SIX Index

Index Calculation and Corporate Actions Rulebook Governing Equity, Real Estate and Bond Indices

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C1 Public

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1 Introduction

This Index Calculation and Corporate Actions Handling Rulebook describes the calculation of indices and the treatment of corporate actions. It is an integral part of and should be read in conjunction with the SIX and BME index-specific rules for Equity Indices, Real Estate Indices, and Bond Indices. In case the index-specific rulebooks indicate a different treatment, these prevail over this Index Calculation and Corporate Actions Handling Rulebook.

The goal is to provide transparency and consistency regarding the handling of corporate actions in an index related context to the greatest extent possible. However, because of the complexities and local market practices involved in exceptional cases, the guidelines described in that document should not be understood as definitive rules that will determine the handling of corporate actions and events in all circumstances. SIX reserves the right to determine the most appropriate implementation for any corporate action or event which is not described here, or which is of a complex nature.

The initial section provides an overview of the definitions used. This is followed by a section containing the theory behind the calculation of index values. Subsequently, the main part describes the handling of corporate actions and events.

This document is subject to regular review, at least once a year.

1.1 Revision History

Date	Version	Description
05.03.2025	1.00	Introduction of harmonized Index Calculation and Corporate Actions Handling Rulebook Governing Equity, Real Estate and Bond Indices

2 Basic Principles

This Index Calculation and Corporate Actions Handling rulebook is based on the following basic principles. SIX follows these basic principles when situations arise that are not foreseen in the rulebook or in case of doubt.

- **Representative:**
  The development of the market is represented by the index.
- **Tradable:**
  The index components are tradable in terms of company size and market.
- **Replicable:**
  The development of the index can be replicated in practice with a portfolio.
- **Stable:**
  High index continuity.
- **Rules-based:**
  Index changes and calculations are rules-based.
- **Projectable:**
  Changes in rules are with appropriate lead time (usually at least 2 trading days) – no retrospective rule changes.
- **Transparent:**
  Decisions are based on public information.

3 Definitions

3.1 Equity Instrument Definitions

The essential attributes of Equity Instruments are defined below:

Term	Definition
Capping factor	A capping factor is used to limit the weight of an index component in the index. If an index foresees a predefined weighting of its components it is described in the "Component Weighting" section of the corresponding index.
Candidate	A candidate is an instrument from the universe of an index. An index is selected from its universe. For indices with a fixed number of components the selectable candidates are on a selection list.
Corporate Actions	Companies use Corporate Actions to adjust their capital structure. Corporate Actions include, among others, Dividends, Share Splits or Rights Issues. For the calculation of index values, those capital events are considered, which have an effect on the parameters of the index calculation.
Ex-date (ex-dividend date)	The ex-date is the first trading date from which a share is traded without entitlement to a dividend or another capital event. The holder of a share is entitled to a capital event immediately before the ex-date.
Free float factor	The free float factor is the relative proportion of the number of shares that are not in fixed ownership and are therefore freely tradable. As a rule, only freely tradable shares are taken into account when calculating market capitalization. The free float factor puts the freely tradable shares in relation to the number of shares in a share line.
Free float market capitalization	The free float market capitalization is calculated by multiplying the share price by the number of shares and the free float factor. This expresses the weight of an instrument within the index.
Instrument currency	Each instrument is traded in a currency in which shares are bought and sold. The majority of the index components are traded in local currency. However, it is possible that an index component is traded in a foreign currency.
Number of shares	The number of shares is the number of shares in circulation. They constitute the total share capital, which is fully subscribed and fully or partially paid in and registered in the Commercial Register. The capital in circulation does not include conditional or authorized capital. The number of shares is used to calculate the free float market capitalization. The number of shares is regularly reviewed to ensure that it is up to date and the reviewed values are included in the review list.
Order book turnover	The order book turnover is the total traded volume in trading currency of an index component over a defined period of time.
Participation certificates	The participation certificate is an equity instrument that gives the holder the right to a dividend, but no voting rights. An issuer can use participation certificates to raise additional capital without changing the ownership structure.
Primary listing	The primary listing is the main exchange on which an issuer's instruments are admitted for trading. It is possible for an issuer to have multiple primary listings.
Registered shares	The registered share is an equity instrument in which the owner of the shares is registered in the share register of the issuer. The issuer knows its shareholders structure and is informed in the event of transfers.
Sector classification	Each issuer is assigned to a sector. SIX uses a proprietary two-level taxonomy for equities ("SIX Equity taxonomy") which assigns a 4-digit code for classification.

Term	Definition
Trading segments	Instruments traded on the following trading segments are eligible: – SIX Swiss Exchange: Equity Market – SIX Swiss Exchange: Investment funds – SIX Swiss Exchange: SPARKS – BME: MFT Equity Market – Nordics: Nasdaq Nordic main lists and First North – Nordics: Euronext Oslo

3.2 Equity Index Definitions

Regarding Equity Indices, this document uses the following definitions:

Term	Definition
Base Date	The Base Date is the date when the Base Value is set. Usually this happens at the launch of the index.
Base Value	The Base Value of an index is the value it is standardized to. It is common to set a Base Value to 100 or 1000.
Calculation method	The calculation method defines how the index value of an index is calculated. For each index, the method used to calculate the index value is defined in its index-specific rules. In most cases this is the Laspeyres formula, which is described in more detail in section 4.1.
Effective date	Date as of which ordinary and extraordinary index adjustments are considered in the index calculation.
Index	An index measures the performance of a defined market. In each index-specific rules document, the “Overview” section describes which market is measured by the index.
Index candidate	An index candidate is an instrument of the index universe which can be selected for the index. All candidates of an index form the universe.
Index component	Index components are instruments that together form the index composition.
Index composition	The index composition consists of the index components. During the selection process, candidates are selected from the index universe based on the selection criteria of the index. Selected candidates are index components.
Index currency	Each index has a currency. Index components listed in another currency are converted into the index currency for the index calculation.
Index standardization	The index level is standardized to a base value (mostly 100 or 1000) at the base date (usually at the launch of an index). From this date on, the index level is constantly updated by incorporating market movements and corporate actions into the index level.
Index type	SIX basically offers three types of equity indices. In contrast to the price return type, the gross return type assumes that dividend income is reinvested. The net return type takes into account dividend income after deduction of withholding tax.
Index universe	For each index there is a defined index universe. The index universe is a group of instruments that share common characteristics and from which the index components are selected. The universe consists of index candidates and is explained in the section “Index Composition” of the respective index.

Term	Definition
Instrument	An instrument is issued by the issuer to raise capital. Different types of instruments exist, such as equities, bonds or funds.
Weight	Each index component has a weight. In most cases, the weight is based on the free float market capitalization. If an index has a deviating rule for weight determination, this is listed in the section "Component Weighting" of the respective index section.

3.3 Equity Abbreviations

Regarding Equity Instruments and Equity Indices, this document uses the following abbreviations:

Abbreviation	Description
Δ	Delta (Difference)
a	Price adjustment factor for corporate actions
A	Number of shares before a corporate action
B	Number of shares after a corporate action
c	Capping factor
D	Divisor
d	Dividend amount
f	Free float factor
g	Normalized weighting factor
I	Index value
i	Specific index component
M	Market value
ΔM	Change in market value
n	Number of index components
p	Price
p^{adj}	Price adjusted due to a capital event (corporate action)
PSS	Price Spun Off Shares
s	Number of shares
s^{adj}	Adjusted number of shares
SP	Subscription Price
SR	Subscription Rights offered
t	Time
tax	Withholding tax rate
w	Weighting factor
w^{adj}	Adjusted weighting factor
x	Foreign Exchange rate

3.4 Bond Instrument Definitions

The essential attributes of Bond Instruments are defined below:

Term	Definition
Callable Bond	Bonds that can be redeemed early are callable bonds. They can be redeemed at the Issuer's discretion at a predefined call date.
Corporate Action	Corporate actions may be but are not limited to an increase of nominal amount or the calling of a bond. Corporate actions, which have an effect on index calculation parameters, are considered within the index calculation process.
Coupon Structure	Bonds which yield the same interest on a yearly basis are called fixed coupon or straight bonds. Other coupon structures may be zero coupon bonds which do not pay interest or floating rate notes where the interest varies depending on an agreed reference rate. Bonds can change from a fixed to a floating coupon structure.
Domicile	Each bond has a domicile. Bonds with a domicile in Switzerland and in the principality of Liechtenstein are categorized as 'Domestic' and bonds with a different domicile are categorized as 'Foreign'.
Instrument Currency	Each bond is issued in a specific currency.
Issuer	An organization that borrows money by selling bonds. There are various types of issuers, such as governments, supranational entities, regions or cities, as well as corporations.
Nominal Amount	On the issue date, the nominal amount equals the capital raised by the Issuer. During the term, the nominal amount can be reduced or increased. For SDX Listed Bonds the aggregate amount of both instruments is taken into account.
Price	Bonds are traded as a relative fraction of their face value in 'percent'. Due to the less liquid nature of bond markets the price of the instrument is based on the order book of SIX Swiss Exchange. Bid and ask quotes or mid-prices are used in the index calculation process. All prices are clean prices without accrued interest. SDX Listed Bonds will use the same pricing source.
Residual Term	In this rulebook the shorter term of Time to First Call and Time to Maturity is the Residual Term of the bond.
SBI Composite Rating	SIX assigns to each bond a SBI Composite Rating from AAA to BBB which states the creditworthiness of a bond. The rating used in the indices is rule-based and taking into consideration several external ratings.
SDX Listed Bond	With the introduction of Swiss Digital Exchange (SDX) it is possible to list digital bonds in Switzerland. A bond which is listed at SDX (digital bond) and is also listed at SIX Swiss Exchange (traditional bond) under the same bond prospectus and is therefore exchangeable between the two trading venues is referred to as "SDX Listed Bond" in this rulebook. SDX Listed Bonds will only appear once in the Swiss Bond Index with the ISIN of the traditional bond but with the aggregate nominal amount of the digital and the traditional bond. The pricing source for the ISIN in the Swiss Bond Index will be SIX Swiss Exchange.
Sector Classification	Each bond is assigned to a sector. SIX uses a proprietary three-level taxonomy for bonds ("SIX Bond taxonomy") which assigns an 8-digit code for classification.
Time to First Call	The Time to First Call of a bond is the time period between now and the first possible call date of the bond. This calculation is based on the 30/360 day count convention where each month has 30 days and one year has 360 days.
Time to Maturity	The Time to Maturity of a bond is the time period between now and the expiration date of the bond. This calculation is based on the 30/360 day count convention where each month has 30 days and one year has 360 days.

3.5 Bond Index Definitions

Regarding Bond Indices, this document is using the following definitions:

Term	Definition
Base Date	The Base Date is the date when the Base Value is set. Usually this happens at the launch of the index.
Base Value	The Base Value of an index is the value it is standardized to. It is common to set a Base Value to 100 or 1000.
Cut-off Date	The data to select the index components from its universe is fixed at the cut-off date. Changes to the data that occur after the close of that trading day are only considered at the subsequent index review.
Effective Date	Ordinary and extraordinary index adjustments are considered in the index calculation from the effective date onward.
Filter	Filters are applied to the SBI index in order to create sub-indices. The available filters are 'SBI Composite Rating', 'Sector Classification', 'Domicile', 'Nominal Amount', 'Residual Term' and 'ESG Eligibility'. For each filter predefined options are available.
Government Curve	The term "Government Curve" is used for a Yield Curve that depicts yields of government bonds on the vertical axis and the maturites of these bonds on the horizontal axis.
Index	An index measures the development of a defined market. The market is represented by the index components with defined characteristics and selected accordingly with the filters.
Index Component	Index components are instruments that together form the index composition. During the selection process, candidates are selected from the SBI Index Universe based on the selection criteria of the index. Selected candidates are index components.
Index Composition	The index composition consists of the index components.
Index Standardization	The index level is standardized to a base value (mostly 100 or 1000) at the Base Date (usually at the launch of an index). From this date on, the index level is constantly updated by incorporating market movements and corporate actions into the index level.
Index Type	Each index is calculated as a price, total return, yield and duration type. Some indices are also available as spread to government and spread to swap types. All types share the same index composition.
Instrument	An instrument is issued by an Issuer to raise capital. An Issuer can emit different kind of instruments including equities and bonds.
SBI Eligibility Criteria	The eligibility criteria are a set of conditions which a bond needs to fulfil to be selected for the SBI index.
SBI Index Universe	The index universe is a group of instruments which share common characteristics. The index universe is the basis to select the index composition.
Swap Curve	The term "Swap Curve" is used for a Yield Curve that depicts yields of swaps on the vertical axis and the maturities of these swaps on the horizontal axis.
Yield Curve	For the purpose of this rulebook, a Yield Curve means a graphical representation of the yield of an interest-bearing financial instrument on the vertical axis and the maturities of these instruments on the horizontal axis.

3.6 Bond Abbreviations

Regarding Bond Instruments and Bond Indices, this document uses the following abbreviations:

Abbreviation	Description
Δ	Delta (Difference)
c	Capping factor
C	Coupon in %
cpa	Coupon payments per year
D	Duration of bond
FV	Face value
G	Weight of a Bond's Market Value times Duration in the index
I	Index value
i	Specific index component / instrument
k	Number of bonds with coupon payment on t+1
l	Number of bonds with change of nominal value on t+1
M	Market value of bond and/or Index
N	Nominal value
p	Price of bond listed at SIX Swiss Exchange
R	Residual term
T	Date of next coupon payment
t	Time
TTM	Time to Maturity
TTC	Time to First Call
τ	Fraction of current coupon period in %
YTW	Yield to Worst
YTM	Yield to Maturity
YTC	Yield to First Call

4 Calculation of Index Values

4.1 Laspeyres Formula

Globally, the performance of most indices is calculated according to the Laspeyres formula, which measures the change in value of a basket of goods relative to its initial value.

The index formula for calculating an index value (I) divides a market value (M) by a divisor (D) at a given time (t) as follows:

$$I_t = \frac{M_t}{D_t}$$

4.1.1 Divisor Calculation in General

The Divisor has two raisons d'être. On the one hand, it is used to standardize the index value to a meaningful size at inception of the index. The divisor is updated from the day on which the base value of the index was determined. On the other hand, it is used throughout the life of the index to compensate for external effects that may lead to a potential daily change in the market value (ΔM).

$$D_{t+1} = D_t \cdot \frac{M_t + \Delta \mathrm{M_t}}{M_t}$$

These effects normally take the form of corporate actions and have a defined effective date. Therefore, the divisor is adjusted daily and kept constant within a day. The new divisor is calculated in the evening of the day before the corporate action becomes effective.

The divisor calculation formula is applied for all other SIX indices, unless otherwise specified.

4.1.2 Divisor Calculation for Total Return Bond Indices

The next day's divisor for Total Return indices is calculated by making some adjustments to the market value of the Index. First, the current day's market value is calculated taking into account the accrued interest for the next trading day. This is to make sure the divisor calculation only takes into account corporate actions:

$$M_{t,divisor\_calc} = \sum_{i=1}^{n} N_{i,t} \left(p_{i,t} + \tau_{i,t+1} \cdot C_i\right)$$

Then, the adjusted market value is calculated which reflects changes effective the next trading day:

$$M_{t,divisor\_calc,adj} = M_{t,divisor\_calc} + \sum_{i=1}^{k} \Delta M_{i,coupon} + \sum_{i=1}^{l} \Delta M_{i,nominal}$$

Where $\Delta M_{i,coupon}$ = Market value of coupon of bond i (see 5.2.1.1 for details)

and $\Delta M_{i,nominal}$ =Market value of nominal change of bond i (see 5.2.1.2 for details)

The next day's divisor is finally calculated by $D_{t+1} = \frac{M_{t,divisor\_calc,adj}}{M_{t,divisor\_calc}} \cdot D_t$

4.1.3 Weighting According to Free Float Market Capitalization

The below Laspeyres index formula is used to calculate a free float market capitalization-weighted index:

$$I_t = \frac{M_t}{D_t} = \frac{\sum_{i=1}^{n} s_{i,t} \cdot f_{i,t} \cdot c_{i,t} \cdot p_{i,t} \cdot x_{i,t}}{D_t}$$

The weight of a particular index component is derived from the proportion of shares available on the market, which is defined as the product of the listed shares ($s_{i,t}$) and the free float factor ($f_{i,t}$). Depending on the index concept, a capping factor ($c_{i,t}$) can be used to further scale the relative weight of an index component. To obtain the free float market capitalization of the component, the weight is multiplied by the price ($p_{i,t}$) in the index currency ($x_{i,t}$).

4.1.4 Weighting According to Weighting Factor

Another form of the Laspeyres index formula is used to calculate indices with a weighting according to an external weighting factor with a basis other than free float market capitalization. Compared to the free float market capitalization variant, only a few indices are calculated using this method:

$$I_t = \frac{M_t}{D_t} = \frac{\sum_{i=1}^{n} w_{i,t} \cdot p_{i,t} \cdot x_{i,t}}{D_t}$$

The weight of an instrument in the index is determined by the rules of the individual index and is expressed in the weighting factor ($w_{i,t}$). The weighting factor is usually kept constant within one trading day. As with the free float market capitalization-weighted index, the weights of the index components are multiplied by the price ($p_{i,t}$) in the index currency ($x_{i,t}$) to obtain the market value.

4.1.5 Weighting According to Market Value for Bond Indices

The below Laspeyres index formula is used to calculate a bond index by market value:

$$I_t = \frac{M_t}{D_t} = \frac{\sum_{i=1}^{n} N_{i,t} \, (p_{i,t} + \tau_{i,t} \cdot C_i)}{D_t}$$

For price return indices, the nominal amount (N) of the bond (i) is multiplied by its clean price (p), while the coupon is not taken into account ($C_i = 0$).

For total return indices, the nominal amount (N) of the bond (i) is multiplied by its clean price (p) corrected for the accrued interest for a given day. To account for the accrued interest, the upcoming coupon payment (C_i) is multiplied by the fraction of the current coupon period resulting from dividing the days from the most recent payment by the days within the coupon period. This calculation is based on the 30/360 day count convention where each month has 30 days and one year has 360 days.

4.1.6 Adjustments of Corporate Actions

Depending on whether the index components are weighted by their free float market capitalization, their weighting factor, or according to their bond's market values, a corporate action may affect the market value of an instrument. This results in an adjustment of the divisor according to the equation in section 4.1.1. These effects are usually predictable and have to be considered in terms of the market expectation at the effective date. The change of the market value in the index is the sum of the changes in the index components:

$$\Delta M_t = \sum_{i=1}^{n} \Delta M_{i,t}$$

In order to meet the market expectation, different adjustments can be made according to the weighting method to determine $\Delta M_{i,t}$. Further details and examples of corporate actions are explained in section 5.

4.2 Performance Attribution Formula

In addition to the widely used Laspeyres formula, indices are also calculated following a performance attribution approach, where returns are reinvested through the index components in two defined ways. In principle, it does not deviate from the standard Laspeyres formula and the Laspeyres formula can probably be converted into the performance attribution representation. However, since the interpretation of the formulas is slightly different, it is worth treating the two separately.

4.2.1 Performance Attribution with Relative Weighting

An index value is calculated by weighting the daily performance of the instruments with a weight according to the index method. The weights add up to 100%. The sum of the returns weighted in this way is then scaled by the index value of the previous day and added to it to obtain the current index value.

$$I_t = I_{t-1} + I_{t-1} \cdot \sum_{i=1}^{n} \left(\frac{p_{i,s}}{p_{i,t-1} \cdot a_{i,t}} - 1 \right) \cdot g_{i,t}$$

Where

$$\sum_{i=1}^{n} g_{i,t} = 1$$

4.2.2 Performance Attribution with Equal Weighting

An index value is calculated by weighting the daily instrument performance equally according to the number of index components. As with the calculation with relative weighting, the sum of the weighted returns is multiplied by the index value of the previous day and added to it to obtain the current index value.

$$I_t = I_{t-1} + I_{t-1} \sum_{i=1}^{n} \left(\frac{p_{i,s}}{p_{i,t-1} \cdot a_{i,t}} - 1 \right) / n$$

4.2.3 Adjustments of Corporate Actions

Price changes due to corporate actions are adjusted using the following formula:

$$a_{i,t} = \frac{p_{t-1}^{adj}}{p_{t-1}}$$

Compared to the Laspeyres formula described above, no weights need to be adjusted, as only the previous closing price is considered in the adjustment.

5 Corporate Actions

5.1 Corporate Actions for Equity Indices

5.1.1 Ordinary Corporate Actions

5.1.1.1 Dividend Payments

Unless otherwise mentioned, for Equity Indices, Gross Return, Net Return and Price Return indices are calculated as standard. Typically, Gross Return indices assume a full reinvestment of all distributions into the index. Net Return indices take into account distributions after deduction of withholding tax (see also section 5.1.1.5 Withholding Tax). Price Return indices do not apply any reinvestments of distributions.

Depending on the form and nature of distributions, these may also be reinvested in a Price Return index. These are distributions such as special dividends, extraordinary dividends, or distributions of shares of another company.

Scrip dividends, which give investors the option to receive additional shares instead of the cash value, are handled like a cash dividend. A Capital Repayment, or Return of Capital, describes the event of capital paid back to shareholders and is treated equally to a Cash Dividend. Stock Dividends from treasury stock and dividends from redeemable shares are treated equally to Cash Dividends (see section Cash Dividend and section Special Cash Dividend).

Cash Dividend

Cash Dividends are regular dividends paid to the shareholders and funded by the company's profits or reserves.

The adjusted share price of an instrument on the ex-date applies to Gross Return and Net Return indices only and is calculated as follows:

Index	Price adjustment	Divisor adjustment
Gross Return	$\boldsymbol{p_t^{adj} = p_{t-1} - d_t}$	↘
Net Return	$p_t^{adj} = p_{t-1} - d_t \cdot (1 - tax_t)$	↘
Price Return	Not applicable	Not applicable

Special Cash Dividend

Special Cash Dividends are extraordinary, non-recurring distributions. All dividends, which do not follow the regular dividend payment policy, will be classified as extraordinary / special dividends. Adjustments for Special Cash Dividends are applied to Gross Return, Net Return and Price Return Indices.

The adjusted share price of an instrument on the ex-date is reflected as follows:

Index	Price adjustment	Divisor adjustment
Gross Return	$\boldsymbol{p_t^{adj} = p_{t-1} - d_t}$	↘
Net Return	$p_t^{adj} = p_{t-1} - d_t \cdot (1 - tax_t)$	↘
Price Return	$\boldsymbol{p_t^{adj} = p_{t-1} - d_t}$	↘

5.1.1.2 Stock Split

Stock splits, reverse stock splits and stock dividends from newly listed instruments of the same share line lead to a change in the instrument price.

The following table describes the necessary adjustments to account for a stock split or a reverse stock split:

Weighting	Price adjustment	Other adjustments	Divisor adjustment
Free Float Market Cap.	$p_t^{adj} = \frac{p_{t-1} \cdot A}{B}$	$s_t^{adj} = s_{t-1} \cdot \frac{B}{A}$	➔
Weighting Factor	$p_t^{adj} = \frac{p_{t-1} \cdot A}{B}$	$w_t^{adj} = w_{t-1} \cdot \frac{B}{A}$	➔

"A" is the number of shares held prior to the stock split and "B" is the number of shares held after the stock split.

5.1.1.3 Rights Issue

The rights issue serves either to raise capital for the company or to return capital to the shareholders. The company issues rights to shareholders so that they can buy shares at a discount or sell shares at a premium.

A rights issue is always assumed to be fully subscribed. The adjusted number of shares is calculated as follows:

Weighting	Price adjustment	Other adjustments	Divisor adjustment	
			Capital Increase	Capital Decrease
Free Float Market Cap.	$p_t^{adj} = \frac{p_{t-1} \cdot A \pm SP_{t-1} \cdot B}{A \pm B}$	$s_t^{adj} = s_{t-1} + SR_{t-1}$	↗	↘
Weighting Factor	$p_t^{adj} = \frac{p_{t-1} \cdot A \pm SP_{t-1} \cdot B}{A \pm B}$	$w_t^{adj} = w_{t-1} \cdot \frac{p_{t-2}}{p_{t-1}^{adj}}$	➔	➔

"A" is the number of shares held prior to the rights issue and "B" is the number of tendered shares (a positive number in case of capital increase, a negative number in case of capital reduction).

The weighting factor weighted index determines its weights independently of market capitalization, hence rights issues do not have any influence on the market value. The adjusted weighting factor is calculated based on the closing price two trading days prior to the effective date.

5.1.1.4 Adjustments in case the Rights Issue does not follow the standard process described in section 5.1.1.3

This treatment applies to the following cases:

- Issue of convertible debt certificates, debt certificates associated with warrants to subscribe for new issues or similar securities that affect the Index Component
- Offer to acquire securities or rights of any kind or to acquire such securities or rights without payment
- New issue involving a new type of share that is not an ordinary share and that deviates from the ones of the Index Component

If a valuation of the distribution is available, scenario 5 mentioned in section 5.1.2.3 applies.

If no valuation of the distribution is available, scenario 1, 2, 3 or 4 in section 5.1.2.3 applies.

5.1.1.5 Withholding Tax

Withholding taxes are taxes deducted at source and remitted to the government directly. They are applicable to certain distributions.

In such cases, gross distributions are adjusted by the withholding tax applicable to the company that pays the distribution.

More details about the applicability of withholding taxes can be found in section 5.1.1.1 Dividend Payments.

5.1.2 Extraordinary Corporate Actions

5.1.2.1 Initial Public Offering (IPO) and New Listings

A company newly listed on an approved Stock Exchange and fulfilling the selection criteria is included in the index calculation from the second trading day, where the last traded price for the company on the first trading day is used.

5.1.2.2 Mergers and Acquisitions

Mergers and acquisitions are corporate actions in which the ownership structure of one or more companies is changed. This may result in the disappearance of the companies involved (delisting) and the formation of a new company (merger) or the integration of one company into the other (acquisition). The corporate action may therefore lead to a new listing or a delisting, resulting in an adjustment of the index composition. In both cases, a change in the number of shares and the free float factor of the companies involved is possible, which may also lead to an adjustment outside of the regular review cycle. Such an adjustment will take effect on the basis of the interim and final end results and considering a notice period of two trading days.

A company will be excluded from an index, at the latest, when the ownership of the absorbing company exceeds 90%.

5.1.2.3 Spin-off

A spin-off occurs when a company sells parts of its business into a new company. Often the shares of the spun-off company are listed. The shares of the newly formed company are distributed equally to the shareholders of the existing company. Therefore, the spin-off is generally treated as an extraordinary payment. Estimates may be used to determine a reference price if one is not provided.

Under the most common circumstances, the below rules will apply:

1. Basket method

   If the spun-off entity is to be listed on the same stock exchange/region, the spun-off entity is added to the same indices as the parent company with either a reference price or zero, until its first trading day with a quoted price. Thereafter the spun-off entity either remains as an index constituent or is removed, depending on the index-specific methodology.

2. No Action

   If no valuation price or estimation is available and the spun-off entity is insignificant, no action is taken.

3. Exclusion

   If no valuation price or estimate is available and the spun-off entity is significant, the parent company is removed from the index the day before the spin-off date and is added again one day after the ex-date.

Spin-off events are complex corporate actions and may differ greatly e.g. in terms of applicable conditions and timing. Taking this into consideration, expert judgement may be applied aiming to reflect the intended economic reality.

Weighting	Price adjustment	Other adjustments	Divisor adjustment
Free Float Market Cap.	$p_t^{adj} = \frac{p_{t-1} \cdot A - PSS_{t-1} \cdot B}{A}$	$s_t^{adj} = s_{t-1} \cdot \frac{B}{A}$	➔
Weighting Factor	$p_t^{adj} = \frac{p_{t-1} \cdot A}{B}$	$w_t^{adj} = w_{t-1} \cdot \frac{B}{A}$	➔

5.1.2.4 Adjustments due to Share Buybacks and Ordinary Capital Increases

Extraordinary corporate actions may lead to an adjustment of the number of shares and the free float factor outside the ordinary index review:

- The corporate action leads to an adjustment of the number of shares of at least 10%
- The corporate action leads to an adjustment of the free float factor of at least 5%

Such adjustment is effective considering a notice period of two days. The effective date is based on available information.

5.1.2.5 Bankruptcy

When a company files for bankruptcy, it is deleted from the index. In most cases, after a bankruptcy a company fails to meet the exchange's requirements for a listing. On its final day as index constituent the price of the constituent is set at zero.

5.1.2.6 Liquidation

In the event of the liquidation of an Index Component, it may be excluded from the index.

5.1.3 Index-Specific Treatments

As described in section 5.1.2, extraordinary corporate actions include IPOs, mergers & acquisitions, spin-offs, insolvencies or any other events leading to a listing or delisting. Although there is a clearly defined effective date for an extraordinary corporate action, its effect can usually not be anticipated with a generally valid formula. Since in most cases an extraordinary corporate action involves index-relevant listing or delisting, an extraordinary adjustment (inclusion or exclusion) of the index composition and its weighting is made.

The exact handling and the timing of those extraordinary exclusions and inclusions is specified in the respective index-specific methodology.

5.2 Corporate Actions Bond Indices

5.2.1 Ordinary Corporate Actions

Generally, two standard corporate actions are leading to an index divisor adjustment. Those are coupon payments and the change in the nominal amount of a bond instrument.

5.2.1.1 Coupon Payments

Coupon payments are adjusted only in Total Return Indices and always treated as gross amounts, including the withholding tax portion. The change in market value for a single bond due to coupon payment is defined as:

$$\Delta M_{i,coupon} = (-\tau_{i,t+1} \cdot C_i) \cdot N_{i,t}$$

At the ex-date (t+1) the coupon period changes to the next one and τ drops to 0. To offset this effect, the divisor is adjusted for all accrued interests effective on t, assuming a reinvestment into the index.

Therefore, the index adjustment and effect for k bonds with a coupon payment can be summarized as follows:

Index	Index adjustment	Divisor adjustment
Total Return	$\sum_{i=1}^{k} \Delta M_{i,coupon}$	↘
Price Return	n.a.	→

5.2.1.2 Change in Nominal Amount

A change in market value based on a change in the nominal amount of a bond is adjusted for both Total Return and Price Return Indices. Changes in the nominal amount of a bond are implemented on the effective date (t+1), which usually is the next ordinary index review date. It is assumed that the increase or decrease has no effect on the market price.

$$\Delta M_{i,nominal} = \left(N_{i,t+1} - N_{i,t}\right) \cdot p_{i,t}$$

The index adjustment and effect for l bonds with a change in nominal amount can be summarized as follows:

Index	Index adjustment	Divisor adjustment	
		Nominal amount increase	Nominal amount decrease
Total Return	$\sum_{i=1}^{l} \Delta M_{i,nominal}$	↗	↘
Price Return	$\sum_{i=1}^{l} \Delta M_{i,nominal}$	↗	↘

5.2.2 Extraordinary Corporate Actions

In addition to the two standard corporate actions mentioned above, there are also extraordinary adjustments. These include, for example, the early redemption of a bond.

5.2.2.1 Early Redemption of a Bond

If a bond is called outside the predefined dates, for example due to a takeover or another exceptional event, it is kept in the index until the next ordinary index review. For the period after the call, the redemption price is used, if possible. In addition, the yield and duration of the bond are set to zero.

5.3 Specific Bond Indices

5.3.1 Yield Index

The yield is used to calculate the returns of an investment into a bond based on today's market price if it was held until Maturity or First Call. On an index level the weighted average yield over all bonds in the index is considered.

For the Yield Index calculation only the Yield to Worst (YTW) is considered which is the lower of Yield to Maturity (YTM) and Yield to First Call (YTC). The problem to be solved therefore can be expressed in the following equation where the current price including accrued interest is set into relation to the expected cash flows of the bond:

$$p_{i,t} + \tau_{i,t} \cdot C_{i,T} = \left(\sum_{T=1}^{\mathrm{R}_{i,t}} \frac{\frac{C_{i,T}}{cpa}}{\left(1 + \frac{YTW_i}{cpa}\right)^{T-\tau_{i,t}}} \right) + \frac{FV_i}{\left(1 + \frac{YTW_i}{cpa}\right)^{\mathrm{R}_{i,t}-\tau_{i,t}}}$$

Subject to

R is either TTM or TTC so that YTW is minimal.

To resolve this equation to YTW, SIX uses standard approximation techniques. For bonds with more than one coupon payment per year, the YTW is annualized with the following method before considered in the index calculation:

$$YTW_{a,i,R} = \left(1 + \frac{YTW_{i,R}}{cpa}\right)^{cpa} - 1$$

Based on the Yield to Worst and the Duration to Worst, which is introduced in the section below, the Average Yield is calculated as follows:

$$I_t = \sum_{i=1}^{n} YTW_{i,t} \cdot G_{i,t}$$

Where:

$$G_{i,t} = \frac{M_{i,t} \cdot D_{i,t}}{\sum_{i=1}^{n} M_{i,t} \cdot D_{i,t}}$$

and

$$M_{i,t} = N_{i,t} \cdot (p_{i,t} + \tau_{i,t} \cdot C_{i,T})$$

5.3.2 Duration Index (Macaulay Duration)

The Macaulay duration is the weighted average of the time until all cash flows are received measured in years. The Duration Index weights the durations of all bonds in the index by their market capitalization.

The Duration to Worst is calculated using with the following expression:

$$D_{i,t} = \frac{\left(\sum_{T=1}^{R_{i,t}} \frac{(T - \tau_{i,t}) \cdot \frac{C_{i,T}}{cpa}}{\left(1 + \frac{YTW_{i,t}}{cpa}\right)^{T-\tau_{i,t}}} \right) + \frac{(R_{i,T} - \tau_{i,t}) \cdot FV_i}{\left(1 + \frac{YTW_{i,t}}{cpa}\right)^{R_{i,T}-\tau_{i,t}}}}{cpa \cdot (p_{i,t} + \tau_{i,t} \cdot C_{i,T})}$$

Based on the duration of the bonds the Average Duration on index level is calculated as follows:

$$I_t. = \sum_{i=1}^{n} D_{i,t} \cdot G_{i,t}$$

Where:

$$G_{i,t} = \frac{N_{i,t} \cdot (p_{i,t} + \tau_{i,T} \cdot C_i)}{\sum_{i=1}^{n} N_{i,t} \cdot (p_{i,t} + \tau_{i,T} \cdot C_i)}$$

5.3.3 Spread Index

The riskiness of a fixed income instrument can be expressed by the additional yield ("Risk Premium") that the instrument offers compared to a (nearly) risk-free reference asset. Within the fixed income space, this reference asset is normally a government bond or a swap rate.

Over time the riskiness of bonds varies and the additional "Risk Premium" extends or contracts. The risk is measured relative to a Yield Curve (typically a Government Curve or a Swap Curve), i.e. the yield difference between the individual bond and the respective Yield Curve at the maturity point of the bond reflects its individual "Risk Premium". For the spread indices in this section, the risk premium measured against the Swiss Government Curve is referred to as "Spread to Government" and measured against the CHF SARON based Swap Curve as "Spread to Swap".

5.3.3.1 Yield Curve Data

Yield Curve data for Swiss government bonds and CHF SARON based swaps is sourced from an external provider, who creates such curves by fitting bond and swap price data from SIX Swiss Exchange and other trading venues to the suitable yield and maturity profiles.

To calculate the reference price point for any given Swiss government bond, an average is calculated from the various trading venues. Price data to determine the Yield Curve is selected at 17:30 CET on each business day of the underlying trading venues.

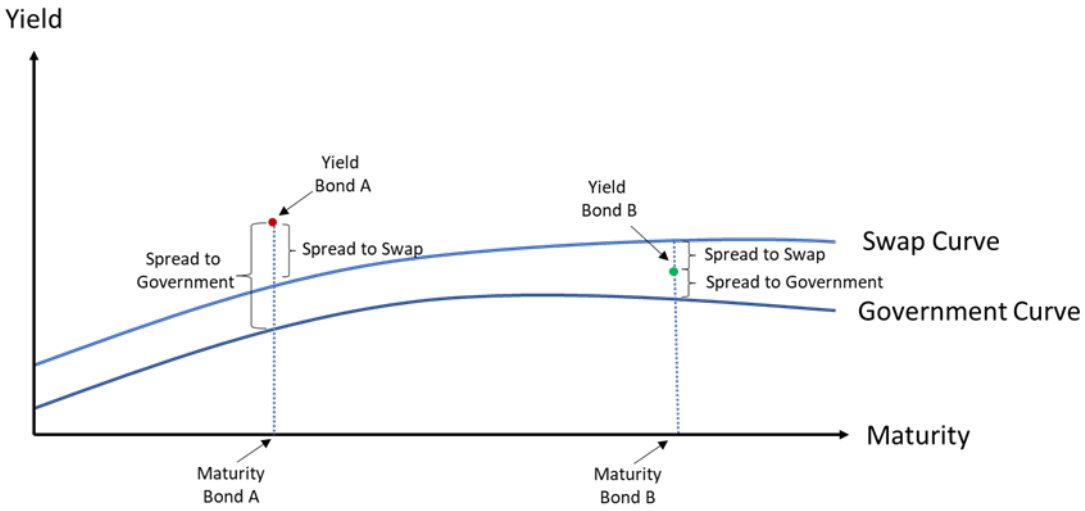
SIX uses data points of these Yield Curves up to a maturity of 30 years, with an accuracy of 0.25 years.

5.3.3.2 Calculation of Spreads

To calculate the spread measure ("Risk Premium") of an individual bond, it is necessary to have the respective yields of the Government- and Swap-Curve at the maturity point of the individual bond. If the maturity of a bond lies between 0.25-year increments of the provided Yield Curve, SIX calculates the corresponding yield by linear interpolation of the two data points that are on the Yield Curve immediately before and after the maturity to be determined (Example: if a bond has a remaining maturity of 17.7 years, the data points on the respective curve for 17.5 years and for 17.75 years will be used to determine the yield of the curve for a maturity of 17.7 years).

If the maturity of a bond is 30 years or longer, SIX will use the 30 year data point on the Yield Curve as the corresponding yield for the spread calculation.

The spread is then calculated by subtracting the yield of the bond, as calculated in section 5.3.1 Yield Index, from the yield of the curve at the maturity of the bond, as explained above. The calculation is shown in the graph below:



$$Spread\ to\ Government_{Bond\ B} = Yield_{Bond\ B} - Government\ Curve_{Maturity\ Point\ Bond\ B}$$

$$Spread\ to\ Swap_{Bond\ A} = Yield_{Bond\ A} - Swap\ Curve_{Maturity\ Point\ Bond\ A}$$

5.3.3.3 Calculation of Spread Index

Spread Indices based on the Swiss Bond Index Family aim to measure the change in this "Risk Premium" for a given Index Composition and are calculated as follows:

$$SSIndex_t = \sum_{i=1}^{n} \frac{M_{i,t}}{\sum_{i=1}^{n} M_{i,t}} \cdot SS_{i,t}$$

$$SGIndex_t = \sum_{i=1}^{n} \frac{M_{i,t}}{\sum_{i=1}^{n} M_{i,t}} \cdot SG_{i,t}$$

Where:

$SSIndex_{\square} \rightarrow Spread\ to\ Swap\ Index\ value\ (in\ bps)$

$SGIndex_{\square} \rightarrow Spread\ to\ Government\ Index\ value\ (in\ bps)$

$SS_{\square} \rightarrow Spread\ to\ Swap\ of\ an\ individual\ bond$

$SG_{\square} \rightarrow Spread\ to\ Government\ of\ an\ individual\ bond$

$M_{i,t} = w_{i,t}\ (p_{i,t} + \tau_{i,t} C_i)$

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