



Index Calculation & Adjustments Rulebook

5 January 2024



Table of Contents

1	Policies & Expert Judgments	3
1.1	Data Sourcing	3
1.2	Guidelines for Elective Corporate Actions	3
2	Definitions	3
2.1	Glossary of Key Terms	3
2.2	Definitions of Variables	8
3	Index Variant Calculations.....	9
4	Adjustments.....	10
4.1	Share Split / Share Consolidation / Reverse Split.....	11
4.2	Bonus Issue / In-kind Stock Dividend	11
4.3	Regular Cash Dividend / Scrip Dividend.....	11
4.4	Special Cash Dividend / Return of Capital.....	12
4.4.1	Pro rata Method / Cap-weight Method.....	12
4.4.2	Into-payer Method / Equal-weight Method.....	12
4.5	Rights Offering	12
4.5.1	Cap-weight Method	13
4.5.2	Equal-weight Method	13
4.6	Merger / Acquisition (M&A)	14
4.6.1	Cap-weight Method for M&A Paid in Constituent's Stock.....	14
4.6.2	M&A Paid Otherwise / Equal-weight Method.....	15
4.7	Spin-off / Stock-paid Partial Acquisition / Other-stock Dividend	15
4.7.1	Spin-off on an Eligible Exchange.....	15
4.7.2	Cap-weight Method for Spin-off on an Ineligible Exchange.....	16
4.7.3	Equal-weight Method for Spin-off on an Ineligible Exchange.....	16



1 Policies & Expert Judgments

1.1 Data Sourcing

Unless otherwise specified, data used in construction and calculation of an Index is sourced from Refinitiv. Additionally, certain data and algorithms are sourced from Syntax.

1.2 Guidelines for Elective Corporate Actions

In cases where Expert Judgment is required to decide how an Index reflects the choice of a hypothetical investor among options provided by the entity performing a corporate action, the Administrator prioritizes the following, generally in this order:

- Greater liquidity
- Greater return or profit
- Lower turnover
- Closer adherence to the intent of the Basket Construction

The Administrator may consult Stakeholders regarding the handling of a corporate action or event in the Index, provided that the consultation consists of gathering facts or estimates of what the Stakeholders and hypothetical investors are likely to experience, rather than gathering preferences of the Stakeholders.

2 Definitions

2.1 Glossary of Key Terms

Administrator

The party ultimately responsible for all aspects of Index calculation and maintenance.

Aggregate Index Market Cap

The sum of all the Constituents' individual Index Market Caps.

Backtest



The result of or act of extrapolating past performance of an Index, generally achieved by creating historical Baskets based on point-in-time data and following the same schedule and construction methodology applied to the Production of the Index.

Basket

A set of Constituents and their Index Shares and/or reset Index Weights that is established at a Rebalancing or Reconstitution and, apart from effects of price movements and isolated adjustments reflecting corporate actions or events, held constant until the next Rebalancing or Reconstitution.

Candidate

An investment instrument, or a proxy thereof, that is a member of the Universe of an Index such that it may enter the screening, ranking, or similar processes of an Index's Rebalancing, Reconstitution, or Intra-Basket Change.

Constituent

A member of a Basket, assigned some non-zero quantity of Index Shares and/or some non-zero Index Weight.

Effective Date

The applicable trade date upon which some action or event (e.g., a corporate action, a Rebalancing, a suspension of trading) occurs at the market open, or equivalently, has occurred at or after the market close on the previous applicable trade date.

Ex-Date

The date starting upon and after which a purchase of shares in some security no longer entitles the purchaser to a certain benefit (e.g., share subscription rights, dividend payments, spun-off shares). Generally, the Ex-Date is defined by the share listing's exchange relative to a shareholder record date defined by the issuer entity.

Expert Judgment

The Administrator's application of its expertise, together with the spirit of the Index's methodology and information from data sources and/or Stakeholders, in deciding the most appropriate methods of the



Index allocating to Constituents and reflecting the performance thereof. In exercising Expert Judgment, the Administrator seeks to reflect — and measure performance hypothetically resulting from — the market reality as experienced by a hypothetical investor who seeks to materially adhere to the Index's methodology and acts rationally and reasonably in so doing.

Family

A collection of Indices that are methodologically similar or created as a complementary set, provided they use the same or similar input data.

Index

A certain methodology of Basket Construction and the resulting series of Baskets, as well as the performance thereof, which may be measured by one or more Index Variants.

Index Dividend

Total per-share amount (expressed in the currency of the Index calculation) of regular cash dividend(s) for the constituent listing gone ex as of market open on the file date.

Index Divisor

A value used in day-to-day Index Calculation to scale the Aggregate Index Market Cap down as desired to the Index Level and to expedite the reflection of corporate actions, Rebalancings and other events that require adjustments to the Index; set arbitrarily at the Base Date to achieve the Base Level as of that time.

Index Level

The numeric value for some point of time within a time series representing the relative performance of an Index or Index Variant; typically assigned an arbitrary starting value (the “Base Level”) of 100 or 1000 at the “Base Date”, which is typically either at Index Inception or at the first date of the Backtest (the “First Value Date”). Mathematically, the Index Level equals the Aggregate Index Market Cap divided by the Index Divisor.

Index Market Cap



The hypothetical market value of all a Constituent's Index Shares as of some time, expressed in the currency of the Index calculation, equal to the product of the Constituent's Index Shares and Index Price at that time.

Index Price

The per-share or otherwise per-unit, per-Index Share price of a Constituent as of some time, expressed in the currency of the Index calculation.

Index Shares

The quantity of a Constituent's shares or equivalent units of ownership represented in an Index as of some time, such that the product of the Constituent's Index Shares and Index Price at each given time equals the Constituent's Index Market Cap at that same time.

Index Variant

One of a set of parallel calculations of an Index's performance, each following a distinct methodology for regular calculation and resulting in a time series of Index Levels potentially different from those of another Variant of the same Index. Typically calculated Index Variants include Price Return, Net Total Return, Gross Total Return, and various currency representations.

Index Weight

The portion of the hypothetical market value of all the Constituents' Index Shares (expressed in the currency of the Index calculation) accounted for by a certain Constituent as of some time.

Inter-Basket Change

A difference between a Basket and its successor Basket, occurring with or arising from a Reconstitution or Rebalancing.

Intra-Basket Change

A change to a Basket occurring apart from a Reconstitution or Rebalancing, not initiating a new Basket. This kind of change includes adjustments necessitated by corporate actions and events.

Local Price



The local-currency per-share price quoted for a Constituent listing as of some time on its exchange. Unless otherwise specified, this is the listing exchange's definition of the closing price; the Local Price may be otherwise defined as the last-traded price, the volume-weighted average price (VWAP), the bid-ask midpoint, etc.

Production

The result of or act of carrying on the maintenance of Baskets and/or calculation of Index Levels for an Index day-to-day, not involving extrapolation into the past or into the future.

Rebalance Date

The trade date immediately preceding the Effective Date at whose market open a new Basket goes live.

Rebalancing

A scheduled reset of the Index Shares and/or Index Weights across a set of Constituents as per the applicable Index methodology, initiating a new Basket. This may include addition or removal of Constituents.

Reconstitution

A scheduled reset of the Constituents and their associated Index Shares and/or Index Weights as per the applicable Index methodology, initiating a new Basket. This involves reevaluating the eligibility of all Candidates and Constituents, and, if applicable, reranking all Candidates eligible for the Reconstitution.

Snapshot Date

The as-of date for data that determines the eligibility of Candidates to become Constituents in a Reconstitution or Rebalancing.

Stakeholder

With respect to a certain Index, a licensee or designated affiliate thereof making regular and appropriate use of the Index data.

Universe

The set of Candidates for a given Index or Family of Indices.



Weight Date

The as-of date for the data that determines the Index Shares that are used to implement the weighting methodology in a Rebalancing.

Price Return

An index variant where changes in Index Level reflect changes in the Constituents' security prices, and does not include ordinary income.

Gross Total Return

An index variant where changes in Index Level reflect changes in the Constituents' security prices and ordinary income received for holding those Constituents. The Gross Total Return variant does not apply a withholding tax on income received.

Net Total Return

An index variant where changes in Index Level reflect changes in the Constituents' security prices and ordinary income received for holding those Constituents. The Net Total Return variant applies a withholding tax on income received.

2.2 Definitions of Variables

The equations within this document reference the following variables:

- **L** is the Index Level of the Index Variant
- **D** is the Index Divisor
- **Q** is the quantity of Index Shares of the Index Constituent
- **O** is the Index Price of the Index Constituent as of the market open
- **C** is the Index Price of the Index Constituent as of the market close
- **I** is the per-share income gone ex for shares of the Index Constituent
- **W** is the tax withholding rate applicable to the per-share income gone ex
- **A** is the ratio of the number of directly related Index Shares held post-event (after receiving additional and/or replacement shares as per the terms of a corporate action) to the number of directly related Index Shares held prior to the event
- **S** is the subscription price (as referenced in a Rights Offering by the Index Constituent)



The equations within this document also use the following in subscript to clarify the variables:

- **t** denotes that the variable is measured as of the Ex-Date or effective date relevant to the event
- **t-1** denotes that the variable is measured as of the trade date immediately preceding the Ex-Date or effective date relevant to the event
- **t+1** denotes that the variable is measured as of the trade date immediately following the Ex-Date or effective date relevant to the event
- **i** denotes that the variable is one of multiple in the same equation that are measured with respect to the same Constituent(s)
- **p** denotes that the variable is measured with respect to the “parent” or originating security
- **s** denotes that the variable is measured with respect to the spin-off originating from a parent

3 Index Variant Calculations

The end-of-day (EOD) Index Level of a (Gross or Net) Total Return Index Variant may be calculated assuming reinvestment of each dividend, coupon or similar per-share income either into only the Index Constituent from which it originates (the “Into-payer Method”) or into all the Index Constituents *pro rata* (the “Pro rata Method”).

The EOD Index Level of any Price Return Index Variant — or of any (Gross or Net) Total Return Index Variant using the Into-payer Method of dividend reinvestment — is calculated equivalently to that of a Laspeyres Price Index, as follows:

$$L_t = L_{t-1} * \frac{\sum_{i=1}^n C_{i,t} * Q_{i,t}}{\sum_{i=1}^n O_{i,t} * Q_{i,t}}$$

The Into-payer Method assumes reinvestment of the income at the corresponding Index Constituent’s market-open Index Price on the Ex-Date, while the Pro rata Method assumes reinvestment of the income at each Index Constituent’s market-close Index Price on the Ex-Date.

The EOD Index Level of a Gross Total Return Index Variant under the Pro rata Method is calculated as follows:



$$L_t = L_{t-1} * \frac{(\sum_{i=1}^n C_{i,t} * Q_{i,t}) + (\sum_{i=1}^n I_{i,t} * Q_{i,t})}{\sum_{i=1}^n O_{i,t} * Q_{i,t}}$$

The EOD Index Level of a Net Total Return Index Variant under the Pro rata Method is calculated as follows:

$$L_t = L_{t-1} * \frac{(\sum_{i=1}^n C_{i,t} * Q_{i,t}) + (\sum_{i=1}^n I_{i,t} * Q_{i,t} * [1 - W_{i,t}])}{\sum_{i=1}^n O_{i,t} * Q_{i,t}}$$

4 Adjustments

Each description of corporate action handling within this section assumes that the corporate action in question is the only one affecting the Index Constituent(s) involved at that time. If multiple corporate actions are effective simultaneously for the same Index Constituent, then the Administrator will need to specify the order in which they occur, which will often be defined by the entity or entities performing the action.

The following symbols represent effects on Index Shares, Index Divisor, and/or Index Price:

— = *remains constant*

▲ = *increases*

▼ = *decreases*

* = *varies, depending on case-by-case info*

The change symbols for Index Divisor, Shares and Price refer only to Constituents that remain in the Index after the action or event is effective. If a Constituent is dropped in the action or event, then that Constituent will no longer have Index Shares, but that decrease to zero Index Shares will not be explicitly stated with either a change symbol or an equation; refer instead to the verbal description of the handling.

Each change symbol representing an increase or decrease is followed by an equation for calculating the corresponding post-event value.



4.1 Share Split / Share Consolidation / Reverse Split

In this kind of event, there is an increase (decrease) in the number of shares for a security, and a corresponding decrease (increase) in the security's per-share price such that the market capitalization of the security remains constant across the event.

— Index Divisor

▲ Index Shares:

$$Q_t = \frac{C_{t-1} * Q_{t-1}}{O_t}$$

▼ Index Price:

$$O_t = \frac{C_{t-1}}{A}$$

4.2 Bonus Issue / In-kind Stock Dividend

In this kind of event, there is an increase in the number of shares for a security, and a presumed corresponding decrease in the security's per-share price such that the market capitalization of the security remains constant across the event.

— Index Divisor

▲ Index Shares:

$$Q_t = \frac{C_{t-1} * Q_{t-1}}{O_t}$$

▼ Index Price:

$$O_t = \frac{C_{t-1}}{A}$$

4.3 Regular Cash Dividend / Scrip Dividend

In this kind of event, there is a per-share payment scheduled for each holder of eligible shares, and a presumed corresponding decrease in the security's per-share price. The adjustments are reflected in (Gross or Net) Total Return Index Variant(s) only upon the market close of the ex-dividend date. Scrip Dividends are treated as if all shareholders choose the cash option rather than stock.



4.4 Special Cash Dividend / Return of Capital

In this kind of event, there is a per-share payment scheduled for each holder of eligible shares, and a presumed corresponding decrease in the security's per-share price. Unlike a Regular Cash Dividend, a Special Cash Dividend is not expected to recur, and rather than being reflected only in the (Gross or Net) Total Return Index Variant(s), it is reflected also in the Price Return Index Variant(s). The adjustments are reflected upon the market open of the ex-dividend date.

4.4.1 Pro rata Method / Cap-weight Method

▼ Index Divisor:

$$D_t = D_{t-1} * \frac{\sum_{i=1}^n O_{i,t} * Q_{i,t}}{\sum_{i=1}^n C_{i,t-1} * Q_{i,t-1}}$$

— Index Shares

▼ Index Price:

$$O_t = C_{t-1} - I_t$$

4.4.2 Into-payer Method / Equal-weight Method

— Index Divisor

▲ Index Shares:

$$Q_t = \frac{C_{t-1} * Q_{t-1}}{O_t}$$

▼ Index Price:

$$O_t = C_{t-1} - I_t$$

4.5 Rights Offering

In this kind of event, the share issuer exclusively offers to sell additional shares to current shareholders at a fixed price, usually at a discount compared to the current market price of the shares already held.

If in the money as of the market close on the trade date immediately preceding the Ex-Date, the offered Rights are exercised effective at the market open on the Ex-Date (where the Ex-Date is the first day in the



subscription period and the first day when new purchases of the regular, non-subscription shares do not provide rights to the subscription shares — not to be confused with the expiration date, when the subscription rights expire and the subscription period ends).

For the purpose of determining the offered Rights to be either in or out of the money, the amount of any upcoming dividend for which the Subscription Shares will be ineligible (despite being held on or before the Record Date used for the extant shares) will be added to the Subscription Price, as follows.

The offered Rights are considered in the money if:

$$S_i + I_i < C_{i,t-1}$$

The offered Rights are considered out of the money if:

$$S_i + I_i \geq C_{i,t-1}$$

4.5.1 Cap-weight Method

The Index Market Capitalization of the Constituent is increased, with a corresponding increase in the Index Weight. The Divisor increases to maintain the Index Level across the event.

▲ Index Divisor:

$$D_t = D_{t-1} * \frac{\sum_{i=1}^n O_{i,t} * Q_{i,t}}{\sum_{i=1}^n C_{i,t-1} * Q_{i,t-1}}$$

▲ Index Shares:

$$Q_{i,t} = Q_{i,t-1} * A_i$$

▼ Index Price

$$O_{i,t} = \frac{C_{i,t-1} * Q_{i,t-1} + S_i * (A_i - 1) * Q_{i,t-1}}{Q_{i,t-1} * A_i}$$

4.5.2 Equal-weight Method

The Index Shares are adjusted to maintain the Index Market Capitalization of the Constituent across the event. There is no Divisor adjustment.



— Index Divisor

▲ Index Shares:

$$Q_{i,t} = \frac{Q_{i,t-1} * C_{i,t-1}}{O_{i,t}}$$

▼ Index Price:

$$O_{i,t} = \frac{C_{i,t-1} * Q_{i,t-1} + S_i * (A_i - 1) * Q_{i,t-1}}{Q_{i,t-1} * A_i}$$

4.6 Merger / Acquisition (M&A)

In this kind of event, an entity merges with or acquires a Constituent in a way that predictably affects the shares of the Constituent security. If a Constituent engages in M&A with a non-Constituent and remains listed with the same number and value of shares outstanding after the event, then no adjustment to the Index is required.

4.6.1 Cap-weight Method for M&A Paid in Constituent's Stock

In a case where both parties in the M&A are Constituents and the target's shareholders are compensated at least partially in shares of the acquirer's stock, the Index Shares of the acquiring Constituent are increased as per the deal terms while the target of the acquisition is dropped from the Index, with a possible adjustment to the Index Divisor as needed to cancel out any resulting change to the Aggregate Index Market Cap (whether to redistribute a cash portion of the compensation *pro rata*, or to address a discrepancy between the market values of the target's liquidated shares and the acquirer's issued shares).

* Index Divisor:

$$D_t = D_{t-1} * \frac{\sum_{i=1}^n O_{i,t} * Q_{i,t}}{\sum_{i=1}^n C_{i,t-1} * Q_{i,t-1}}$$

▲ Index Shares:

$$Q_{i,t} = Q_{i,t-1} * A_i$$

— Index Price



4.6.2 M&A Paid Otherwise / Equal-weight Method

In any M&A case that requires an adjustment but does not fall under 4.6.1 (e.g., a Constituent being acquired by a non-Constituent, an acquisition compensated fully in cash), as well as in any M&A case where the Index uses the Equal-weight Method, the target of the acquisition is dropped from the Index and its Index Weight is redistributed *pro rata* via an adjustment to the Index Divisor.

▼ Index Divisor:

$$D_t = D_{t-1} * \frac{\sum_{i=1}^n O_{i,t} * Q_{i,t}}{\sum_{i=1}^n C_{i,t-1} * Q_{i,t-1}}$$

— Index Shares

— Index Price

4.7 Spin-off / Stock-paid Partial Acquisition / Other-stock

Dividend

In this kind of event, the shareholder receives shares of a different security, and there is a corresponding decrease in the value of the originating security (usually due to a portion of the share issuer splitting off to become or join with a separate issuer). In the formulas below, A_{p+s} is the ratio of the sum of the parent's share count and the spin-off share count to the parent's share count.

4.7.1 Spin-off of Eligible Security Type on an Eligible Exchange

Effective for the Ex-Date's market open, the spin-off is added to the Index at an Index Price of zero (its Index Shares set as per the terms of the corporate action). Upon reaching the market close on the Ex-Date, the spin-off is treated as a normal Constituent until the next Rebalancing, and no adjustment is made to the parent Constituent.

— Index Divisor

▲ Index Shares:

$$Q_{s,t} = Q_{p,t-1} * (A_{p+s} - 1)$$

— Index Price



4.7.2 Cap-weight Method for Spin-off Ineligible Due to Security Type or Exchange

Effective for the Ex-Date's market open, the spin-off is added to the Index at an Index Price of zero (its Index Shares set as per the terms of the corporate action). Upon reaching the market close on the Ex-Date, the spin-off is dropped from the Index and its Index Weight is redistributed *pro rata* via an adjustment to the Index Divisor.

▼ Index Divisor:

$$D_{t+1} = D_t * \frac{\sum_{i=1}^n O_{i,t+1} * Q_{i,t+1}}{\sum_{i=1}^n C_{i,t} * Q_{i,t}}$$

▲ Index Shares:

$$Q_{s,t} = Q_{p,t-1} * (A_{p+s} - 1)$$

— Index Price

4.7.3 Equal-weight Method for Spin-off Ineligible Due to Security Type or Exchange

Effective for the Ex-Date's market open, the spin-off is added to the Index at an Index Price of zero (its Index Shares set as per the terms of the corporate action). Upon reaching the market close on the Ex-Date, the spin-off is dropped from the Index and its Index Weight is reinvested into the parent Constituent for the next market open.

— Index Divisor

▲ Index Shares of spin-off:

$$Q_{s,t} = Q_{p,t-1} * (A_{p+s} - 1)$$

▲ Index Shares of parent:

$$Q_{p,t+1} = Q_{p,t} + \frac{C_{s,t} * Q_{s,t}}{C_{p,t}}$$

— Index Price