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STOXX

STOXX® Calculation Guide

STOXX.com



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Part of



DEUTSCHE BÖRSE
GROUP

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The STOXX index guides are separated into the following sub-sets:

- » The **STOXX Calculation guide** provides a general overview of the calculation of the STOXX equity indices, the dissemination, the index formulas and adjustments due to corporate actions
- » The **STOXX 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 **STOXX World Equity Index Methodology guide** contains the index specific rules regarding the construction and derivation of the STOXX World portfolio based indices, the individual component selection process and weighting schemes
- » The **STOXX Strategy Index guide** contains the formulas and description of all strategy indices
- » The **STOXX DVP Calculation guide** describes the dividend points products
- » The **STOXX Distribution Points Calculation guide** describes the distribution points products
- » The **iSTOXX Fund Indices Methodology guide** contains the index specific rules regarding the construction and derivation of the iSTOXX Fund indices, the individual component selection process and weighting schemes
- » The **iSTOXX Strategy Indices Methodology guide** contains the index specific rules regarding the construction and derivation of the iSTOXX Strategy indices, the individual component selection process and weighting schemes
- » The **iSTOXX Decrement Indices Methodology guide** contains the index specific rules regarding the construction and derivation of the iSTOXX Decrement indices, the individual component selection process and weighting schemes
- » The **iSTOXX Equity Indices Methodology guide** contains the index specific rules regarding the construction and derivation of the iSTOXX Equity indices, the individual component selection process and weighting schemes
- » The **STOXX Reference Rates guide** contains the rules and methodologies of the reference rate indices
- » The **STOXX Reference Calculations guide** provides a detailed view of definitions and formulas of the calculations as utilized in the reports, factsheets, indices and presentations produced by STOXX
- » The **STOXX Currency Rates Indices Methodology guide** contains the index specific rules regarding the construction and calculation of the derivation of the STOXX FX Rolling Spot Mid Rate and STOXX FX Rolling Spot Tomorrow Next Open Rate indices
- » The **Guide to Industry Classifications Used By STOXX** contains general information pertaining to industry classifications used in STOXX indices, together with any references and links to third-parties that create the data.
- » The **STOXX Eligible Market Segments guide** contains the list of stock exchanges and market segments.

All rule books are available for download on <http://www.stoxx.com/indices/rulebooks.html>

2.1. HISTORY OF CHANGES TO THE STOXX EQUITY CALCULATION GUIDE

February 2011: Publication of a complete new rule book series

August 2011: Modification of Free Float Factors and Share Adjustments

February 2013: Amendments of chapter 8 Corporate Actions and Adjustments; addition of chapter 5.8 STOXX News and Index Data Notifications and 13 Contact and Customer Support

July 2014: Interims solution: Treatment of Rights Issues with highly dilutive terms in chapter 8.1 and addition of chapter 8.7: Extreme Market and Company Events

September 2014: Treatment of Rights Issues with highly dilutive terms in chapter 8.1

December 2014: Clarification taxation of corporate actions in chapter 8

July 2016: Correction of wording in treatment of Spin-offs in chapter 8.4

May 2017: Update of Customer Support contact details

October 2017: Update of definition for Dissemination Calendar

November 2017: Calendars addition to the definition for Dissemination Calendar

December 2017: Calendars addition to the definition for Dissemination Calendar

December 2017 (2): Correction of typing error in spin-off adjustment formula

March 2018: Change of cut-off date for free-float research in section 8.2

July 2019: Change of announcement of events that involve takeover of US or Canadian company in section 8.3

May 2020: Treatment of stock dividends from redeemable shares

June 2020: Introduction of sections 9. Discretion, 10. Limitations, 11. Methodology Review, 12. Calculation Correction

June 2020: Clarification of section 8.6 Illiquidity, Bankruptcy and Delisting

July 2020: Change of section 8.7 Payment Defaults and Dividend Data Changes

October 2020: Update of section 8.3 Mergers and Takeovers

November 2020: Update to Rights Offering under section 8.1 Corporate Actions

December 2020: Update of section 8.3 Mergers and Takeovers

July 2021: Update of section 8.3 Mergers and Takeovers

February 2022: Update of section 8.3.1 Target Company – Free Float Adjustment

May 2022: Changing the calendar name STOXX Asia calendar to STOXX Global calendar

July 2022: Section 1 updated with new guides

August 2022: Update of section 8.6. Illiquidity, Bankruptcy and Delisting to reflect inclusion of China Connect Security inclusion

September 2022: Update of Section 4.4 Currency Rates - Change in close time for Asia indices that include India, Pakistan and GCC.

November 2022: Addition of a new sub-section 'Suspension' in the section of ILLIQUIDITY, BANKRUPTCY AND DELISTING

December 2022: Added reference of STOXX Eligible Market Segments Guide

January 2023: Added reference of STOXX Bond Index Guide

January 2023(2): Minor formatting changes in section 'Limitations'.

February 2023: Removed reference of STOXX Bond Index guide and amendment in section 'Delisting' of 'Corporate action and adjustments' section.

August 2023: Clarification in sub-section 'Corporate Actions' by subsequently creating respective subsections, addition of sub-sections of 'Free float factors and share adjustments during review implementation week', 'Free float adjustment effective during review implementation week' and 'Deletion immediately after review effective date' as part of a rule clarification

2. CHANGES TO THE GUIDEBOOK

October 2023: Change in the STOXX logo

November 2023: Clarification in sub-section 'Corporate Actions'

December 2023: Changes in Special Cash Dividend treatment for Gross Return indices

August 2024: Changes in treatment for rights issues and Mergers and Acquisitions

August 2024(2): Rule clarifications in section Open Quotations

January 2025: Change in STOXX logo, alignment of fonts to STOXX Brandbook, update of Customer Support contact details, and Rule clarification in section Mergers and Takeovers

May 2025: Correction in STOXX Eurex Calendar in section 'Dissemination' sub section 'Other Calendars', addition of STOXX USA Calendar in section 'Dissemination' sub section 'Regional Calendars' and removed reference of STOXX ESG Methodology guide.

November 2025: Rule clarification on sections Data Accuracy, STOXX Currency Rates and update in the section of 'Introduction to the STOXX Index Guides'

January 2026: Rule clarification in section Intraday snapshot data

3.1. DISSEMINATION CALENDARS

The STOXX indices are disseminated Monday through Friday between 0:00 and 22:15 CET, according to the calendars defined below.

In exceptional cases, the STOXX Management Board can make changes to the dissemination calendar.

3.1.1. REGIONAL CALENDARS

STOXX defines the following Regional Calendars:

STOXX Europe Calendar: every weekday except January 1st, Good Friday, Easter Monday, December 25th and December 26th (this is the default calendar for any index, unless differently specified in the relevant index methodology)

STOXX Americas Calendar: every weekday except January 1st, Good Friday and December 25th

STOXX Global Calendar: every weekday except January 1st

STOXX USA Calendar: every weekday except non trading days on NYSE and NASDAQ

3.1.2. COUNTRY CALENDARS

STOXX defines Country Calendars as every weekday except non-trading days which are defined as exchange holidays. The information is provided by STOXX on an annual basis and is available on the STOXX website under Resources, Methodology, Dissemination for the countries listed in chapter 4.3 of STOXX Index Methodology Guide.

For the latest update, please refer to the following link:

Dissemination period: <http://www.stoxx.com/res-dissemination.html>

3.1.3. OTHER CALENDARS

STOXX Target Calendar: every weekday except January 1st, Good Friday, Easter Monday, May 1st, December 25th and December 26th

STOXX Eurex Calendar: every weekday except January 1st, Good Friday, Easter Monday, May 1st, December 24th, December 25th, December 26th and December 31st.

STOXX Specific Calendar: Index specific calendars which cannot be associated to any of the above defined STOXX Calendars. In this case the dissemination days are specified in the relevant index methodology and are subject to STOXX approval.

3.2. DISSEMINATION PERIOD

The index dissemination period begins with the opening of the first trading system. 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. The index dissemination period ends, when the last trading system in the regional universe closes.

For the latest update, please refer to the following links:

Dissemination period: <http://www.stoxx.com/indices/dissemination/period.html>

3. DISSEMINATION

Individual index dissemination times: 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: Calculated and disseminated every 15 seconds during the index dissemination period.

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:
http://www.stoxx.com/data/vendor_codes.html

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:
<http://www.stoxx.com/indices/dissemination/realtime.html>

4. INPUT DATA

4.1. SOURCES

The input data sources for the index production include:

Trading platforms
Regulatory agencies
Companies in the investable stock universe
Real-time and end of day stock prices and currency exchange rates provided by Thomson Reuters
Related data and service providers

4.2. MONITORING

The real-time input data feeds for the index calculation are monitored by:

Data filters
Quality assurance tools
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. For details on currency rates calculation please refer to section 4.4. STOXX Currency Rates.
Index divisors and market capitalization: rounded to integer numbers
Free float factors: rounded to four decimal places
Product of (number of shares x Free float factor x weighting capfactor): rounded to two decimals
Product of (weightfactor x weighting capfactor): rounded to integer numbers
Index values: rounded to two decimal places for dissemination
Weights: expressed in percentage with 5 decimals

4.4. STOXX CURRENCY RATES

STOXX computes the STOXX Currency Rates based on the WMR Spot Rates (intraday and Closing) provided by FTSE International Ltd. STOXX determines a Real Time STOXX real time Currency Rate and a STOXX closing currency rate as follow:

- **STOXX real time Currency Rate** is the mid between the WMR intraday Spot Rates bid and ask prices. The WMR intraday Spot Rates bid and ask prices are truncated after seven decimals and the calculated mid is rounded to seven decimals.

4. INPUT DATA

- **STOXX closing Currency Rate** is the mid between the WMR closing Spot Rates bid and ask prices. The WMR closing Spot Rates bid and ask prices are truncated after seven decimals and the calculated mid is rounded to seven decimals.

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

- From 09:00 to 17:30 CET, the STOXX real time Currency Rate is used as the currency rate in order to calculate the indices for Europe Region.
- From 15:30 to 22:00 CET, the STOXX real time Currency Rate is used as the currency rate in order to calculate the indices for the Americas region.
- From 00:00 to 11:15 CET, the STOXX real time Currency Rate is used as the currency rate in order to calculate the indices for the Asia/Pacific region. The time is extended to 12:30 CET if the indices might include securities from India and Pakistan and extended to 14:20 CET if the indices might include securities from GCC countries.

The End of day index levels (Closing and historical value) for the real-time indices, are calculated as follow:

- From 17:30 to 17:50 CET, the STOXX closing Currency Rate is used as the currency rate in order to calculate the End of day index levels for Europe Region.
- From 22:00 to 22:30 CET, the STOXX closing Currency Rate is used as the currency rate in order to calculate the indices for the Americas regions.
- At 17:50 CET, the STOXX closing Currency Rate is used as the currency rate in order to calculate the indices for the Asia/Pacific and GCC regions.

4.5. STOCK PRICES

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

The 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.

The 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).

The 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.

The 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.

5.1. 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 4:30 CET for indices from the Asia Pacific and Middle East region,
- » at 10:30 CET for indices from the Europe and Africa region and
- » at 17:00 CET for indices from the Americas region.

If an opening stock price is unavailable by the above-mentioned time, the stock's previous day's closing/adjusted price is used. Global Indices do not have open quotations.

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 closing prices are converted using WM fixed exchange rates of the day before.

5.2. INDEX SETTLEMENT VALUES

The index settlement values are calculated daily as the average of the 41 index values disseminated between 11:50 CET and 12:00 CET.

5.3. INTRADAY SNAPSHOTS DATA

Intraday snapshot data for the STOXX indices are disseminated daily at:

10:30 CET or earlier: opening stock prices for selected STOXX indices and open quotation index values for real-time indices.

12:00 CET: final index settlement values (FSV) as well as component stock prices for selected STOXX indices.

For selected STOXX indices, intraday index values and component stock prices are disseminated at the specified time. Refer to the vendor code sheet for details.

5.4. CLOSING DATA

The closing data for the STOXX indices are disseminated after the index dissemination period for the relevant region. The closing data includes the following sets of data:

Stock prices: both closing and adjusted prices for all components of the STOXX indices.

Index-related values: closing values, market capitalization and divisors for all indices.

Currency rates to EUR for all currencies used in any STOXX indices.

Corporate actions and dividends: effective the next trading day.

Other information like weightings, corporate actions and dividend forecasts.

5. AVAILABLE DATA

5.5. 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 for the coming week.
Initial public offerings (IPOs): recent IPOs that could qualify for the indices; for the STOXX Europe IPO Indices.

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

5.6. MONTHLY REPORTS AND SELECTION LISTS

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

Index composition and performance reports

Statistical and fundamental reports

Factsheets for various indices with information on fundamental ratios, performance data and other statistics

Selection lists are produced for indices with a fixed number of components 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 stock 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.

5.7. INDEX REVIEW LISTS

Each index has defined dates, when the new constituents, the underlying data (shares, free float, weighting-cap factors) are announced and implemented. The component and the underlying data announcement dates differ by index category and are therefore covered in the respective STOXX 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 STOXX Methodology Guides

5.8. STOXX NEWS AND INDEX DATA NOTIFICATIONS

5. AVAILABLE DATA

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, the periodic review announcements, index calculation and production issues and errors, new index launches and general information from STOXX.

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.

7.1. 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)
ΔMC_{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)

7. INDEX VALUE CALCULATION

x_{it}	= Exchange rate from local currency into index currency for company (i) at time (t)
ΔMC_{t+1}	= The difference between the units in the index at closing and the units in the index after calculation parameters have been adjusted: 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).

7.2.3. DIVIDEND POINT CALCULATIONS

Dividend Point Calculations

For a detailed overview also consult the STOXX Dividend Point Calculation Guide.

$DP_t(DVP)$	$\frac{\sum_{i=1}^n d_{it} \cdot s_{it} \cdot ff_{it} \cdot cf_{it} \cdot X_{it-1}}{D_t}$
DP	= Dividend points (applies to STOXX Dividend Point – DVP indices only)
t	= Time the value is computed
D_t	= Divisor of the price index at time t
t	= Time the amount is computed
n	= Number of companies in the index
i	= Individual company being a constituent of the index
d_{it}	= Includes ordinary un-adjusted gross cash dividends and withholding tax amounts applied to special cash dividends and capital returns (d) in respect of each share of company (i) which is a constituent of the index at day (t) being an ex-dividend date as appropriate, or zero if no amount is applicable
s_{it}	= Number of shares outstanding 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-1}	= Exchange rate from local currency into EUR for company (i) at time (t-1)

8. CORPORATE ACTIONS AND ADJUSTMENTS

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).

τ = 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 weighing 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

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

decreases

Gross Return Indices: $p_{\text{adj}} = p_{t-1} - \text{Div}_t$

Net Return Indices: $p_{\text{adj}} = p_{t-1} - \text{Div}_t \times (1 - \tau^*)$

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

Price indices are not affected.

8. CORPORATE ACTIONS AND ADJUSTMENTS

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: $p_{adj} = p_{t-1} - \text{Div}_t$

Net Return and Price Indices: $p_{adj} = p_{t-1} - \text{Div}_t \times (1 - \tau^*)$

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

8.1.3. SPLIT AND REVERSE SPLIT

Divisor

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

a) For free 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

Divisor

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

a) For free float market capitalization weighted indices: increases

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

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 to be a Highly Dilutive Rights Issue (HDRI) if the share ratio is larger than or equal to 200% ($B/A \geq 2$).

Scenario 1) If a Highly Dilutive Rights Issue is fully underwritten it will be implemented as a Standard Rights Issue as laid out in the section 8.1.4.1.

see 8.1.4.1

8. CORPORATE ACTIONS AND ADJUSTMENTS

Scenario 2) If a Highly Dilutive Rights Issue is not fully underwritten and the rights are tradable on the 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 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 3) If a Highly Dilutive Rights Issue is not fully underwritten and the rights are not tradable on the ex-date or not tradable on the 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 on the ex-date at close, using a price of 0.0000001 in local currency. unchanged
- For free float 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

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

Divisor

- 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

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

8.1.5.2. STOCK DIVIDEND FROM TREASURY STOCK

Divisor

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

8. CORPORATE ACTIONS AND ADJUSTMENTS

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

- a) If it is considered as **regular** cash dividend, only the Gross Return and Net Return indices are adjusted. decreases
- b) If it is considered as **special** 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 **regular** cash dividend, only the Gross and Net Return indices are adjusted. decreases
- b) If it is considered as **special** cash dividend, Price, Gross and Net Return 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 (τ) 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 **regular** 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
- 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

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

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

8. CORPORATE ACTIONS AND ADJUSTMENTS

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.

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

a) For free float market capitalization weighted indices:

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

unchanged

on ex-date

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

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

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

8. CORPORATE ACTIONS AND ADJUSTMENTS

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

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: unchanged

Adjusted prices will be calculated as above a) to c)

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

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.

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

8. CORPORATE ACTIONS AND ADJUSTMENTS

announcement dates and implemented on the quarterly implementation dates. The review cut-off date for free float data is the fourth Friday of the month preceding the review month, i.e., of February, May, August and November. 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 $\pm 10\%$ 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 ± 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 $\pm 10\%$ 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

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 STOXX indices following the publication of the results of each tender offer period or the publication of the result when the tender offer period is extended, if all the following conditions are met:

- » The conditions of shareholder approval, if required, and minimum acceptance are fulfilled.
- » The acquired stake implies a change in the free float factor greater than or equal to 5 percentage points.
- » The company is not subject to the Target Company – Deletion rule of section 8.3.2.

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 percentage points.

8. CORPORATE ACTIONS AND ADJUSTMENTS

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 STOXX indices following the publication of the results of each tender offer period or the publication of the result when the tender offer period is extended, 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 85% of the shares have been acquired through the tender offer or the remaining free float factor of the target is less than 10% 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 GB, AU, NZ and HK, if the only condition left is the Court Hearing sanctioning the Scheme, the 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 STOXX Benchmark 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. An artificial price will be calculated based on the default option as announced by the offeror or, in its absence, on the non-elective investor consideration.

8. CORPORATE ACTIONS AND ADJUSTMENTS

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

A surviving stock that qualifies for the STOXX Benchmark indices is added to the indices as follows:

STOXX Benchmark indices: The surviving stock replaces the largest of the original stocks.

STOXX Size indices: The surviving stock replaces the original stock that belonged to the largest affected Size index.

STOXX Blue-Chip and other indices: If one of the original stocks was a component, it is replaced by the surviving stock. Separate buffer rules and additional requirements for individual indices may apply according to specific index methodology.

STOXX Select Dividend indices: If one of the original stocks was a Select Dividend component, then it is replaced by the surviving stock, if it was ranked at or above the lower buffer limit on the currently valid Select Dividend selection list. A surviving stock that falls below the lower buffer limit, is replaced by the highest-ranked non-component on the selection list.

8.3.2.1. DELETION IMMEDIATELY AFTER REVIEW EFFECTIVE DATE

If the completion of a merger or a takeover would lead to a deletion effective within 2 trading days following review effective date, the event will be implemented at review effective date, provided that 2 trading days' notice can be given.

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 company does not qualify based on the rules set out below, it will be deleted at the close of the day it starts to trade with traded price being available. Separate buffer rules and additional requirements for individual indices may be applied according to specific index methodology, as outlined in the STOXX methodology guide.

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

STOXX benchmark, blue-chip and derived indices:

Each spin-off stock qualifies for addition, if it lies within the upper (higher) buffer on the latest selection list for the specific index. The spin-off replaces the lowest ranked stock in that index, as determined by the latest selection list

Qualifying spin-off stocks are added in sequence:

The largest qualifying spin-off stock replaces the original stock in the index

8. CORPORATE ACTIONS AND ADJUSTMENTS

The next qualifying spin-off stock replaces the lowest ranked stock in the index

Likewise for the other qualifying spin-off stocks

STOXX Total Market and derived indices:

The spin-off stock is added, if it qualifies for the STOXX TMI indices as of the latest quarterly review list

8.5. SECTOR CHANGES

The indices are updated with the sector changes; the timing depends on the cause of the change:

Changes due to corporate actions: Announced immediately, implemented two trading days later and effective the next trading day after implementation.

Changes in the primary revenue source: Announced on the quarterly component announcement dates, implemented on the quarterly implementation dates and effective the next trading day after implementation.

8.6. ILLIQUIDITY, SUSPENSION, BANKRUPTCY AND DELISTING

8.6.1. ILLIQUIDITY

Stocks are deleted if their illiquidity is due to not being traded for 10 trading days as observed during the quarterly Review of the STOXX Total Market and the STOXX GCC Total Market indices as stated in the STOXX Index Methodology Guide section 6.1.2 and 6.4.2.

8.6.2. SUSPENSION

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 chapter 9.1 EXERCISE OF DISCRETION) 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. CORPORATE ACTIONS AND ADJUSTMENTS

8.6.3. BANKRUPTCY

Stocks are deleted following ongoing bankruptcy proceedings: a company that has filed for bankruptcy will 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 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.

8.6.4. 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.

In case the Stock Exchange of Hong-Kong suspends buy orders or removes a China Connect Security from the Shanghai Connect Northbound Trading or from the Shenzhen Connect Northbound Trading schemes, STOXX will delete the concerned China Connect security within 2 trading days' notice.

If STOXX is informed of a China Connect Security ineligibility between the review publication of the index and the review effective date, the following scenarios will apply:

China Connect Security ineligibility announcement	China Connect Security ineligibility effective date	China Connect Security deletion from Indices
Between the review publication of the index and t-3 prior to the review effective date	Before the review effective date	Effective t+2
	On the review effective date	At the review effective date
	After the review effective date	At the review effective date
Starting from t-2 prior to the review effective date	Before the review effective date	Effective t+2
	On the review effective date	Effective t+2
	After the review effective date	Effective t+2

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.

8.7. 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-date¹. The following rules apply:

- » For indices that held the affected company on the ex-date a negative reinvestment is applied via a divisor adjustment to correct the index points previously added.

¹ If the ex-date falls before the launch date the index is not corrected.

8. CORPORATE ACTIONS AND ADJUSTMENTS

» 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.

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.

9.1. EXERCISE OF DISCRETION

Discretion may 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;
- 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 STOXX 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.

9. DISCRETION

The following committees (hereafter also referred to as "STOXX Committee(s)") are involved in the decision-making process relevant for the indices governed by this Guide:

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

The following table provides an overview of the cases in which STOXX Committees may exercise discretion regarding the index methodology, its limitations and its application:

Case	Responsible STOXX Committee
Index Termination (Cessation or Transition)	IGC
Non-rule-based Correction (treatment of calculation error)	IOC, IGC
Limitations	IGC
Annual methodology review schedule	IGC
Initiation of ad hoc methodology reviews	IMC
Determination regarding materiality of changes to the index methodology	IMC, IGC
Deviation from standard consultation period in case of material changes of the index methodology	IGC
Decision whether material change shall become effective	IGC
Decision to conduct another consultation in case of material changes of the index methodology	IGC
Extreme or exceptional market conditions or analogous extraordinary situations to be addressed in a fast track way	IGC
Periodic review of current index methodologies (e.g. matching of underlying interest) including initiation of ad-hoc reviews of benchmarks or benchmark families and clarification of methodologies (if required).	IGC
Decisions on rule changes for existing indices (Changes to methodology).	IMC, IGC
(Annual) Review of the control framework (including identification of operational risks and definition of measures that address operational risks).	IOC, IMC
Review and approve reports on monitoring of outsourced service providers, contributors, risks and incidents reporting (Art. 10 BMR relevant)	IGC
Consideration and follow-up on the implementation of remedial actions based on results of internal and external audits	IGC
Monitoring of input data (including input data from contributors).	IOC, IGC

9. DISCRETION

Review and approval of special cases identified during index review	IOC, IMC, IGC
Review and approval of complex corporate actions (disagreement on treatment of corp. action or application of rules)	IOC, IMC, IGC
Decisions with respect to complaints	IGC
Review and approve periodic reporting requirements under the Periodic Review Policy	IGC
Review and approve changes in case thresholds of significant or critical benchmarks exceeded and notify competent authority.	IGC

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
 - insufficient 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 9). Any such rectification may comprise deviations from the index methodology which may apply as long as the Limitation persists (Discretionary Rule, see Section 9).

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 9). 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.

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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.

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.

11.1. 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 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.

11.2. REVIEW PROCEDURE

11.2.1. INITIATION OF METHODOLOGY REVIEW

The IMC proposes an annual methodology review schedule for approval by the IGC (Discretionary Rule, see Section 9).

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 Committees (Discretionary Rule, see Section 9).

11.2.2. 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 11.3),
- b) the change is triggered by an Unclear Rule or Insufficient Rule (as part of a Limitation, Section 10), 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.

11.3. MATERIAL CHANGES WITH CONSULTATION

As described in the STOXX Changes to Methodology Policy, prior to proposed material changes to the index methodology, a consultation will be performed.

In case the proposed changes to the Index Methodology are deemed material, a consultation will be performed in accordance to STOXX Consultation Policy.

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

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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.

In case of Changes to Methodology 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)

Taking into account 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

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- 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, taking into consideration the principles stipulated in the Index Guides and in the Terms of Reference Appendix, to shorten the 1-month period in the following cases:

- 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 changed 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 the Methodology Change 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.

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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.

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 ("Index Guides") 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 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 Index Guides, 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 force.

Product is responsible for adding any change or amendment to the benchmark methodology in the respective Index Guides. Any change or amendment must also be added to the Index Guides' change history.

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11.4. 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 9). 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 9). 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.

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.

12.1. RULE-BASED CORRECTION

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

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

STOXX Ltd. 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.

12.2. 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 9).

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 9)).

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

13.1. STOXX CUSTOMER SUPPORT

For questions regarding our indices, please contact our Customer Support team:

Available from 07:30 to 22:00 CET on STOXX trading days

Phone: +41 43 430 72 72

Fax: +41 43 430 72 72

E-Mail: customersupport@iss-stoxx.com