



Nasdaq Index Methodology Guide



30 Oct 2024

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Table of Contents

1	Introduction and Overview.....	4
2	Governance	5
2.1	Overview.....	5
2.2	Index Oversight Committee.....	5
2.3	Index Management Committee	5
2.4	Internal Reviews of Methodology	5
2.5	Index Consultations	6
2.6	Expert Judgment.....	6
2.7	Conflicts of Interest	7
2.8	Retention of Records.....	7
3	Other Index Guidelines.....	8
3.1	Calculation and Pricing Disruptions.....	8
3.2	Unexpected Exchange Closures.....	8
3.3	Announcement Policy.....	9
3.4	Situational Announcements	9
3.5	Daily Calculations	9
3.6	Market Holidays	9
3.7	Data Sufficiency	9
3.8	Hierarchy of Data Inputs and Data Sources.....	10
3.9	Industry Classification Benchmark	10
4	Dissemination Methods and Channels	11
4.1	Index Calculation and Dissemination Schedule	11
4.2	Global Index Data Services (GIDS)	11
4.3	Contributor Application Programming Interface (CAPI).....	11
4.4	Global Index Watch (GIW) Website.....	11
4.5	Global Indexes FlexFile Delivery Service (GIFFD).....	12
4.6	Genium Consolidated Feed (GCF).....	12
5	Other Adjustments.....	13
6	Appendix A: Glossary of Key Terms.....	14
7	Disclaimer.....	17

1 Introduction and Overview

This document serves as a guide to govern Index Methodologies. The goal of this document is to capture information applicable across all Index methodologies, unless otherwise specified or as detailed in their individual methodologies.

This Guide will be reviewed and approved annually (or as otherwise needed) by the Index Management Committee.

2 Governance

2.1 Overview

The Nasdaq Index business is managed by a governance committee structure, and has established transparent governance, oversight and accountability procedures for the Index determination process. The two main committees include the Index Oversight Committee and the Index Management Committee.

2.2 Index Oversight Committee

The Index Oversight Committee is responsible for the oversight of the overall Benchmark determination process and is responsible for the overall governance of the U.S.-based Index business (Nasdaq, Inc.) including review and approval of the control framework, certain policies and procedures, certain methodologies and methodology changes and other Index management oversight.

2.3 Index Management Committee

Nasdaq Global Indexes has established the Index Management Committee for the purpose of providing governance and internal oversight in respect of all aspects of Nasdaq's Index Administration activity.

The Index Management Committee is responsible for the overall oversight of activities related to the development, issuance and operation of Nasdaq Global Indexes. The Committee meets on a periodic basis, at least quarterly, and will have representatives from appropriate functions. The main features of the Index Management Committee include, but are not limited to, the following aspects of the Index lifecycle:

- (a) **Development:** Nasdaq Global Indexes develops Indexes which enable investors and market counterparties to gain exposure to investment allocation strategies. Nasdaq is responsible for establishing and maintaining accurate definitions of each Index and launching it subject to Nasdaq's approval process.
- (b) **Determination and Dissemination:** Ensuring the accurate and timely compilation, publication and distribution of each Index. In respect of certain Indexes, third parties are appointed to calculate the Index or perform specified aspects of the Index determination in accordance with a defined Methodology for the respective Index. Notwithstanding any such appointment, Nasdaq, as Administrator, retains the intellectual property and the primary responsibility for determining the Index and will provide oversight of third parties.
- (c) **Operation:** Nasdaq provides appropriate transparency over significant decisions affecting the compilation of the Index and any related determination process, including contingency measures in the event of absence of or insufficient inputs, market stress or disruption, failure of critical infrastructure, or other relevant factors. Any contingency measures that are not directly addressed in the Methodology for the respective Index shall be subject to Nasdaq's Index governance processes.

2.4 Internal Reviews of Methodology

In addition to its governance of Indexes and maintenance of Index Methodologies, the Index Management Committee reviews, at least once within any 12-month period, each Index Methodology

to ensure the Index continues to achieve the stated objectives, and that the data and methodology remain effective. The annual review process includes the gathering of information on the appropriateness, representativeness, and effectiveness of the Index Methodology from colleagues responsible for commercializing the Indexes. In the case that an Index Methodology is reviewed off cycle from the annual review, the Index Management Committee reserves the right to cancel the annual review if the requested review covers all the relevant issues.

2.5 Index Consultations

Nasdaq communicates and consults with Stakeholders through various channels such as press releases, Index announcements, emails and the distribution of data files.

When a material change to the Index Methodology is considered, Nasdaq may publish a consultation inviting comments from Stakeholders. A material change alters the Index objective or is a change to the Index Methodology in a way that affects the likelihood that the Index will achieve its objective.

Examples of methodology changes potentially impacting the Index objective include:

- Alteration of rules determining the Index universe (including the selection of constituents)
- Modifications to the methods determining the weighting of constituents
- Adjustments to the timing of evaluation periods and related announcement dates
- Changes in the handling of certain corporate actions
- Weighting of its constituents

Consultations are announced through a number of channels, including the Nasdaq website, and by email directly to Nasdaq Index clients. Under normal circumstances, the consultation period is open for a minimum of 30 days from publication. Feedback is accepted only during the posted timeframe.

In instances where a material change is deemed to be time sensitive, the Index Management Committee may determine that a shorter consultation period is required. Time sensitive changes are those that may require consideration or implementation within a shorter timeframe, and where the full consultation time period is not possible.

Prior to finalizing its decision, the Index Management Committee will consider the issues and may request clarifications from respondents as part of this process. All timely feedback from consultations is reviewed and considered before a final decision is made by the Nasdaq Index Management Committee. Any changes to an Index Methodology are announced on the website together with the Effective Date of the change. A summary of the consultation feedback is made available upon request after announcement of the results, with the exception of responses requesting confidentiality. Individual and company names are not provided.

2.6 Expert Judgment

The exercise of Expert Judgment will be subject to the approval of the Index Management Committee. The Index Management Committee may exercise or seek Expert Judgment when the situation calls for the interpretation of data in calculating and maintaining a Nasdaq Index. Nasdaq Global Indexes documents the use of Expert Judgment and the rationale behind any such use of Expert Judgment via Index Management Committee meeting minutes. Expert Judgment specifically and exclusively refers to Nasdaq Global Indexes exercise of discretion with respect to its use of data in determining a course of action. Other areas of discretion, such as methodology changes, are not, for the purposes of this document, considered Expert Judgment.

If the Index Management Committee or the Index Oversight Committee is required or entitled to make a determination in relation to an Index pursuant to the Index Methodology and that determination involves the exercise of Expert Judgment or discretion, then that Expert Judgment or discretion would be exercised (i) in good faith and in a commercially reasonable manner and (ii) in such a manner as to ensure, as far as commercially reasonable, consistency in the approach it adopts with regard to the exercise of such Expert Judgment or discretion.

2.7 Conflicts of Interest

In addition to broader internal Nasdaq policies on the management of conflicts of interest, in order to monitor and control potential conflicts of interest in respect of Nasdaq Global Indexes:

- (a) all proposed exercises of discretion in respect of an Index must be escalated to the Index Management Committee or, depending on the nature of the discretion, another relevant control function;
- (b) conflicted Members who sit on the Index Management Committee must recuse themselves from voting as necessary to maintain independence; and
- (c) the determination or operation of Nasdaq Global Indexes may not be delegated to Index Research and Index Product Development and/or trading desks.

Staff who participate in the Nasdaq Index determination process are not directly rewarded or incentivized by the levels of the Nasdaq Index.

All trading activity in relation to Nasdaq Global Indexes is subject to separate policies and controls. Internal policies related to Gifts and Entertainment and Outside Business Activities address additional conflicts of interest.

2.8 Retention of Records

Written records, including electronic records, in relation to Nasdaq Global Indexes will be retained for a period of at least five years (subject to applicable legal or regulatory requirements).

3 Other Index Guidelines

3.1 Calculation and Pricing Disruptions

Nasdaq calculates, for certain Indexes, intra-day Index valuations on a pre-determined fixed interval (i.e. once per second for the Nasdaq-100 Index) using the latest real-time price for the underlying securities which are constituents of the Index. If a new/current price is unavailable at the time of the calculation, Nasdaq will utilize the last sale price provided by the Index Exchange. If there is no real-time traded price for a particular security for that day, the prior day's closing value/end-of-day price, adjusted for corporate actions, will be used.

End-of-day calculations are computed using an Index Security's Last Sale Price at the time of market close. The closing value of the Indexes may change as specified in individual methodologies due to corrections to the Last Sale Price of the Index Securities.

In the event of disruptions to an Index regarding calculations for U.S. listed securities and the primary market is down, Nasdaq may switch to the consolidated feed or alternative handling, where applicable. If this is not practicable or sufficient, additional action may be taken as deemed necessary to ensure the integrity of the Index and/or market, up to and including the decision to delay or not publish Index values.

Please refer to Nasdaq Index Policies & Procedures: Calculation Manual – Equities for further information on calculation types and pricing disruptions.

3.2 Unexpected Exchange Closures

In situations where an Index Exchange fails to open (fully or partially) or trading is temporarily halted, Nasdaq considers these as an unexpected exchange closure. This may be applicable to a single exchange (such as The Nasdaq Stock Market or the London Stock Exchange) or to a market in its entirety when all of the primary exchanges are closed and/or not trading. Unexpected exchange closures typically are due to unforeseen circumstances including inclement weather, natural disasters, technology and/or infrastructure outages, or other events, including National Days of Mourning.

Generally, Nasdaq relies upon the various exchanges to provide guidance as to appropriate handling in the event of an unexpected exchange closure, if the exchange guidance provides sufficient information regarding pricing and mandatory corporate actions. In the absence of this information, Unexpected Exchange Closures are generally treated as if the Index Exchange is on a holiday. For securities, which trade in multiple markets, in the event the primary market is down, Nasdaq may switch to the consolidated feed or alternative handling, where applicable.

Where there is full market disruption prior to the opening of trading, if all exchanges indicate trading will not open, the day may be treated as an unscheduled market holiday. Clients will be informed as soon as possible using the normal announcement channels. Indexes which contain multiple markets are calculated as normal if at least one market is open that day. If an Index is comprised of securities containing data only from a closed exchange or exchanges the Index may not be calculated for that day.

In instances where there are intra-day disruptions and the exchange indicates that trading will not resume for a particular day, Indexes may be calculated using prices determined by the exchanges. Intra-day Index values will use the last traded price.

As international exchanges do not have similar secondary exchange default capabilities as found in U.S. exchanges, for instances where an unexpected closure occurs prior to open and the exchange indicates

trading will not commence for the day, the day is treated as an unscheduled market holiday. Intra-day disruptions result in Nasdaq waiting for a published list of closing prices from the impacted exchange, which will then be used to calculate closing Index values. In the absence of a list of closing prices, the last trade information prior to the disruption is used to calculate the closing Index values.

3.3 Announcement Policy

Nasdaq announces Index-related information on the Global Index Watch at <https://indexes.nasdaq.com/>. Where applicable, press releases are distributed to major news services and are also posted on the website.

3.4 Situational Announcements

Corporate Actions are implemented in the Indexes in accordance with the Index maintenance rules. The announcement may be made prior to the effective date of the corporate actions.

Intraday changes: An announcement will be made to inform clients of the change.

Historical correction to an Index calculation: An announcement will be provided and clients are asked to update their databases accordingly.

See the individual Index Methodologies for specific details regarding announcements.

3.5 Daily Calculations

Nasdaq Global Indexes are calculated on a daily basis throughout the year except for market holidays and/or market closures.

3.6 Market Holidays

Nasdaq Global Indexes are calculated on a daily basis throughout the year except for market holidays and/or market closures. Any exceptions to this are noted in the respective Index methodology documents.

Unless specified in an Index methodology, if the entirety of the Index is on a holiday, the effective date of an Index evaluation or rebalance will be postponed until all securities are no longer on a holiday.

3.7 Data Sufficiency

Data Sufficiency requires that data used to construct an Index determination should be sufficient to accurately and reliably represent the interest measured by the Index and should be:

- (a) Based on prices, rates, Indexes or values that have been formed by the competitive forces of supply and demand in order to provide confidence that the market price discovery system is reliable; and
- (b) Anchored by observable transactions entered into at arm's length between buyers and sellers in the market for the Interest the Index measures in order for it to function as a credible indicator of prices, rates, Indexes or values.

3.8 Hierarchy of Data Inputs and Data Sources

The primary source for pricing data is generally the exchange upon which the underlying security is traded (either directly from the applicable exchange or via a third-party data vendor).

Data used for Indexes may include:

- (a) Completed transaction data for use in Indexes; and/or,
- (b) Theoretical prices for certain corporate actions which may be derived using the existing security price and the specifics of the corporate action.

3.9 Industry Classification Benchmark

Nasdaq Global Indexes utilize the Industry Classification Benchmark (ICB), a product of FTSE International Limited that is used under license. ICB is a detailed and comprehensive structure for sector and industry analysis, facilitating the comparison of companies across four levels of classification and national boundaries. For a complete description of ICB guidelines, structure, and definitions, please refer to Industry Classification Benchmark (Equity), a publication of FTSE Russell.

4 Dissemination Methods and Channels

4.1 Index Calculation and Dissemination Schedule

Indexes may vary in their calculation and dissemination schedule. See the respective Index Methodology for greater details on the calculation and dissemination schedule.

4.2 Global Index Data Services (GIDS)

GIDS serves as Nasdaq Index's Real-Time Data Feed, providing one aggregated data feed for Index values to data recipients either directly from the Nasdaq Stock Market or through third-party distributors. Data is sourced from global exchanges, including:

- Nasdaq Stock Market
- Nasdaq PHLX
- Nasdaq Nordic Exchange
- Nasdaq Baltic Exchange
- Third party partner Indexes and ETPs.

4.3 Contributor Application Programming Interface (CAPI)

This mechanism allows third-party data partners to connect to Nasdaq through an Application Programming Interface (API) or direct peer-to-peer connection, enabling these partners to send real-time and end-of-day index information directly to Nasdaq for distribution through its dissemination channels from the GIDS feed.

Third Party Data Contributors who are engaged in activity related to the benchmark determination process for a Nasdaq Index have agreed to abide by Nasdaq's Submitters Code of Conduct and attest annually that they maintain proper management, review and oversight to policies and controls to ensure the integrity, estimates, values and/or rates ("Submissions") made on its behalf.

4.4 Global Index Watch (GIW) Website

GIW is Nasdaq's Index website dissemination channel for Index start-of-day and end-of-day historical and current index values and weightings as well as pro-forma and corporate actions information for select indexes. Additionally, GIW provides research pieces, methodology and factsheet documents, governance consultations, and more. GIW may be accessed at <https://indexes.nasdaq.com/>.

Global Index Watch (GIW) Web Services

GIW Web Services is Nasdaq's Index REST API (request-response application programming interface) dissemination channel for Index start-of-day and end-of-day historical and current values, constituents and weights, as well as corporate actions and pro-forma data for select indexes. Clients and partners can use the same credentials as the GIW website and write code to programmatically request data.

4.5 Global Indexes FlexFile Delivery Service (GIFFD)

GIFFD is Nasdaq's Index SFTP (secure file transfer protocol) dissemination channel for Index start-of-day and end-of-day historical and current values, constituents and weights, as well as corporate actions and pro-forma files for select indexes. Clients and partners can use the same credentials as the GIW website and write code to programmatically request data.

4.6 Genium Consolidated Feed (GCF)

GCF provides real-time Index values and weightings for the Nordic Indexes.

5 Other Adjustments

Notwithstanding any other provision in this document, Nasdaq may make necessary adjustments in circumstances other than those detailed in this document including, but not limited to, adjustments necessary to ensure Index and/or market integrity. Nasdaq may exercise Expert Judgment (other than that which is purely mechanical and, where relevant, implemented in accordance with the relevant Index Methodology) when the situation calls for the interpretation of data in calculating and maintaining an Index, including application of corporate actions. The use of Expert Judgment is overseen by the Index Governance process and mandates that Expert Judgment would be exercised (i) in good faith and in a commercially reasonable manner and (ii) in such a manner as to ensure, as far as commercially reasonable, consistency in the approach it adopts with regard to the exercise of Expert Judgment.

6 Appendix A: Glossary of Key Terms

Audit Trail for the purposes of the Index-setting process, the documentation and retention of all relevant data, Submissions, other information, judgments (including the rationale for any exclusions of data), analyses and identities of Submitters used in the Index-setting process for an appropriate period.

Benchmark¹ or Index is an Index that is:

- i. made available to users, whether free of charge or for payment;
- ii. calculated periodically, entirely or partially by the application of a formula or another method of calculation to, or an assessment of, the value of one or more underlying Interests; and
- iii. used for reference purposes for one or more of the following:
 - a. determining the interest payable or other sums due, under loan agreement or under other financial contracts or instruments;
 - b. determining the price at which a financial instrument may be bought or sold or traded or redeemed, or the value of a financial instrument; and/or
 - c. measuring the performance of the financial instrument.

BMR is the European Benchmark Regulation, Regulation (EU) 2016/2011.

Calculation Agent is a legal entity with delegated responsibility for determining an Index through the application of a formula or other method of calculation the information or expression of opinions provided for the purpose, in accordance with the Benchmark methodology provided by Nasdaq.

Closing Value is the final price at which a security is traded on a given trading day.

Data Provider is a third party that provides data input used in the calculation or administration of a Benchmark. For purposes of this Guide, Data Providers shall explicitly exclude Regulated Markets or Exchanges providing data.

Data Submitter is a Data Provider that provides Submissions.

Effective Date is the date that an action is set to occur on the Index Exchange.

Ex-Date, Ex-Dividend Date or Ex-Distribution Date is the date on or after which a security is traded without a previously declared dividend or distribution. After the ex-date, a stock is said to trade ex-dividend. The ex-date is the date on which the seller, and not the buyer, of a stock will be entitled to a recently announced dividend.

Expert is an individual who can provide expert judgment as it relates to use of data within an Index or otherwise has expertise in support of Nasdaq's Index business which may also include legal and/or commercial expertise.

Expert Judgment is the exercise of discretion by Nasdaq or a Third-Party Benchmark Determination Contributor with respect to using data when determining a Benchmark. Expert Judgment includes extrapolating values from prior or related transactions, adjusting values for factors that might influence

¹ For avoidance of doubt: (a) the term "Benchmark" is defined in accordance with the IOSCO Principles for Financial Benchmarks and not Regulation (EU) 2016/1011; and (b) for purposes of the Nasdaq Index Policies and Procedures, uses the terms Benchmark and Index interchangeably

the quality of the data like market events or impairment of a buyer or seller’s credit quality, or weighting firm bids or offers greater than a particular concluded transaction.

Free Float is the proportion of the total amount of share capital available to ordinary investors compared to the total number of listed shares of a security. The balance of a security’s share capital will be in the form of strategic holdings, effectively excluded from normal trading.

Free float is defined by either the Standard float method or the Alternative float method. Unless otherwise noted within the index-specific methodology, Nasdaq Global Indexes utilize the Standard float method. Select indexes in the Nordic markets utilize the Alternate float method. The Standard float method’s and Alternate Float method’s shareholder classifications and formulas are defined below.

Standard Float method:

- Free float = Total Shares Outstanding (TSO) – holders of >=5% of the TSO excluding Hedge Funds
- The Free Float Factor will be rounded to the closest 1%. For example, 56.2% will be rounded to 56% and 56.5% will be 57%.

Alternative Float method:

The shareholders are divided into two groups: strategic investors and non-strategic investors. Shares owned by strategic investors are deemed less likely to be available to the market and will therefore be excluded from the free float.

The below table describes the type of shareholders that are considered as Strategic Investors.

Strategic Owners	Description
Controlling Shareholders	Shareholders (excluding the non-strategic investor type) owning ≥ 10% of the capital or votes (applies to both the company total capital/votes as well as the specific share class)
Public Sector	Shares owned by Governments, States or Municipalities.
Listed Companies	Shares owned by listed companies, including the company’s treasury shares.
Private Equity & Venture Capital	Shares owned by PE/VC-owners
Board & Management	Shares owned by the company board and management as well as affiliated owners.
Affiliated Sphere Owners	Clusters of owners that likely act together as a group and have some relation to the company, larger shareholders or founders
Owners Under Lock-up	Shares that are subject to lock-up clauses.

Non-Strategic Owner Types – Fund, Pension Funds, Insurance Companies and Retail Investors

Free float = (Total number of shares in issue – shares owned by Strategic investors) / Total number of shares in issue

Index Currency is the currency in which the Index is calculated.

Index Exchange is the listing exchange or market for which prices for an Index Security are received and used by Nasdaq in the Index calculation.

Index Security is a security included in an Index and as further defined in the Nasdaq Global Indexes Calculation Methodology documents.

Infrastructure Provider is a third-party provider of critical software or technology used in the administration of Benchmark determination.

Interest is any physical commodity, currency or other tangible goods, intangibles (such as equity security, bond, futures contract, swap or option, interest rates, another Index including Indexes that track the performance of a rule-based trading strategy or the volatility of a financial instrument or another Benchmark), any financial instrument on an Interest, which is intended to be measured by an Benchmark.

IOSCO is the International Organization of Securities Commissions outlining principles for financial benchmarks and is recognized as the global industry standard for indexes.

Last Sale Price is the last regular way trade reported on such security's Index Exchange. The Index Exchange is the listing market for which prices are received and used by Nasdaq in the Index calculation and generally will represent the most liquid trading market of the Index Security. If a security does not trade on its Index Exchange on a given day or the Index Exchange has not opened for trading, the most recent last sale price from the Index Market (adjusted for corporate actions, if any) is used. For securities where Nasdaq Stock Market is the Index Exchange, the Last Sale Price may be the Nasdaq Official Closing Price (NOCP) when Nasdaq Stock Market is closed.

Material Change is a change that alters the Index objective or is a change to the methodology in a way that affects the likelihood that the Index will achieve its objective.

Methodology Determination Contributor is a third party that contributes to the design and/or content of the Methodology (e.g. selection of universe of securities, provision of algorithm). The Methodology Determination Contributor may retain rights in intellectual property provided as part of the Methodology.

Regulated Market is a market or exchange that is regulated and/or supervised by a Regulatory Authority.

Regulatory Authority is a governmental or statutory body with responsibility for securities and/or commodities and futures regulation.

Submission is price estimates, values and rates used for the purpose of determining a Benchmark.

Third Party Benchmark Determination Contributors is collectively Calculation Agents, Data Providers, Data Submitters, Infrastructure Providers and Methodology Determination Contributors.

Total Shares Issued (TSI) is an issuer's total listed shares of eligible security types on the same exchange.

Volume Weighted Average Price (VWAP) is used solely in calculating certain Nasdaq Global Indexes. For those Indexes, the VWAP is received directly from the Genium Consolidated Feed (GCF) and is calculated as the aggregate traded amount for all transactions under certain trading conditions during normal trading hours divided by the corresponding aggregated number of shares traded for the day. If a VWAP is not received on a particular day, the VWAP for such Index Security on the last Index calculation day on which it was possible to calculate such VWAP is used.

Weighting is the calculation of the Index Security market value divided by the Index market value.

7 Disclaimer

Nasdaq may, from time to time, exercise reasonable discretion as it deems appropriate in order to ensure Index integrity, including but not limited to, quantitative inclusion criteria. Nasdaq may also, due to special circumstances, if deemed essential, apply discretionary adjustments to ensure and maintain the high quality of the index construction and calculation. Nasdaq does not guarantee that any Index accurately reflects future market performance.

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