the issue and an estimate on when the issue will be solved.
- MarketVector Indexes recalculates missing EOD data points and disseminates to vendors and clients.

In case of a material error,

- Legal and Compliance to check the relevant agreements for liability of the calculation agent.
- If MarketVector Indexes identifies any conduct that may involve manipulation or attempted manipulation of an index by a calculation agent it will report this to the regulator.
- Where possible and economically reasonable MarketVector Indexes will try to use another calculation agent.

Investigations and communication regarding disruptions with calculation agents will be handled by Compliance and Senior Management. They are either caused by disruptions in calculation or dissemination, which might affect different servicers.

- The disruption is immediately communicated to the calculation/dissemination agent, if applicable.
- Calculation/dissemination agent will be asked to investigate the reason for the disruption.
- An email will be sent to all affected clients to inform them about the disruption; this includes the reason for the issue and an estimate on when the issue will be solved.
- MarketVector Indexes prompts calculation agent to make all efforts to restart index calculation.
- MarketVector Indexes prompts dissemination agent to make all efforts to restart index dissemination.
- MarketVector Indexes recalculates missing EOD data points and disseminates to vendors and clients.
- Legal and Compliance to check the relevant agreements for liability of the calculation/dissemination agent.
- If MarketVector Indexes identifies any conduct that may involve manipulation or attempted manipulation of an index by calculation/dissemination agent it will notify the competent authority where required.
- Where possible and economically reasonable MarketVector Indexes will try use another calculation and/or dissemination agent.

7 Appendix

7.1 Changes to the Index Guide

Date	IG Version	Change
02 August 2025	1.01	Inclusion of additional footnote to the section 4.1.
01 January 2026	1.02	De-scoping under the amended EU BMR
19 June 2026	1.03	Change of pricing source from CCIX by CCData to BITA Cryptocurrency Real-Time Rates by BITA GmbH.

8 Disclaimer

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9 Regulatory Status

All indexes administered by MarketVector Indexes GmbH currently qualify as non-significant benchmarks within the meaning of Article 3 (27) of the EU Benchmarks Regulation (Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds, as amended by Regulation (EU) 2025/914). Accordingly, the administration of these indexes no longer fall within the direct scope of the EU Benchmarks Regulation as of 1 January 2026. As benchmark usage evolves over time, MarketVector may consider voluntarily opting in to EU Benchmarks regulation supervision should relevant regulatory thresholds be met. Regardless of regulatory classification, MarketVector continues to apply the organizational, operational, and governance frameworks developed under the EU Benchmarks Regulation. MarketVector continues to administer its benchmarks in line with the IOSCO Principles for Financial Benchmarks and recognized index-industry best practices, ensuring the integrity, transparency, and reliability of its entire suite of index offerings.