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# DAX Equity Index Calculation Guide

STOXX.com



**STOXX**

25 years of index innovation

Part of  
 DEUTSCHE BÖRSE  
GROUP

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# 1. INTRODUCTION TO THE DAX INDEX GUIDES

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## 1.1. INTRODUCTION TO THE DAX INDEX GUIDES

- » The **DAX Equity Index Methodology Guide** contains the equity index specific rules regarding the construction and derivation of the portfolio based indices, the individual component selection process and weighting schemes
- » The **DAX Equity Index Calculation Guide** describes the calculation and dissemination processes of the DAX equity indices, including index formulas and adjustments due to corporate actions
- » The **DAX Strategy Index Guide** contains the formulas and description of all DAX strategy indices
- » The **Guide to the iNAV Calculation** contains details on the calculation of indicative net asset values (iNAV)
- » The **Guide to Industry Classifications used by STOXX Ltd.** contains general information pertaining to industry classifications used in DAX indices
- » The **Guide to Reference Calculations used by STOXX Ltd.** provides a detailed view of definitions and formulas of the calculations as utilized in the reports, factsheets, indices and presentations produced by STOXX

# 2. GENERAL PRINCIPLES

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## 2.1. PRINCIPLES FOR INDEX CALCULATION

The DAX Equity Indices are calculated based on the following principles whenever possible:

- » Representative: The indices aim to best represent the performance of the target market
- » Tradeable: Index components are tradeable in relation to the size of the companies and the target market
- » Replicable: Performance of indices can be tracked by an actual portfolio
- » Stable: High degree of index continuity
- » Rules-based: Index calculation and changes to the index composition follow transparent rules
- » Predictable: Changes to index rules are publicly announced with a reasonable notice period (generally at least 2 trading days), and are never implemented retroactively
- » Transparent: Decisions are based on public information

## 2.2. ADVISORY BODY

The **Advisory Board for Equity Indices** (“Arbeitskreis Aktienindizes”) provides advice on topics related to indices administered by STOXX and referenced in this guide. It acts as an advisory body based on the basic principles mentioned and the rules of these guidelines. The Advisory Board does not take binding decisions on behalf of STOXX.

The Advisory Board for Equity Indices consists of employees appointed by STOXX and representatives of leading national and international financial institutions. The Advisory Board's meetings usually take place not later than the sixth trading day in March and September. Extraordinary meetings may also be convened.

## 2.3. DISCRETION

Save for the cases expressly described in this Guide, the index methodology is entirely rule-based and automatic. Discretion only applies if expressly stated and must be exercised as provided for in this Guide.

### 2.3.1. EXERCISE OF DISCRETION

Discretion may only be exercised by STOXX Committee(s) (as defined hereafter) with a view to resolve issues arising in maintaining the prevailing index methodology in response to events, with an overarching aim to accurately and reliably measure the market or economic realities as defined in this Guide.

Discretion shall be exercised in line with the following principles:

- » The body or person(s) exercising discretion must not be affected by a conflict of interest;
  - » The body or person(s) exercising discretion must have the requisite skills, knowledge and experience to exercise such discretion;
  - » All facts and circumstances relevant for the exercise of discretion must have been established and properly documented prior to the exercise of discretion;
  - » The exercise of discretion must comply with all applicable laws and regulations;
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## 2. GENERAL PRINCIPLES

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- » The body or person(s) exercising discretion must act on the basis of the relevant facts and circumstances only, must give proper weight to the various considerations and ignore irrelevant facts and circumstances;
- » The body or person(s) exercising discretion must act with a view to maintain the integrity of the market or economic reality by aiming to ensure that indices remain representative and can be replicated, taking into account, inter alia, some, or all of the following:
  - Relevance of the event to the DAX indices
  - Trading accessibility of the affected market
  - Availability of alternative markets
  - Ability of market participants to replicate the index or, where applicable, the results of the index review
  - Public information related to the events and their development in the foreseeable future
- » The body or person(s) exercising discretion must act honestly, reasonably, impartially and in good faith.

As part of the decision-making process, STOXX may consult with external stakeholders.

**Discretionary Rule:** *Any exercise of discretion must take into account the rationale of the index, the purpose of the rules with regard to which discretion is exercised, the objective to preserve market integrity and reliability of the index calculation to avoid undue market impact, the technical feasibility and economic reasonability, and the interest of licensees or investors.*

The cases in which STOXX Ltd. may exercise discretion regarding the index methodology and its application are noted in the respective rules of this Guide.

The following bodies (hereafter each of them separately also referred to as “STOXX Committee”) are involved in the decision-making process relevant for the indices governed by this Guide:

- » Product Approval Committee (PAC),
- » Index Operations Committee (IOC),
- » Index Management Committee (IMC),
- » Index Governance Committee (IGC),
- » Oversight Committee (OC),
- » Management Board (MB).

The description of STOXX Governance Structure is available on [www.stoxx.com](http://www.stoxx.com) in the section Resources / Index Regulations.

### 2.4. INDEX TERMINATION POLICY

For termination of an index or an index family that underlie financial products available for trading on the market, to the knowledge of STOXX, a market consultation will be conducted by STOXX in advance of the index termination in line with STOXX Transition Policy and STOXX Consultation Policy (publicly available on STOXX website). The length of the consultation period will be defined in advance based on the specific issues of each proposed termination subject to STOXX Benchmark Transition Policy (Discretionary Rule, see section 2.3). During the

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## 2. GENERAL PRINCIPLES

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consultation period, clients and third parties will have the chance to share their concerns regarding the termination of the index or index family. Based on the collected feedback, STOXX may review its decision to terminate an index or an index family (Discretionary Rule, see section 2.3). At the end of the consultation period, STOXX will publicly announce its final decision about the termination. A transition period will be granted in the event of termination (Discretionary Rule, see section 2.3).

For termination of an index or an index family that do not underlie financial products available for trading on the market, no market consultation will be conducted.

# 3. DISSEMINATION

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## 3.1. DISSEMINATION CALENDARS

The indices are disseminated Monday through Friday between 00:00 and 22:15 CET, according to the calendars defined as follows:

**Xetra Calendar:** every weekday except January 1st, Good Friday, Easter Monday, May 1st, December 25th and December 26th.

**STOXX Global Calendar:** every weekday except January 1.

In exceptional cases, the STOXX Index Governance committee can decide about changes to the dissemination calendar.

## 3.2. DISSEMINATION PERIOD

Each index has a defined dissemination start and end time. The actual dissemination of each index is triggered, when the first opening stock price for that index is received within these time frames.

For the latest update, please refer to the following links:  
Dissemination period: <https://www.stoxx.com/res-dissemination>

Individual index dissemination times: [http://www.stoxx.com/data/vendor\\_codes.html](http://www.stoxx.com/data/vendor_codes.html)

## 3.3. REAL-TIME AND END-OF-DAY INDICES

The indices are calculated and disseminated at different frequency standards:

**Real-time indices:** Generally disseminated every second, every 15 seconds or every 60 seconds, depending on the respective index.

**End-of-day indices:** Calculated and disseminated once a day at the end of the index dissemination period.

All indices including their frequencies are listed in the data vendor code file:  
<https://www.stoxx.com/data-vendor-codes>

The index values are disseminated over the Consolidated Exchange Feed (CEF) of Deutsche Börse and can be procured directly from data vendors. For further information:  
<https://www.stoxx.com/res-dissemination>



# 4. INPUT DATA

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## 4.1. SOURCES

The input data sources for the index calculation include:

Real-time and end-of-day stock prices and currency exchange rates provided by Refinitiv.

## 4.2. MONITORING

The real-time input data feeds for the index calculation are monitored continuously to ensure data quality and availability. Data monitoring controls include data filters according to each exchange specification, outlier detection mechanisms, quality assurance tools and verification against secondary sources.

## 4.3. DATA ACCURACY

The data accuracy for the following factors of the index calculation is defined as (unless stated differently in the individual index methodologies):

- Input data (e.g. pricing and currency rates) and other underlying data: rounded to seven decimal places
- Index divisors: rounded to integer numbers
- Market capitalization: rounded to two decimal places
- Free float factors: rounded to four decimal places
- Product of (number of shares x Free float factor x weighting cap factor): rounded to integer numbers
- Product of (weighting factor x weighting cap factor): rounded to integer numbers
- Index values: rounded to two decimal places for dissemination
- Weights: expressed in percentage with 5 decimals

## 4.4. CURRENCY RATES

All **real-time indices** use the following currency rates:

- From 09:00 to 17:30 CET, the mid between the latest real-time bid and ask prices is used as the currency rate in order to calculate the indices for the Europe region.
- From 00:00 to 22:00 CET, the mid between the latest real-time bid and ask prices is used as the currency rate in order to calculate International Indices.

All **end-of-day indices**, as well as the closing procedure for the real-time indices, use currency rates as follows:

- For Europe region, fixed foreign exchange rates (WM closing spot rates from 17:00 CET) are used for the calculation of the indices from 17:30:15 CET.

## 4. INPUT DATA

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- For International Indices, fixed foreign exchange rates are used for the calculation of the indices from 22:00:15 CET

The fixed foreign exchange rates are provided by WM/Refinitiv – for further information refer to Refinitiv page “WMRSPOT01” or Bloomberg page “WMCO”.

### 4.5. STOCK PRICES

The data hierarchy used to process stock prices and calculate the DAX equity indices are as follows: All data is provided by Refinitiv. For all non-equity indices the individual index methodologies contain further descriptions about the pricing sources and types.

**Opening price:** the first traded price during the official trading hours of the stock’s trading system; until this is available, the previous day’s closing/adjusted price is used.

**Intraday price:** the currently traded price during the official trading hours of the stock’s trading system. When the stock is not traded, the last available stock price is used, this can either be the last available intraday stock price (e.g. if the stock is temporarily suspended) or the last available closing/adjusted price (e.g. if the stock exchange is closed).

**Closing price:** the last traded price or auction price during the official trading hours of the stock’s trading system is used. If the stock has not been traded all day, then the previous day’s closing/adjusted price is used.

**Adjusted price:** the closing price is adjusted to reflect a stock’s corporate action that will be effective the next trading day.

Stock prices in local currency are converted to EUR first before being converted to the index currency.

# 5. AVAILABLE DATA

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## 5.1. OPEN QUOTATIONS

The index open quotation takes the opening prices of all stocks in a real-time index into account. This value indicates what the index value would have been, if all opening stock prices had been received at the same time.

The index open quotations for the real-time indices are calculated either as soon as all the relevant opening stock prices are received or, at the latest, at 10:30 CET. If an opening stock price is unavailable at 10:30 CET, the stock's previous day's closing/adjusted price is used.

Non-EUR stock prices are converted into EUR using the currency rate valid at the time of the opening stock price (or previous day's closing/adjusted price), i.e. opening stock prices are converted using real-time currency rates and the previous day's adjusted closing prices are converted using WM fixed exchange rates of the day before.

## 5.2. INDEX SETTLEMENT VALUES

For DAX, MDAX, TecDAX, DivDAX and DAX 50 ESG a settlement price is calculated once a day, using the prices determined in the course of the midday intra-day auction on Xetra. If no price results from the midday intra-day auction for a company, the last price available before the intraday auction is used for calculation.

## 5.3. DAILY REPORTS

The daily reports for the DAX indices are published after the index dissemination period for the relevant region on the STOXX index data distribution system. The daily reports include the following sets of data:

- Stock prices: both closing and adjusted prices for all components of the DAX indices.
- Stock reference data and identifiers for all components of the DAX indices.
- Index-related values: closing values, market capitalization and divisors for all indices.
- Currency rates to EUR for all currencies used in any DAX indices.
- Corporate actions and dividends effective the next trading day.
- Other information like weightings, corporate actions and dividend forecasts.

## 5.4. CORPORATE ACTION FORECASTS

The corporate action forecasts are updated daily and include information about future adjustments induced by confirmed corporate events. This includes, but it is not limited to:

Mergers, takeovers, spin-offs, price and shares adjustment, and IPOs.

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# 5. AVAILABLE DATA

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All corporate actions forecasts are subject to change. Customers are recommended to download regularly the forecast from the website and subscribe to corporate actions alerts to receive notification for the latest changes.

## 5.5. MONTHLY REPORTS

The monthly reports are published each month and include the following data for selected indices:

- » Index performance
- » Index fundamentals
- » Index correlation
- » Factsheets for various indices with information on fundamental ratios, performance data and other statistics

## 5.6. SELECTION LISTS

Selection lists are produced for indices with a fixed number of constituents in order to:

- » indicate possible changes in the composition of the index at the time of the next quarterly / semi-annual / annual review, and
- » determine replacements for any component deleted from the indices due to corporate actions.

The STOXX Index Governance Committee(s) may decide to update the selection lists in between the regular publication dates to reflect extraordinary market movements and underlying data changes (Discretionary Rule, see section 2.3).

## 5.7. INDEX REVIEW LISTS

Each index has defined dates, when the new constituents and the underlying data (shares, free float, weighting cap factors) is announced and implemented. The component and the underlying data announcement dates differ by index category and are therefore covered in the respective DAX Methodology Guides. The quarterly implementation for all indices is by default on the third Friday in March, June, September and December, otherwise, specified in the respective DAX Methodology Guides.

## 5.8. STOXX NEWS AND INDEX DATA NOTIFICATIONS

For customers a subscription to e-mail notifications is available on the website. Notifications are sent out for short-term corporate actions and dividend changes, unscheduled composition changes due to mergers, spin-offs and delistings, periodic review announcements, index calculation errors, real-time input feed availability, daily report publication, new index launches and general information from STOXX.

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# 6. INDEX PARAMETERS

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## 6.1. PRICE AND RETURN INDICES

All indices are calculated as price and return indices. Dividend payments are invested in return indices only and neglected in price indices. Return indices are available as gross-return versions, calculated with a full dividend re-investment and as net-return investment, where dividends minus the withholding taxes are invested.

## 6.2. INDICES IN EUR, USD AND OTHER CURRENCIES

All stock prices of the indices are converted to EUR and USD, as follows:

- EUR indices: Non-EUR stock prices are converted to EUR for the index calculation.
- USD indices: Non-EUR stock prices are converted to EUR first (as above), and then - together with the EUR stock prices - converted to USD for the index calculation.

Some indices are additionally available in other currencies. The following rule applies:

Indices in other currencies: non-EUR stock prices are converted to EUR first, and then - together with the EUR stock prices - converted to the appropriate index currency for the index calculation.

# 7. INDEX VALUE CALCULATION

## 7.1. INDEX FORMULAS

The indices are calculated with the Laspeyres formula, which measures price changes against a fixed base quantity weight. Each index has a unique index divisor, which is adjusted to maintain the continuity of the index's values across changes due to corporate actions.

### 7.1.1. MARKET CAPITALIZATION-WEIGHTED

The indices are calculated with the Laspeyres formula, which measures price changes against a fixed base quantity weight:

$$\text{Index}_t = \frac{\sum_{i=1}^n (p_{it} \cdot s_{it} \cdot ff_{it} \cdot cf_{it} \cdot x_{it})}{D_t} = \frac{M_t}{D_t}$$

Where:

- $t$  = Time the index is computed
- $n$  = Number of companies in the index
- $p_{it}$  = Price of company (i) at time (t)
- $s_{it}$  = Number of shares of company (i) at time (t)
- $ff_{it}$  = Free float factor of company (i) at time (t)
- $cf_{it}$  = Weighting cap factor of company (i) at time (t)
- $x_{it}$  = Exchange rate from local currency into index currency for company (i) at time (t)
- $M_t$  = Free float market capitalization of the index at time (t)
- $D_t$  = Divisor of the index at time (t)

### 7.1.2. PRICE-WEIGHTED WITH WEIGHTING FACTORS

The indices are weighted based on the components' stock prices and weighting factors:

$$\text{Index}_t = \frac{\sum_{i=1}^n (p_{it} \cdot wf_{it} \cdot cf_{it} \cdot x_{it})}{D_t} = \frac{M_t}{D_t}$$

Where:

- $t$  = Time the index is computed
- $n$  = Number of companies in the index
- $p_{it}$  = Price of company (i) at time (t)
- $wf_{it}$  = Weighting factor of company (i) at time (t)
- $cf_{it}$  = Weighting cap factor of company (i) at time (t)
- $x_{it}$  = Exchange rate from local currency into index currency for company (i) at time (t)
- $M_t$  = Total 'units' of the index at time (t)
- $D_t$  = Divisor of the index at time (t)

# 7. INDEX VALUE CALCULATION

## 7.2. INDEX DIVISOR CALCULATION

### 7.2.1. MARKET CAPITALIZATION-WEIGHTED

Each index has a unique index divisor that is adjusted to maintain the continuity of the index's values across changes due to corporate actions. Changes in weights due to corporate actions are distributed proportionally across all index components. The index divisors are calculated as follows:

$$D_{t+1} = D_t \cdot \frac{\sum_{i=1}^n (p_{it} \cdot s_{it} \cdot ff_{it} \cdot cf_{it} \cdot x_{it}) \pm \Delta MC_{t+1}}{\sum_{i=1}^n (p_{it} \cdot s_{it} \cdot ff_{it} \cdot cf_{it} \cdot x_{it})}$$

Where:

- $D_{t+1}$  = Divisor at time (t+1)
- $D_t$  = Divisor at time (t)
- $n$  = Number of companies in the index
- $p_{it}$  = Price of company (i) at time (t)
- $s_{it}$  = Number of shares of company (i) at time (t)
- $ff_{it}$  = Free float factor of company (i) at time (t)
- $cf_{it}$  = Weighting cap factor of company (i) at time (t) (only applicable if index is capped)
- $x_{it}$  = Exchange rate from local currency into index currency for company (i) at time (t)
- $\Delta MC_{t+1}$  = The difference between the closing market capitalization of the index and the adjusted closing market capitalization of the index:  
For companies with corporate actions effective at time (t+1), the free float market capitalization is calculated with adjusted closing prices, the new number of shares at time (t+1) and the free float factor at time (t+1) minus the free float market capitalization calculated with closing prices, number of shares at time (t) and free float factor at time (t).

### 7.2.2. PRICE-WEIGHTED WITH WEIGHTING FACTORS

Each index has a unique index divisor that is adjusted to maintain the continuity of the index's values across changes due to corporate actions. Changes in weights due to corporate actions are distributed proportionally across all index components. The index divisors are calculated as follows:

$$D_{t+1} = D_t \cdot \frac{\sum_{i=1}^n (p_{it} \cdot wf_{it} \cdot cf_{it} \cdot x_{it}) \pm \Delta MC_{t+1}}{\sum_{i=1}^n (p_{it} \cdot wf_{it} \cdot cf_{it} \cdot x_{it})}$$

Where:

- $D_{t+1}$  = Divisor at time (t+1)
- $D_t$  = Divisor at time (t)
- $n$  = Number of companies in the index
- $p_{it}$  = Price of company (i) at time (t)
- $wf_{it}$  = Weighting factor of company (i) at time (t)
- $cf_{it}$  = Weighting cap factor of company (i) at time (t) (only applicable if index is capped)
- $x_{it}$  = Exchange rate from local currency into index currency for company (i) at time (t)
- $\Delta MC_{t+1}$  = The difference between the units in the index at closing and the units in the index after calculation parameters have been adjusted:

# 7. INDEX VALUE CALCULATION

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For companies with corporate actions effective at time (t+1), the units in the index are calculated with adjusted closing prices, the adjusted weighting factors at time (t+1) and the adjusted weighting cap factors at time (t+1) minus the units in the index calculated with closing prices, weighting factors at time (t) and weighting cap factors at time (t).



# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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## 8.1. CORPORATE ACTIONS

The list of corporate actions indicates the calculation of the adjusted prices and the impact on the index divisor. All corporate actions and dividends are implemented at the effective date (ex-date); i.e. with corporate actions where cash or other corporate assets are distributed to shareholders, the price of the stock will drop on the ex-date. Changes in weights due to corporate actions are distributed proportionally across all index components and equal an investment into the portfolio.

Withholding taxes are considered for all corporate actions and dividends where applicable and defined per country. If STOXX becomes aware of an exception on the taxation; e.g. in case a company confirms a deviating tax treatment the exception will be used for the index calculation.

For the latest update on withholding taxes, please refer to the following link:

<https://www.stoxx.com/withholding-taxes>

For the corporate actions listed below, the following assumptions apply: Shareholders will receive "B" new shares for every "A" share held (where applicable).

$\tau$	= withholding tax
$Div_t$	= dividend amount announced by company
$p_{t-1}$	= closing price on the day before the ex-date
$p_{adj}$	= new adjusted price
$wf_{t-1}$	= weighting factor on the day before the ex-date
$wf_{adj}$	= new adjusted weighting factor
$s_{t-1}$	= number of shares on the day before the ex-date
$s_{adj}$	= new adjusted number of shares
$SP$	= subscription price

All adjusted prices consider withholding taxes, where applicable, based on the new shares being distributed:  $B \times (1 - \tau)$ , where applicable).

If the new shares have a dividend disadvantage - i.e., the new shares have a different dividend from that paid on the old shares - the price for these new shares will be adjusted according to the gross dividend amount.

### 8.1.1. CASH DIVIDEND

**Divisor**  
decreases

Cash distributions that are within the scope of the regular dividend policy or that the company defines as a regular distribution.

Gross Return Indices:

$$p_{adj} = p_{t-1} - Div_t$$

Net Return Indices:

$$p_{adj} = p_{t-1} - Div_t \times (1 - \tau^*)$$

# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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\* If a withholding tax ( $\tau$ ) applies then  $\tau > 0$ , else  $\tau = 0$ .  
Price indices are not affected.

## 8.1.2. SPECIAL CASH DIVIDEND

Cash distributions that are **outside** the scope of the regular dividend policy or that the company defines as an extraordinary distribution.

Divisor  
decreases

Gross Return Indices:

$$p_{adj} = p_{t-1} - Div_t$$

Net Return and Price Indices:

$$p_{adj} = p_{t-1} - Div_t \times (1 - \tau^*)$$

\* If a withholding tax ( $\tau$ ) applies then  $\tau > 0$ , else  $\tau = 0$ .

## 8.1.3. SPLIT AND REVERSE SPLIT

$$p_{adj} = p_{t-1} \times A / B$$

Divisor

a) For float market capitalization weighted indices:

unchanged

$$s_{adj} = s_{t-1} \times B / A$$

b) For price weighted indices with weighting factors:

unchanged

$$wf_{adj} = wf_{t-1} \times B / A$$

## 8.1.4. RIGHTS OFFERING

If the subscription price (SP) is not available or equal to or greater than the closing price on the day before the ex-date (out of the money), then no adjustment is made.

If the subscription price (SP) is available as a price range and not as a fixed price, the price and share adjustment is performed only if both lower and upper range are in the money. The average value between lower and upper range will be used as a subscription price.

### 8.1.4.1. STANDARD RIGHTS ISSUE

$$p_{adj} = (p_{t-1} \times A + SP \times B) / (A + B)$$

Divisor

a) For free float market capitalization weighted indices:

increases

$$s_{adj} = s_{t-1} \times (A + B) / A$$


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# 8. CORPORATE ACTIONS AND ADJUSTMENTS

b) For price weighted indices with weighting factors: unchanged

$$wf_{adj} = wf_{t-1} \times p_{t-1} / p_{adj}$$

## 8.1.4.2. HIGHLY DILUTIVE RIGHTS ISSUE

### Divisor

A rights offering is considered as Highly Dilutive Rights Issue (HDRI) when the share ratio is larger or equal to 200% ( $B/A \geq 2$ ).

Scenario 1) If the rights are tradable on ex-date on the same eligible stock exchange as the parent company:

- The rights will be included into the indices with a theoretical price on the ex-date with the same parameters as the parent company. unchanged on ex-date
- The rights will be removed at the close of the day they start to trade based on its closing price. decreases after deletion of rights
- For free float market capitalization (ffmcap) weighted indices only: If the rights issue results into listing of new shares and satisfy the criteria laid out in the section 8.2, then the number of shares will be increased after the new shares have been listed. for ffmcap indices only: increases on the day of the share increase

Scenario 2) If the rights are not tradable on ex-date or not tradable on the ex-date on the same eligible stock exchange as the parent company:

- Only a price adjustment will be applied. decreases on ex-date
- For market capitalization weighted indices only: If the rights issue results into listing of new shares and satisfy the criteria laid out in the section 8.2, then the number of shares will be increased after the new shares have been listed. for ffmcap indices only: increases on the day of the share increase

## 8.1.5. STOCK DIVIDEND

### 8.1.5.1. ORDINARY STOCK DIVIDEND

### Divisor

$$p_{adj} = p_{t-1} \times A / (A + B)$$

a) For free float market capitalization weighted indices: unchanged

$$s_{adj} = s_{t-1} \times (A + B) / A$$

b) For price weighted indices with weighting factors: unchanged

$$wf_{adj} = wf_{t-1} \times (A + B) / A$$

# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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## 8.1.5.2. STOCK DIVIDEND FROM TREASURY STOCK

### Divisor

Stock dividends from treasury stocks will be adjusted as cash dividends.

$$p_{adj} = p_{t-1} - p_{t-1} \times B / (A + B)$$

- |  |           |
|--|-----------|
| a) If it is considered as <b>regular</b> cash dividend, only the Gross and Net Return indices are adjusted.      | decreases |
| b) If it is considered as <b>special</b> cash dividend, Gross Return, Net Return and Price indices are adjusted. | decreases |

## 8.1.5.3. STOCK DIVIDEND FROM REDEEMABLE SHARES

### Divisor

Stock dividends from redeemable shares will be adjusted as cash dividends. In such a case, redeemable shares are considered as:

- A separated share line with a fixed price.
- Ordinary shares that are self-tendered on the same ex-date.

$$p_{adj} = p_{t-1} - p_{t-1} \times B / (A + B)$$

- |  |           |
|--|-----------|
| a) If it is considered as <b>regular</b> cash dividend, only the Gross and Net Return indices are adjusted.      | decreases |
| b) If it is considered as <b>special</b> cash dividend, Gross Return, Net Return and Price indices are adjusted. | decreases |

## 8.1.5.4. STOCK DIVIDEND OF ANOTHER COMPANY

### Divisor

$$p_{adj} = [(p_{t-1} \times A) - [(1 - \tau^*) \times \text{price of the other company} \times B]] / A$$

decreases

\* If a withholding tax ( $\tau$ ) applies then  $\tau > 0$ , else  $\tau = 0$ .

## 8.1.6. RETURN OF CAPITAL AND SHARE CONSOLIDATION

### Divisor

The event will be applied as a combination of cash/special dividend together with a reverse split.

- |   |           |
|---|-----------|
| a) If the return of capital is considered as <b>regular</b> cash dividend, then the treatment for Gross and Net Return of section 8.1.1 and 8.1.3 apply while the treatment for Price indices of section 8.1.3 applies accordingly. | decreases |
|---|-----------|
-

# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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- b) If the return of capital is considered as **special** cash dividend, then the treatment for Gross Return, Net Return and Price indices of section 8.1.2 and 8.1.3 apply accordingly. decreases

$$p_{adj} = [p_{t-1} - \text{capital return announced by the company} \times (1 - \tau^*)] \times A/B$$

\* If a withholding tax ( $\tau$ ) applies then  $\tau > 0$ , else  $\tau = 0$ .

- a) For free float market capitalization weighted indices:

$$s_{adj} = s_{t-1} \times B / A$$

- b) For price weighted indices with weighting factors:

$$wf_{adj} = wf_{t-1} \times B / A$$

## 8.1.7. REPURCHASE OF SHARES/SELF-TENDER

Divisor

$$p_{adj} = [(p_{t-1} \times s_{t-1}) - (\text{tender price} \times \text{number of tendered shares})] / s_{adj}$$

- a) For free float market capitalization weighted indices: decreases

$$s_{adj} = s_{t-1} - \text{number of tendered shares}$$

- b) For price weighted indices with weighting factors: unchanged

$$wf_{adj} = wf_{t-1} \times p_{t-1} / p_{adj}$$

## 8.1.8. SPIN-OFF

Divisor

The adjusted price ( $p_{adj}$ ), the number of shares before the ex-date ( $s_{t-1}$ ) and the weighting factor on the day before the ex-date ( $wf_{t-1}$ ) refer to the parent company. For further details on spin-offs, please refer to section 8.4

$$p_{adj} = (p_{t-1} \times A - \text{price of spun\_off shares} \times B) / A$$

unchanged  
on ex-date

- a) For free float market capitalization weighted indices:

$$\text{New number of shares for the spun-off company} = s_{t-1} \times B$$

- b) For price weighted indices with weighting factors:

$$\text{New weighting factor for the spun-off company} = wf_{t-1} \times B / A$$

unchanged  
on ex-date

## 8.1.9. COMBINATION OF STOCK DISTRIBUTION (DIVIDEND OR SPLIT) AND RIGHTS OFFERING

Divisor

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# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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For the below corporate actions, the following additional assumptions apply:

Shareholders receive “B” new shares from the distribution and “C” new shares from the rights offering for every “A” share held.

If “A” is not equal to one, all the following ‘new number of shares’ formulas need to be divided by “A”:

- a) If rights are applicable after stock distribution (one action applicable to another) increases

$$p_{adj} = [p_{t-1} \times A + SP \times C(1 + B/A)] / [(A + B) \times (1 + C/A)]$$

$$s_{adj} = s_{t-1} \times [(A + B) \times (1 + C/A)] / A$$

- b) If stock distribution is applicable after rights (one action applicable to another) increases

$$p_{adj} = (p_{t-1} \times A + SP \times C) / [(A + C) \times (1 + B/A)]$$

$$s_{adj} = s_{t-1} \times (A + C) \times (1 + B/A)$$

- c) Stock distribution and rights (neither action is applicable to the other) increases

$$p_{adj} = (p_{t-1} \times A + SP \times C) / (A + B + C)$$

$$s_{adj} = s_{t-1} \times (A + B + C) / A$$

- d) For price weighted indices with weighting factors: Adjusted prices will be calculated as above a) to c) unchanged

$$wf_{adj} = wf_{t-1} \times p_{t-1} / p_{adj}$$

## 8.1.10. ADDITION / DELETION OF A COMPANY

No price adjustments are made. The change in market capitalization (for price weighted indices: the change in units) determines the divisor adjustment.

- a) For free float market capitalization weighted indices:

If the change in market capitalization between added and deleted companies of an index increases (decreases), then the divisor increases (decreases). If the change is null, then the divisor remains unchanged.

- b) For price weighted indices with weighting factors:

If the change in units between added and deleted companies of an index increases (decreases), then the divisor increases (decreases) accordingly. If the change is null, then the divisor remains unchanged.

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# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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## 8.1.11. FREE FLOAT AND SHARES CHANGES

No price adjustments are made. The change in market capitalization (for price weighted indices: the change in units) determines the divisor adjustment. Please refer to 8.2 for further details.

a) For free float market capitalization weighted indices:

If the change in market capitalization of an index increases (decreases), then the divisor increases (decreases). If the change is null, then the divisor remains unchanged.

b) For price weighted indices with weighting factors:

If the change in units of an index increases (decreases), then the divisor increases (decreases) accordingly. If the change is null, then the divisor remains unchanged.

## 8.2. FREE FLOAT FACTORS AND SHARE ADJUSTMENTS

Ordinary adjustments:

The free float factors and outstanding number of shares are reviewed on a quarterly basis based on the most recent available data. The final data are published on the quarterly underlying data announcement dates and implemented on the quarterly implementation dates. The review cut-off date for free float and number of shares data is the trading day prior to the quarterly underlying data announcement date, i.e. usually the Thursday before the second Friday of the review month. Data arriving after the cut-off dates are implemented in the following quarterly review.

Extraordinary adjustments:

The indices are updated with changes to the number of shares and/or free float factors due to corporate actions. The timing depends on the magnitude of the change:

- » Changes to the number of shares due to stock dividends, splits, rights issues etc. are implemented immediately and effective the next trading day.
- » Changes greater than  $\pm 10$  percent to the number of shares from one trading day to the next are announced immediately, implemented two trading days later and effective the next trading day after implementation.
- » Free float factor changes greater than  $\pm 5$  percentage points from one trading day to the next are announced immediately, implemented two trading days later and effective the next trading day after implementation.
- » Changes to the combined free float adjusted number of shares greater than  $\pm 10$  percent from one trading day to the next are announced immediately, implemented two trading days later and effective the next trading day after implementation.
- » All other applicable changes are announced on the next quarterly underlying data announcement date, implemented on the quarterly implementation date and effective the next trading day after implementation.

### 8.2.1. FREE FLOAT FACTORS AND SHARE ADJUSTMENTS DURING REVIEW IMPLEMENTATION WEEK

# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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An extraordinary free float and share adjustment that would be effective during the quarterly review implementation week will become effective on review effective date, provided that minimum 2 trading days' notice can be given. The standard notice period of 2 trading days will be extended such that the effective date will be aligned with the review effective date.

## 8.3. MERGERS AND TAKEOVERS

### 8.3.1. TARGET COMPANY – FREE FLOAT ADJUSTMENT

A merger or takeover will result in an extraordinary free float adjustment of the target company in affected DAX indices following the publication of the definitive results of each tender offer period or the publication of the result when the tender offer period is extended and the acquired stake implies a change of free float factor greater than or equal to 5%, except when a conversion into tendered shares as described in chapter 8.3.3 is applicable.

An extraordinary free float adjustment might apply to the target company following the tender offer cancellation if the return of shares implies a change of free float factor greater than or equal to 5%.

Additionally, an extraordinary adjustment might apply to the acquiring company as per the rule under section 8.2 Free Float Factors and Share Adjustments.

Changes are announced immediately, implemented two trading days later and become effective on the next trading day after implementation.

#### 8.3.1.1. FREE FLOAT ADJUSTMENT EFFECTIVE DURING REVIEW IMPLEMENTATION WEEK

An extraordinary free float adjustment that would be effective during the quarterly review implementation week will become effective on review effective date, provided that minimum 2 trading days' notice can be given. The standard notice period of 2 trading days will be extended such that the effective date will be aligned with the review effective date.

### 8.3.2. TARGET COMPANY – DELETION

A merger or takeover will result in the deletion of the target company from Blue Chip and International indices if all the following conditions are met:

- » All conditions of the event are currently fulfilled (i.e. shareholder & authorities' approval, minimum acceptances, other customary conditions)
- » At least 90% of the shares have been acquired through the tender offer or the remaining free float factor of the target is less than 10% (International indices: 5%) based on the current publicly available information

For events that involve the takeover of US or Canadian companies, the changes are announced based on the expected completion date before being declared wholly unconditional.

For events that involve the takeover of a company from Great Britain, Australia, New Zealand and Hong Kong, if the only condition left is the Court Hearing sanctioning the Scheme, the



# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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changes are announced based on the expected completion date before being declared wholly unconditional.

Additionally, an extraordinary adjustment might apply to the acquiring company as per the rule under section 8.2 Free Float Factors and Share Adjustments.

Changes are announced immediately, implemented two trading days later and become effective on the next trading day after implementation.

This would result in one surviving stock and one or more non-surviving stocks that may not necessarily be de-listed from the respective trading system(s). The rules below are only applied if at least one company in this transaction is a component of the Blue Chip or International indices. Any surviving stock that does not qualify and the non-surviving stock(s) are deleted immediately.

Generally, the non-surviving stock(s) are deleted at the last traded price of the security. If any non-surviving stock is not trading anymore (delisted or suspended before its deletion), a new artificial price based on the acquisition/merger terms is calculated and the company is kept/deleted with this price instead of the last traded one. For the calculation of the artificial price only ordinary cash and stock terms will be used. Other instruments such as Contingent Value Rights will not be considered.

Payment Type	Artificial Price
Cash	Deletion Price = Cash term
Stock	Deletion Price = Close price acquirer*Stock term
Cash & Stock	Deletion Price = Cash term + Close price acquirer*Stock term
Cash or Stock	Deletion Price = Cash term

If the surviving stock meets the criteria for inclusion in a Blue Chip or International index, it replaces the non-surviving stock in the index at the same date the non-surviving stock is deleted from the index. If the surviving stock is already included in the index or does not meet the basic criteria, the non-surviving stock is replaced by a new stock according to the index specific replacement rule.

For All Share indices, the non-surviving stocks are deleted if they are no longer listed on the stock exchange. If the new company is not created from the continuation of the listing of an old company, it is included in the index as a completely new company.

### 8.3.3. CONVERSION INTO TENDERED SHARES

During the period of a takeover bid or mandatory offer the target company shares tendered for exchange shall be treated as follows:

Where the target company is a component of one of the Blue Chip indices and the acceptance rate after the end of the first tender offer period as shown in the notification pursuant to § 23 I WpÜG (German Securities Acquisition and Takeover act) is greater than 50% relative to the

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# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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number of shares not held by the acquirer prior to the offer being made ("acceptance threshold"), then the shares in a target company included in an index shall be replaced by the shares tendered for conversion effective one trading day after the last day of the additional offer period, if the following requirements are met:

- » It can be assumed on the basis of the information publicly available at the time the acceptance threshold is exceeded, that the shares into which the target company shares tendered for exchange would be converted in the event of a successful takeover, satisfy the criteria for obtaining a ranking, as described in the DAX Equity Index Methodology Guide. In this respect, for the purposes of making the required predictive decision it is irrelevant whether the bidder's shares (into which the target company shares tendered for exchange could be converted in the event of a successful takeover) already exist prior to the conclusion of the takeover offer, still need to be created, or are already traded on Xetra. In the context of compliance with the basic criteria regarding the recommendations of the German Corporate Governance Codex (GCGC) and the accounting obligations according to the DAX Equity Index Methodology Guide, it is assumed that the terms and conditions of the parent company will be adopted by the company to which the tender offer will lead, by the end of the financial year following the successful completion of the merger.
- » The bidder resp. the company resulting from the takeover is not already included in a selection index.

The shares tendered for exchange and the other shares not tendered for exchange each form a separate class of shares. If the aforementioned requirements are met, then the number of shares and the free float factor of the class to be replaced shall be adopted and modified only at the next regular review.

If the takeover bid or mandatory offer fails, then the shares tendered for exchange shall be removed from the index and replaced by the shares that were previously included in the index.

## 8.4. SPIN-OFFS

Each spin-off stock is temporarily added to all affected indices, including the fixed component indices, based on an estimated price. As a precondition a listing on one of the eligible exchanges, pricing and instrument reference data must be available. If the spin-off stock is not permanently added, it will be deleted at the close of the day it starts to trade with traded price being available.

Changes are announced immediately, implemented two trading days later and become effective on the next trading day after implementation.

## 8.5. SUSPENSION, INSOLVENCY AND DELISTING

### 8.5.1. SUSPENSION

In the event of a suspension during trading hours, the last price determined before such a suspension is used for all subsequent computations. If such suspension occurs before the start of trading, the closing price of the previous day is used instead. The closing index level is

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# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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calculated using the respective closing prices (or last prices) established on Xetra or Börse Frankfurt as provided by Refinitiv.

Deviating from the rule above, the following applies to International indices:

Stocks are deleted if being suspended from trading for 10 consecutive days or more and not having announced a resumption trading date. Stocks being suspended from trading for 10 consecutive days or more and having announced a resumption trading date will remain in all indices until it resumes trading. Stocks being suspended from trading for 10 consecutive days or more due to a corporate event will remain in all indices until it resumes trading.

During the week prior to the quarterly review effective date, stocks that are suspended, even if not reaching the 10 consecutive days, on the Tuesday (cut-off date) before the third Friday will:

- » Be deleted at review if no resumption date has been announced.
- » Remain until it resumes trading if the resumption date is effective on or before the Wednesday following the review effective date.
- » Be deleted at review if the resumption date is effective after the Wednesday following the review effective date.

Discretion may be exercised by STOXX Committee (as stipulated in section 2.3 Discretion in the DAX Equity Index Calculation Guide) for any of the cases listed above.

A company will be deleted from the index based on the traded stock price if available, or else the OTC stock price; if neither price is available the company will be deleted at close in local currency of 0.0000001.

Changes are announced immediately, implemented two trading days later and become effective the next trading day after implementation.

## 8.5.2. INSOLVENCY OF COMPANIES

“Insolvency Proceeding” shall refer to any applicable insolvency, bankruptcy, dissolution, liquidation or winding up proceedings or similar proceedings in relation to the assets of such constituent. An “Insolvency Event” in relation to a company which is a constituent of an equity index (“Constituent”) shall be deemed to have occurred if STOXX has been informed by the Constituent, or a national competent authority, or a court in writing or through public announcement (other than by entry into a register) that

- (i) Insolvency Proceedings over the assets of the Constituent will be filed or have been filed for, or
- (ii) that Insolvency Proceedings have been opened in relation to the Constituent, or
- (iii) the Constituent seeks or becomes subject to the appointment of an administrator, receiver, trustee, custodian, or other similar official for it or for all or substantially all its assets, or
- (iv) the Insolvency Proceedings are rejected due to a lack of assets, or
- (v) Constituent is in liquidation, be it as a result of Insolvency Proceedings or a shareholders’ decision or otherwise.

# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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For the avoidance of doubt, a resolution and/or restructuring measures under the European Bank Recovery and Resolution Directive (or comparable third country legislation which stipulate that banks shall be subject to an extraordinary restructuring proceeding) shall not be considered as Insolvency Events.

If an Insolvency Event occurred in relation to a Constituent of a Blue Chip or International index, the securities of the Constituent shall be deleted from the index based on the traded stock price on its primary market, if available; if the last price is not available, the Constituent will be deleted at market close in local currency of 0.0000001.

The Constituent shall be extraordinarily replaced in the respective Blue Chip or International index. Such replacement shall be announced at 22:00 CET on the day STOXX became aware of the Insolvency Event based on publicly available information. The change shall be implemented 2 trading days after the calendar day of the announcement by STOXX and shall become effective the next trading day after implementation. In case such security has already been announced as a new index constituent or replacement for a current index constituent, the announcement will be revoked, and a new constituent implemented with 2 trading days' notice. This may lead to an index with less constituents than required by the index methodology until a replacement is effective.

The securities of an issuer for which an Insolvency Event occurred are not eligible as an index constituent or replacement index constituent for any future selection in Blue Chip and International Indices, with immediate effect at the date of STOXX' announcement. The respective securities will be kept on the monthly index ranking list without receiving a rank. The respective securities may receive a rank again once the proceedings in relation to the Insolvency Event have been concluded resulting in the continuance of the business operated by the issuer of the security, but not earlier than one (1) calendar year after exclusion became effective.

### 8.5.3. DELISTING

Stocks are deleted following official delisting. A company will be deleted from the index based on the traded stock price on its primary market, if available, or else the OTC stock price; if neither price is available, the company will be deleted at close in local currency of 0.0000001.

A company will be deleted from the index based on the traded stock price on its primary market, if available, or else the OTC stock price; if neither price is available, the company will be deleted at close in local currency of 0.0000001.

Changes are announced immediately, implemented two trading days later and become effective the next trading day after implementation.

## 8.6. PAYMENT DEFAULTS AND DIVIDEND DATA CHANGES

A correction is applied, when a dividend is declared unpaid (payment default) or the dividend amount is changed by the company after the ex-date<sup>1</sup>. The following rules apply:

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<sup>1</sup> If the ex-date falls before the launch date the index is not corrected.

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# 8. CORPORATE ACTIONS AND ADJUSTMENTS

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» For indices that held the affected company on the ex-date a reinvestment is applied via a divisor adjustment to correct the index points have been previously added. A positive (negative) reinvestment is applied, if the difference between the new amount and old amount is larger (smaller) than 0. The divisor decreases (increases), if a positive (negative) reinvestment is applied. In case the affected company is no longer included in the index, STOXX may decide not to apply the correction.

» A correction will be accepted only if the payment default is discovered within 3 months after the original ex-date.

» Past index values (history) are not corrected.

» The index parameters (number of shares, free float factors, weighting cap factors, currency rates, divisors) effective on the day prior to the correction date are used.

# 9. LIMITATIONS

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## 9.1. LIMITATIONS

This section applies in the event of Limitations that occur due to:

- » insufficient rules, meaning the absence of a methodology rule, provision or procedure which leads to a failure when determining the respective index value or which leads to an index value that does not properly reflect the concept / nature of the index, e.g.:
  - performance of the index can no longer be physically replicated;
  - insufficiently available index constituents to fulfil the requirements of the Index Methodology;
- » unclear rules, meaning a situation in which the rules leave multiple possible interpretations on how a certain rule shall be applied to a specific situation;
- » data insufficiency, meaning a scenario in which the calculation of an index is no longer possible due to insufficient data quantity or quality;
- » failure to produce index values as intended;
- » market disruption which results in the performance of the index being unable to be tracked,
- » events with a market impact that by their nature could reasonably not be foreseen, or events whose impact on an index or the economic reality the index intends to represent, cannot be determined in advance. Events covered in this section include, but are not limited to, events of natural, social, political, economic nature that may negatively impact regional or global societies or economies. Examples may be, but are not limited to, the following: (i) change to currency convertibility or restriction on capital flows announced by a country; (ii) market disruption, e.g., an event that materially negatively influences the aggregated liquidity, capitalization, or tradability of an entire market; (iii) exchange closure, (iv) government intervention, (v) pandemic, (vi) natural catastrophe.

If a Limitation has occurred, the IGC shall decide if and how the Limitation shall be rectified (Discretionary Rule, see section 2.3). Any such rectification may comprise deviations from the index methodology which may apply as long as the Limitation persists (Discretionary Rule, see section 2.3).

In this context, STOXX may also decide to cancel an index review.

If a Limitation that could justify the cancellation of an index review occurs two or fewer dissemination days before the scheduled review implementation day, the review will be performed as planned, if reasonably possible. This aims to avoid last minute changes and not undermine the trading activity that may have already been performed.

If a review is cancelled, STOXX aims to perform it at the next scheduled review of the index or at the next quarterly review date (3rd Friday of March, June, September, and December), whichever comes first and subject to the then prevailing market conditions.

If a decision to deviate from the index methodology is taken, it will be communicated as soon as possible in form of an Announcement or Press Release. STOXX Ltd. will refrain from the issuance of a notification if it reaches the view that the issuance of a notification is not in line with applicable laws and may decide to issue such notification at a later point in time when such reasons have lapsed (Discretionary Rule, see section 2.3). By reason of force majeure or other events beyond the control of STOXX Ltd. it might become impossible for STOXX Ltd. to issue a

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## 9. LIMITATIONS

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notification in due time or by the means set out herein. In such cases STOXX Ltd. may exceptionally issue the notification either subsequently immediately following such event or in any case by other means.

Any measures will be implemented two dissemination days later and will enter into effect the next dissemination day after implementation unless a different effective date is specified in the notification.

# 10. METHODOLOGY REVIEW

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The purpose of the methodology review is to maintain integrity of the index, i.e., that the index methodology remains executable and results in an accurate and reliable representation of the market / economic realities the index seeks to measure.

## 10.1. FREQUENCY OF REVIEW

In order to ensure the index integrity is maintained, the methodology is reviewed annually and ad hoc if a Limitation has occurred. If a Limitation cannot be addressed with by a methodology review, this may give rise to an index cessation or index transition. STOXX Ltd. shall not be liable for any losses arising from any decisions taken as part of a methodology review.

## 10.2. REVIEW PROCEDURE

### 10.2.1. INITIATION OF METHODOLOGY REVIEW

The IMC proposes an annual methodology review schedule for approval by the IGC (Discretionary Rule, see section 2.3).

The IMC is in charge of initiating ad hoc methodology reviews in case of a Limitation or based on recommendations to initiate a Methodology Review by other STOXX. Committee (Discretionary Rule, see section 2.3).

### 10.2.2. DECISION AND ESCALATION

The following STOXX. Committees are responsible for making the decisions on amendments to an index methodology:

The IMC decides on changes to the index methodology, unless

- a) a material change to the index methodology is proposed (see Section 10.3 below),
- b) the change is triggered by an Unclear Rule or Insufficient Rule (as part of a Limitation, Section 9), or
- c) it relates to a request for a market consultation
- d) financial products relating to the index have a notional value/notional amount of more than EUR 100 mn.

If any of the conditions a) to d) above is met, the decision is taken by IGC.

## 10.3. MATERIAL CHANGES WITH CONSULTATION

As described in the STOXX Changes to Methodology Policy and in STOXX Consultation Policy (publicly available on STOXX website), prior to proposed material changes to the index methodology, a consultation will be performed.

A change to an index methodology shall be considered material in the event of:

- a) a substantial change in the index objective or market/economic reality the index aims to represent (e.g. market leader components vs. mid cap companies), or



# 10. METHODOLOGY REVIEW

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- b) a substantial change of the index methodology in aspects such as, but not limited to, the ones listed below and that would result in altering the overall concept or the nature of the index:
- i. calculation methods or formulas with a substantial impact on the index performance, or
  - ii. rules regarding the determination of index constituents by application of the index methodology, or
  - iii. rules regarding the determination of the weights of index constituents by application of the index methodology,
  - iv. rules regarding the treatment of corporate actions.

On the contrary, index methodology updates resulting from the application of existing methodology principles or minor clarifications of existing rules or corrections without altering the overall concept or the nature of the index are generally considered non-material.

The IMC determines whether an amendment is material as defined above. In case such determination is not possible, the proposed amendment shall be treated as material. (Discretionary Rule, see section 2.3).

In case of Changes to Methodology as described in STOXX Changes to Methodology Policy a STOXX consults with reasonably affected stakeholders ("Stakeholders") prior to take decision.

Stakeholders mean (a) persons or entities who have an index license with STOXX regarding a benchmark administered by STOXX (Subscriber) and/or as far as STOXX is reasonable aware (b) persons or entities and/or third parties who own contracts or financial instruments that reference a benchmark administered by STOXX (Investors).

Considering the Principle of Proportionality, STOXX informs affected Stakeholders as follows:

- » either via public consultation open to the entire market and performed via STOXX website;
- » or, when the relevant Stakeholders are known, on a restricted basis directly on the Stakeholders e-mail address.

STOXX shall inform in writing the Stakeholders on:

- » the key elements of the proposed relevant changes
- » the rationale for any proposed relevant changes
- » the specific questions to be answered
- » the deadline for receiving feedback
- » the timeline of implementation of the Relevant Changes
- » contact details where to provide feedback
- » relevant definitions

The consultation shall enable Stakeholders to submit comments.

The standard consultation period shall be 1 month with the option to shorten or extend this period.

The IGC may decide to shorten the 1-month period in the following cases:

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# 10. METHODOLOGY REVIEW

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- » in extreme or exceptional market conditions or analogous extraordinary situations
- » in urgent cases, such as a situation in which the Index cannot be replicated anymore;
- » in situations where there is no known Stakeholders impact or only a limited number of Stakeholders;
- » in order to align the Effective date of a proposed change with Index Maintenance; e.g. an Equity/Bond Index Rebalancing, Index Review, and Corporate Action Adjustment, or
- » any other similar cases applying the principle of proportionality.

The IGC will consider the feedback received and decide whether the relevant changes shall become Effective.

The IGC is not bound by any feedback received. Moreover, if the received feedback is ambiguous, or if no Stakeholders participated, the IGC may decide to conduct another consultation, which again will not be binding.

If the IGC decides that relevant changes shall become Effective, STOXX will communicate a timeline on the implementation of the relevant changes, if not already communicated in the consultation material.

STOXX will after the consultation make available the Stakeholders feedback received in the consultation and STOXX's summary response to those comments, except where confidentiality has been requested by the respective Stakeholders.

The decision will be communicated as soon as possible in the form of an Announcement or Press Release.

STOXX Ltd. will refrain from issuance of a notification if it reaches the view that the issuance of a notification is not in line with applicable laws and may decide to issue such notification at a later point in time when such reasons have lapsed.

By reason of force majeure or other events beyond the control of STOXX Ltd. it might become impossible for STOXX Ltd. to issue a notification in due time or by the means set out herein. In such cases STOXX Ltd. may exceptionally issue the notification either subsequently immediately following such event or in any case by other means.

At the end of each consultation STOXX Ltd. will make available the feedback received from Stakeholders in the consultation together with a summary of its response to that feedback, except where confidentiality has been requested by the respective Stakeholders (Discretionary Rule, see section 2.3).

## 10.4. NON-MATERIAL CHANGES WITHOUT CONSULTATION

Non-material changes of the index methodology, including a description of the impact and the rationale, will be announced via Announcement or Press Release, Effective immediately following publication, unless otherwise specified in the notification (Discretionary Rule, see section 2.3) STOXX Ltd. will refrain from the issuance of a notification if it reaches the view that the issuance of a notification is not in line with applicable laws and may decide to issue such notification at a later point in time when such reasons have lapsed (Discretionary Rule, see

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# 10. METHODOLOGY REVIEW

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section 2.3). By reason of force majeure or other events beyond the control of STOXX Ltd. it might become impossible for STOXX Ltd. to issue a notification in due time or by the means set out herein. In such cases STOXX Ltd. may exceptionally issue the notification either subsequently immediately following such event or in any case by other means.

## 10.5. PUBLICATION OF THE METHODOLOGY CHANGE

The Effective date for benchmark methodology changes is aligned, where feasible, with the periodic benchmark reviews dates when the benchmark composition is changed, and a rebalancing is triggered to avoid extra ordinary impact for clients. Material methodology changes should generally be publicly announced 3 months prior to implementation. IGC may decide to shorten the notice period:

- a) In exceptional or urgent cases such as extreme or exceptional market conditions or analogous extraordinary situations
- b) in situations where there is no Stakeholder impact and where it has been agreed that the notice period has to be shortened but immediate communication is not possible. A case that requires urgent action is for example a situation in which the investor's ability to replicate the index benchmark performance with his or her portfolio is no longer ensured. In such cases, changes or amendments to the published index methodology must be made on the same day the new rule or change is implemented.
- c) to align with the period benchmark review dates and the rebalancing of the benchmarks.

In case of any proposed material change in its methodology, STOXX shall share its view on the key elements of the methodology that will be impacted by a proposed material change. Furthermore, STOXX Ltd. shall include an assessment as to whether the representativeness of the benchmark and its appropriateness for its intended use are put at risk in case the proposed material change is not put in place. In case of any changes or amendments to the present Index Guide, Operations and Product will work together to ensure both the public and subscribers are provided with detailed information about the nature and rationale of the change as well as the implications and terms for the new methodology to enter into fo

# 11. CALCULATION CORRECTION

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This section outlines the rules and procedures applicable in case of a calculation error, meaning the provision of index values, usage of index constituents or other elements or the application of weightings, capping, or other aspects of the index methodology in a manner that is not in line with this index methodology, e.g. due to a mistake, incorrect input data, etc.

## 11.1. RULE-BASED CORRECTION

STOXX corrects a Calculation Error without delay on the dissemination day it occurred, provided that STOXX becomes aware of such Calculation Error before 15:30 CET of that dissemination day and insofar as technically and operationally feasible. STOXX does not change intraday index composition of an index.

If STOXX became aware of a Calculation Error at or after 15:30 CET, STOXX aims at correcting the Calculation Errors as of the end of the next dissemination day, including corrections to index constituents.

STOXX amends without undue delay previous incorrect index values or input data only if they are required for the subsequent index values calculation. Incorrect real-time index values disseminated before the effective time of the correction are not restated.

## 11.2. NON RULE-BASED CORRECTION

If the above-outlined rule-based error correction cannot be applied, relevant STOXX Committees assesses without undue delay:

- if and how the Calculation Error should be corrected, including if the index shall be restated, and/or
- if the dissemination of index values shall be suspended (Discretionary Rule, see section 2.3).

An index should be restated, when the performance of the index can no longer be replicated. A suspension of index dissemination is triggered when STOXX Committee decides that the correction will take significant time during which misleading index values could lead to financial, legal and reputational risks (Discretionary Rule, see section 2.3).

STOXX suspends the dissemination of an index at the latest at the end of the dissemination day after it became aware of a Calculation Error, if the Calculation Error has not been corrected by then.

STOXX will resume the dissemination of the index as soon as the correct index calculation is feasible, and the correct historical values are available.

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# 12. HISTORY OF CHANGES

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