

# BOND INDEX METHODOLOGY

Version 2.2

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## INTRODUCTION

Solactive is committed to the highest standards of integrity and professionalism, which is reflected by a transparent and replicable index design and calculation methodology. Solactive adheres to the following standards in developing methodologies, which, inter alia, are:

- > robust and reliable;
- > rigorous and continuous;
- > traceable and verifiable;
- > resilient; and
- > inclusive of information on the treatment of Corporate Actions.

In line with the above objectives, Solactive develops, calculates and maintains its Indices based on the specifications in this Bond Index Methodology.

Solactive fully complies with the IOSCO principles on the quality and integrity of Index Guidelines by giving its stakeholders a detailed insight into the calculation and maintenance of its Indices. With further reference to the EU Benchmarks Regulation (Regulation (EU) 2016/1011), it is the objective of this Bond Index Methodology to carve out a general framework of applicability which can be referenced by individual Index Guidelines. Disclosure of the index maintenance rules as well as general calculation methods contained in the Bond Index Methodology should further enable issuers and investors to evaluate and utilize Solactive Indices.

The Index Guidelines contain specifications of the relevant Index, Index Component Requirements and calculation frequencies whereas this Solactive Bond Index Methodology elaborates on the Index formulae used by Solactive and their respective adjustments. This Bond Index Methodology further defines the various Corporate Actions which are considered by Solactive in the index maintenance process and specifies their corresponding treatment. It explains the application by means of a detailed description of the individual steps. Generally speaking, Corporate Actions that have a material impact on the price, weighting or overall integrity of Index Components need to be accounted for in the calculation of the Index.

Solactive also develops and calculates customized indices. Due to the variety of their different constructions, each customized Index may follow its own unique Index Guideline. Therefore, the respective Index Guideline provides more detailed information on the index setup and maintenance. In case rules described in an Index Guideline differ from the framework of the Bond Index Methodology, the Index Guidelines prevail. While Solactive aims at maintaining its Bond Index Methodology as generic and transparent as possible and in line with the above-mentioned regulatory requirements, it retains the right to deviate from the standard procedures described in this Bond Index Methodology in case of any unusual or complex Corporate Action or if such a deviation is made to preserve the comparability and representativeness of an Index over time.

In accordance with the principle of transparency, the Bond Index Methodology is directed to all stakeholders, such as financial issuers, potential investors as well as interested third parties, among others. Therefore, this Bond Index Methodology intends to be concise as well as comprehensible on



all levels. The core concepts and terms are defined in Section 4 and the adjustment formulas are presented and explained.

## 1 INDEX CALCULATION & SCOPE

This section details the general calculation methodology for Solactive Indices, elaborating on the index types and the calculation formulas applied for the different cash reinvestment approaches. An overview of the rounding, settlement and day count conventions, index adjustment rules, treatments for special bond types, notice period and index data distribution process used by Solactive for index calculation is also provided.

### 1.1 INDEX TYPES

Based on the client's objective and in line with the industry standards, Solactive offers bond index calculation in price return and total return versions. A Price Return (PR) Index reflects Clean Price movements of the Index Components disregarding accrued interest and coupon payments and only accounting for redemption proceeds with respect to Index Components resulting from Corporate Actions taking place between two Rebalance Days. In this way, price return indices aim to reflect the price performance of the overall market, or of its particular segment. A Total Return (TR) Index seeks to replicate the overall return from holding an index portfolio, thus considering both coupon payments and Corporate Action proceeds in addition to the Dirty Price changes. A Gross Return Index does not consider any tax treatments related to the cash distributions or inflows of the indices constituents. On the other hand, a Net Return Index applies the adequate tax rate to the cash distributions and inflows and then represents a minimal possible reinvestment of the proceeds.

### 1.2 CALCULATION FORMULAS

The index calculation depends on the cash reinvestment approach. Based on whether the cash reinvestment is daily or periodic, Solactive Indices can be calculated with either of the formulas outlined below, as specified in the Index Guideline for the individual Index.

#### 1.2.1 Direct Reinvestment Index Formula

The Direct Reinvestment Index Formula implies daily reinvestment of proceeds resulting from Corporate Actions and, with respect to total return indices, coupons into the Index on the effective date proportionally to the weights of Index Components. The Direct Reinvestment Index Formula implies that the Index Level changes along with the weighted change of prices of its Index Components (the Clean Price, which means the accrued interest is excluded, is used for a Price Return Index and the Dirty Price, which accounts for the accrued interest, is used for a Total Return Index). A Total Return Index additionally incorporates the Cash Component. Depending on the index version (TR or PR), a different formula is used:



> Price Return Index

$$Index_t = Index_{t-1} \cdot \left(1 + \sum_{i=1}^a (PriceReturn_{i,t} \cdot Weight_{i,t-1})\right) \quad (1)$$

where:

$$PriceReturn_{i,t} = \frac{Price_{i,t} \cdot FX_{i,t} \cdot IR_{i,t}}{Price_{i,t-1} \cdot FX_{i,t-1} \cdot IR_{i,t-1}} - 1 \quad (2)$$

$$Weight_{i,t-1} = \frac{Price_{i,t-1} \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t-1} \cdot IR_{i,t-1}}{\sum_{i=1}^a Price_{i,t-1} \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t-1} \cdot IR_{i,t-1}} \quad (3)$$

> Total Return Index

$$Index_t = Index_{t-1} \cdot \left(1 + \sum_{i=1}^a (TotalReturn_{i,t} \cdot Weight_{i,t-1})\right) \quad (4)$$

where:

$$TotalReturn_{i,t} = \frac{(Price_{i,t} + AI_{i,t} + Cash_{i,t} + CPAdj_{i,t}) \cdot SinkingFactor_{i,t} \cdot \frac{IR_{i,t}}{IR_{i,t-1}} \cdot \frac{FX_{i,t}}{FX_{i,t-1}}}{(Price_{i,t-1} + AI_{i,t-1} + CPAdj_{i,t-1}) \cdot SinkingFactor_{i,t-1} \cdot \frac{IR_{i,t-1}}{IR_{i,t-1}} \cdot \frac{FX_{i,t-1}}{FX_{i,t-1}}} - 1 \quad (5)$$

$$Weight_{i,t-1} = \frac{(Price_{i,t-1} + AI_{i,t-1}) \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t-1} \cdot IR_{i,t-1}}{\sum_{i=1}^a (Price_{i,t-1} + AI_{i,t-1}) \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t-1} \cdot IR_{i,t-1}} \quad (6)$$

> Net Total Return Index

$$Index_t = Index_{t-1} \cdot \left(1 + \sum_{i=1}^a (TotalReturn_{i,t} \cdot Weight_{i,t-1})\right) \quad (7)$$

where:

$$\begin{aligned} NetTotalReturn_{i,t} &= \frac{(Price_{i,t} + (1 - \text{tax rate})AI_{i,t} + (1 - \text{tax rate})Cash_{i,t} + (1 - \text{tax rate})CPAdj_{i,t}) \cdot SinkingFactor_{i,t}}{(Price_{i,t-1} + (1 - \text{tax rate})AI_{i,t-1} + (1 - \text{tax rate})CPAdj_{i,t-1}) \cdot SinkingFactor_{i,t-1}} \\ &\cdot \frac{IR_{i,t}}{IR_{i,t-1}} \cdot \frac{FX_{i,t}}{FX_{i,t-1}} - 1 \end{aligned} \quad (8)$$



$$Weight_{i,t-1} = \frac{(Price_{i,t-1} + AI_{i,t-1}(1 - tax\ rate)) \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t-1} \cdot IR_{i,t-1}}{\sum_{i=1}^a (Price_{i,t-1} + AI_{i,t-1}(1 - tax\ rate)) \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t-1} \cdot IR_{i,t-1}} \quad (9)$$

### 1.2.2 Periodic Reinvestment Formula

According to the periodic cash reinvestment methodology, proceeds resulting from Corporate Actions and, with respect to total return indices, cash payments are held in a Cash Component from the effective date of the Corporate Action or Coupon Payment up to the next regular Rebalance Day when the proceeds are reinvested into the Index proportionally to the weights of the Index Components. Unlike the Direct Reinvestment Index Formula that uses daily bond returns as a basis for index calculation, the Periodic Reinvestment Index Formula tracks performance relative to the so-called Base Value (Market Value on the Rebalance Day with the Amount Outstanding as of Selection Day). The formula for a Price Return Index adjusts the Index Level for changes in the Market Value and Cash Component as compared to the Base Value. Total Return version includes cash derived from coupon payments and replaces Dirty Price with Clean Price.

#### > Price Return Index

$$Index_t = Index_n \cdot \frac{MarketValue_t + Cash_t}{BaseValue_n} \quad (10)$$

where:

$$BaseValue_n = \sum_{i=1}^a Price_{i,n} \cdot SinkingFactor_{i,n} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,n} \quad (11)$$

$$MarketValue_t = \sum_{i=1}^a Price_{i,t} \cdot SinkingFactor_{i,t} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (12)$$

$$Cash_t = CashSink_t + CashCA_t \quad (13)$$

$$CashSink_t = \sum_{i=1}^a CashSink_{i,t-1} + \sum_{i=1}^a SinkPayment_{i,t} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (14)$$

$$CashCA_t = \sum_{i=1}^a CashCA_{i,t-1} + \sum_{i=1}^a RedemptionPrice_{i,t} \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (15)$$

#### > Total Return Index



$$Index_t = Index_n \cdot \frac{MarketValue_t + Cash_t}{BaseValue_n} \quad (16)$$

where:

$$BaseValue_n = \sum_{i=1}^a (Price_{i,n} + AI_{i,n} + CAP_{i,n} + CPAdj_{i,n}) \cdot SinkingFactor_{i,n} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,n} \quad (17)$$

$$MarketValue_t = \sum_{i=1}^a (Price_{i,t} + AI_{i,t} + CAP_{i,t} + CPAdj_{i,t}) \cdot SinkingFactor_{i,t} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (18)$$

$$Cash_t = CashCoupon_t + CashSink_t + CashCA_t \quad (19)$$

$$CashCoupon_t = \sum_{i=1}^a CashCoupon_{i,t-1} + \sum_{i=1}^a Coupon_{i,t} \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (20)$$

$$CashSink_t = \sum_{i=1}^a CashSink_{i,t-1} + \sum_{i=1}^a SinkPayment_{i,t} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (21)$$

$$CashCA_t = \sum_{i=1}^a CashCA_{i,t-1} + \sum_{i=1}^a (RedemptionPrice_{i,t} + AI_{i,t} + CAP_{i,t} + CPAdj_{i,t}) \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (22)$$

## > Net Total Return Index

$$Index_t = Index_n \cdot \frac{MarketValue_t + Cash_t}{BaseValue_n} \quad (23)$$

where:

$$BaseValue_n = \sum_{i=1}^a (Price_{i,n} + (1 - tax\ rate) AI_{i,n} + CAP_{i,n} + (1 - tax\ rate) CPAdj_{i,n}) \cdot SinkingFactor_{i,n} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,n} \quad (24)$$

$$MarketValue_t = \sum_{i=1}^a (Price_{i,t} + (1 - tax\ rate) AI_{i,t} + CAP_{i,t} + (1 - tax\ rate) CPAdj_{i,t}) \cdot SinkingFactor_{i,t} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (25)$$





$$Cash_t = CashCoupon_t + CashSink_t + CashCA_t \quad (26)$$

$$CashCoupon_t = \sum_{i=1}^a CashCoupon_{i,t-1} + \sum_{i=1}^a (1 - tax\ rate) \cdot Coupon_{i,t} \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (27)$$

$$CashSink_t = \sum_{i=1}^a CashSink_{i,t-1} + \sum_{i=1}^a SinkPayment_{i,t} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (28)$$

$$CashCA_t = \sum_{i=1}^a CashCA_{i,t-1} + \sum_{i=1}^a (RedemptionPrice_{i,t} + (1 - tax\ rate) \cdot AI_{i,t} + CAP_{i,t} + (1 - tax\ rate) \cdot CPAdj_{i,t}) \cdot SinkingFactor_{i,t-1} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (29)$$

### 1.2.3 Definition of variables

|                                     |  |
|-------------------------------------|--|
| <b><i>a</i></b>                     | Number of bonds in the Index   |
| <b><i>AI<sub>i,t</sub></i></b>      | Interest accrued of bond <i>i</i> on Business Day <i>t</i>   |
| <b><i>Amt<sub>i,t</sub></i></b>     | Amount Outstanding of bond <i>i</i> on Business Day <i>t</i>   |
| <b><i>BaseValue<sub>n</sub></i></b> | Base Market Value of the Index as of Rebalance Day <i>n</i>  |
| <b><i>CAP<sub>i,t</sub></i></b>     | Capitalization Rate of bond <i>i</i> on Business Day <i>t</i> (only relevant for Capitalizing Bonds, otherwise the default value is zero)  |
| <b><i>CF<sub>i,SD</sub></i></b>     | Capping factor of bond <i>i</i> on Selection Day :<br>Fixed on the immediately preceding Selection Day and defined as a parameter used to scale the weight of the bond   |
| <b><i>CPAdj<sub>i,t</sub></i></b>   | Variable Coupon Adjustment Factor of bond <i>i</i> on Business Day <i>t</i> :<br>If the bond is included in the Index during the Ex-Dividend Period, the factor is zero; if the bond is a constituent of the Index during the Ex-Dividend Period, the Variable Coupon Adjustment Factor equals to the coupon value that will be paid on the next coupon date (only |



|   |  |
|---|--|
|   | relevant for bonds with Ex-Dividend Period, otherwise default value is zero)   |
| <b><math>CashCA_t</math></b>              | Aggregated cash consisting of all repayments resulting from Corporate Actions effective up to and including Business Day $t$   |
| <b><math>CashCoupon_t</math></b>          | Aggregated cash consisting of all coupon payments made by the Index Components up to and including Business Day $t$  |
| <b><math>CashSink_t</math></b>            | Aggregated cash consisting of all early repayments of all Sinkable Bonds up to and including Business Day $t$  |
| <b><math>Cash_t</math></b>                | Aggregated cash consisting of all payments made by the Index Components up to and including Business Day $t$ . In relation to Price Return Indices the term $Cash$ includes cash derived from payments resulting from Corporate Actions and early repayments of Sinkable Bonds, while Total Return Indices reflect coupon payments in addition to that. On the immediately following Rebalance Day, $Cash$ is reinvested into the Index and the value is set to zero |
| <b><math>Cash_{i,t}</math></b>            | Cash consisting of all payments made by bond $i$ on Business Day $t$ . On the immediately following Business Day, $Cash$ is reinvested into the Index and the value is set to zero   |
| <b><math>Coupon_{i,t}</math></b>          | Coupon value of bond $i$ on Business Day $t$   |
| <b><math>FX_{i,t}</math></b>              | Exchange rate of bond $i$ currency against the Index Currency on Business Day $t$  |
| <b><math>IR_{i,t}</math></b>              | Inflation ratio of bond $i$ on Business Day $t$ (only relevant for Inflation-Linked Bonds, otherwise the default value is one)   |
| <b><math>Index_t</math></b>               | Index Level on Business Day $t$  |
| <b><math>MarketValue_t</math></b>         | Market Value of Index on Business Day $t$  |
| <b><math>n</math></b>                     | Last Rebalance Day   |
| <b><math>PriceReturn_{i,t}</math></b>     | Price Return of bond $i$ on Business Day $t$   |
| <b><math>Price_{i,t}</math></b>           | Clean Price of bond $i$ on Business Day $t$  |
| <b><math>RedemptionPrice_{i,t}</math></b> | Price at which bond $i$ is redeemed as a result of a Corporate Action effective on Business Day $t$  |
| <b><math>SD</math></b>                    | Last Selection Day   |



|   |  |
|---|--|
| <b><i>SinkPayment<sub>t</sub></i></b>     | Value of the early repayment of Sinkable Bond <i>i</i> on Business Day <i>t</i> .<br>The Sink Payment is calculated as:<br>$Sink\ Payment_{i,t} = (SinkingFactor_{i,t-1} - SinkingFactor_{i,t}) \cdot Price_{i,t}$ |
| <b><i>SinkingFactor<sub>i,t</sub></i></b> | Sinking Fund Factor of bond <i>i</i> on Business Day <i>t</i> (only relevant for Sinkable Bonds, otherwise default value is one)   |
| <b><i>t</i></b>                           | Business Day which is between two regular Rebalance Days   |
| <b>tax rate</b>                           | The applied tax rate to the net return indices   |
| <b><i>TotalReturn<sub>i,t</sub></i></b>   | Total Return of bond <i>i</i> on Business Day <i>t</i>   |
| <b><i>Weight<sub>i,t</sub></i></b>        | Weight of bond <i>i</i> on Business Day <i>t</i>   |

### 1.3 ROUNDING CONVENTION

Solactive calculates its Indices in accordance with the following rounding convention:

- > Index Level: No rounding
- > Prices of Index Components: No rounding
- > Foreign exchange rates: No rounding
- > Amount Outstanding: No rounding
- > Coupon: No rounding
- > Accrued interest: No rounding
- > Cash Component / Payments: No rounding
- > Market Value (Base Market Value, Market Value): No rounding
- > Weights: No rounding
- > Capping factor: No rounding

The published Index Levels are rounded to 2 decimal places. Any deviation from these specifications will be indicated in the individual Index Guidelines.

### 1.4 SETTLEMENT CONVENTION

The default Settlement Convention applied in Solactive Indices is  $t + 0$ , which assumes that bond buy/sell transactions are settled on the same Business day for all Index Components. With respect to the index calculation, this implies the accrued interest of each individual bond *i* used for the Index Closing computation as of *t* being exactly the interest that has accrued on the bond up to and including Business Day *t*.



A  $t + x$  convention implies that the payment for a bond is made in  $x$  Business Days after the execution date. Under this convention, the accrued interest of bond  $i$  used for the calculation of the Index Level on a Business Day  $t$  equals the interest that has accrued on the bond up to and including Business Day  $t + x$ .

These two approaches define the Settlement Convention applicable for calculation of the Index, which disregard individual bond conventions. Another way to account for transaction settlements, is to apply the bond-specific Settlement Conventions. This treatment results in bond  $i$  accrued interest contribution to the Index Level as of  $t$  depending on its individual convention.

## 1.5 DAY COUNT CONVENTION

According to the terms of a bond, the following day count conventions are taken into account:

### > Act/Act

The "ACT/ACT" day-count convention calculates interest by considering the actual number of days between two dates and dividing it by the actual number of days in the year, whether it's a leap year or not. It is known for its precision and is often used in financial instruments where accuracy is critical, such as government bonds.

The days in the numerators are calculated on a Julian day difference basis. In this convention the first day of the period is included and the last day is excluded.

### > Act/360

This convention calculates interest based on the actual number of days between two dates, with a year assumed to have 360 days.

### > Act/365

Similar to Act/360, this convention calculates interest based on the actual number of days between two dates. However, it assumes a year has 365 days.

### > 30/360

In this convention, each month is assumed to have 30 days, and a year is considered to have 360 days, regardless of the actual number of days in each month or year.

### > ISMA 30/360

The ISMA 30/360 day-count convention is a variation of the 30/360 day-count convention that follows specific rules established by the International Securities Market Association (ISMA).

Date adjustment rules for the ISMA 30/360 day-count convention are as follows:



If D1 is 31, then change D1 to 30: This rule applies to the first date, denoted as D1. If the first date falls on the 31st of a month, it is adjusted to the 30th of that same month. This adjustment ensures that months with fewer than 31 days are treated consistently, avoiding the need to account for the varying lengths of different months.

For example, if you have a date range from January 31st to February 28th in a non-leap year, the adjustment would change the first date to January 30th, making the calculation simpler and more uniform.

If D2 is 31, then change D2 to 30: Similarly, this rule applies to the second date, denoted as D2. If the second date falls on the 31st of a month, it is also adjusted to the 30th of that same month. This ensures that the calculation remains consistent and straightforward, even when the second date falls on the last day of a month.

For instance, if you have a date range from August 15th to September 30th, the adjustment would change the second date to September 30th, simplifying the calculation of interest accrual.

## > BUS DAY/252

The BUS DAY/252 day-count convention calculates the number of business days (excluding weekends and holidays) between two dates and divides it by 252 to determine interest.

Here, instead of calendar days, only business days are considered in the calculation of the accruals. The business days of the respective stock market are used.

Specific features: on a holiday (and on Saturdays/Sundays), the accruals are calculated according to the following logic:

The value for the next business day is used instead of the previous day value.

## 1.6 INDEX REBALANCE

The composition of the Index is ordinarily reviewed on the Selection Day. Any change to the Index will be implemented on the Rebalance Day, if not specified otherwise in the Index Guideline. Changes will be announced on the Announcement Day.

## 1.7 SPECIAL TREATMENTS

### 1.7.1 Treatment for Sinkable Bonds

In order to account for payments from Sinkable Bonds, a respective cash component will be considered in the index calculation.

The cash component  $CashSink_t$  is calculated according to the formula:

$$CashSink_t = \sum_{i=1}^a CashSink_{i,t-1} + \sum_{i=1}^a SinkPayment_{i,t} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (30)$$



$$SinkPayment_{i,t} = (SinkingFactor_{i,t-1} - SinkingFactor_{i,t}) \cdot Price_{i,t} \quad (31)$$

$SinkingFactor_{i,t}$  of a bond  $i$  on Business Day  $t$  is only relevant for Sinkable Bonds, otherwise the default value is one.

### 1.7.2 Treatment for bonds with Ex-Dividend Period

For bonds with coupon payments that go ex-dividend, the bond buyer will not be entitled to receive the coupon payment, if purchased between the ex-dividend date and coupon payment date. To compensate the bond buyer for holding the bond up to the coupon payment date, the accrued interest is negative during the Ex-Dividend Period. Therefore, the Dirty Price reflects that the coupon will not be paid to the new bondholder but rather to the original bondholder. With respect to the index, this means that if a bond is already a constituent of the Index on its ex-dividend date, the next coupon payment is displayed as a Variable Coupon Adjustment Factor  $CPAdj_{i,t}$  which adjusts the accrued interest taken into account in the index calculation. If the bond is included in the Index during the Ex-Dividend Period (i.e. the bond was not a constituent of the Index on ex-dividend date)  $CPAdj_{i,t}$  is zero as the next coupon payment does not accrue to the bond holder.

### 1.7.3 Treatment for Capitalizing Bonds

Between two Rebalance Days the increased Amount Outstanding of Capitalizing Bonds is incorporated into the Market Value via the Capitalization Rate ( $CAP_{i,t}$ ).

When calculating the Market Value of a Capitalizing Bond, the variable  $CAP_{i,t}$  receives the value of the Capitalization Rate of bond  $i$  on Business Day  $t$ , which is different from the default value of zero.

$$MarketValue_t = \sum_{i=1}^a (Price_{i,t} + AI_{i,t} + CAP_{i,t} + CPAdj_{i,t}) \cdot SinkingFactor_{i,t} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (32)$$

On the next Rebalance Day, the Amount Outstanding for the Capitalizing Bond will be increased accordingly in case the bond is still an Index Component.

### 1.7.4 Treatment for Floating Rate Notes

The coupon payments of Floating Rate Notes are dependent on an external interest rate. If the rate is unavailable for the determination of the next coupon payment (e.g. the coupon is paid on the floating rate “fixing” date), the current rate is used as an indicative value. Once the rate is available, the coupon will be adjusted accordingly.

## 1.8 CALCULATION

The Index is calculated and distributed once every Business Day based on the Last Evaluated price of the Index Components. In each Index, the Index Price Convention will determine the price type



used for the calculation of the Index. The price convention states whether bid, mid, ask prices are used for entering, existing and exiting index components. Unless otherwise specified in the Index Guideline, newly added bonds will be included in the Index at the Index Price Convention. Bonds removed from the Index at the Rebalance Day will be removed following the Index Price Convention unless specified otherwise. The bond removal will take place at the last Index Closing calculation before the new Index Composition becomes effective. Prices of Index Components not denominated in the Index Currency are converted using the foreign exchange fixings specified in the Index Guideline.

## 1.9 RECALCULATION

Solactive makes the greatest possible efforts to accurately calculate and maintain its indices. However, errors in the determination process may occur for various reasons (internal or external) and therefore, cannot be completely ruled out. Solactive endeavors to correct all errors that have been identified within a reasonable period of time. The understanding of “a reasonable period of time” as well as the general measures to be taken are generally depending on the underlying and is specified in the Solactive Correction Policy, which is incorporated by reference and available on the Solactive website: <https://www.solactive.com/documents/correction-policy/>.

## 1.10 ADJUSTMENTS

Under certain circumstances, an adjustment of the Index may be necessary between two regular Rebalance Days. Basically, such adjustment needs to be made if a corporate action in relation to an Index Component occurs. Such adjustment may need to be done in relation to an Index Component and/or may also affect the number of Index Components and/or the weighting of certain Index Components and will be made in compliance with the rules stated in the Bond Index Methodology

## 1.11 WEIGHTING

The Index Components are weighted on the Weighting Day in accordance with the rules stated in the Index Guideline.

## 1.12 CURRENCY VERSIONS

Any Fixed Income Bond Index could have one or more currency versions. Those currency versions are calculated based on the corresponding foreign exchange rate of all index constituents.

## 1.13 INFLATION LINKED BONDS & INDICES

Inflation-Linked Bond indices offer a hedge against inflation by tying the bond's principal and interest payments to a consumer price index. Unlike conventional bonds, which offer a fixed coupon and principal payment, the payouts of inflation-linked bonds adjust over time, maintaining the real value of the investment. To calculate our inflation-linked bond indices, an Inflation Ratio



(IR) for each bond is applied to the coupon and principal. Essentially, it is a ratio calculated by dividing the current value of the underlying inflation index by the value of the index at the time of the bonds interest accrual date.

## 1.14 NOTICE PERIOD

Solactive will announce the result of the Rebalance no later than until COB one Business Day after the Selection Day, if not specified differently in the Index Guideline. In case of an ad-hoc adjustment, Solactive will inform the relevant parties as soon as information is available directly via email and through an announcement on the Solactive official website: <https://www.solactive.com>.

## 1.15 LICENSING & DISTRIBUTION

Licenses to use the INDEX as the underlying value for financial instruments, investment funds and financial contracts may be issued to stock exchanges, banks, financial services providers and investment houses by Solactive AG.

The Indices are distributed via the price marketing services of Stuttgart Stock Exchange and are distributed to all affiliated vendors.

# 2 INDEX GOVERNANCE AND CLASSIFICATIONS

## 2.1 DISCRETION

Any discretion which may need to be exercised in relation to the determination of the Index (for example the determination of the Index Components or any other relevant decisions in relation to the Index) shall be made in accordance with strict rules regarding the exercise of discretion or expert judgement established by the Index Administrator.

Should a Selection Party be used for the index, the determination of the Index Components is subject to decisions of the Selection Party where the exercise of discretion is needed. The Selection Party should confirm that such discretionary decision is performed in accordance with the specifications established by the Index Administrator.

## 2.2 METHODOLOGY REVIEW

The methodology of the Index is subject to regular review, at least annually. In case a need of a change of the methodology has been identified within such review (e.g. if the underlying market or economic reality has changed since the launch of the Index, i.e. if the present methodology is based on obsolete assumptions and factors and no longer reflects the reality as accurately, reliably and appropriately as before), such change will be made in accordance with the Methodology Policy, which is incorporated by reference available on the Solactive website: <https://www.solactive.com/documents/methodology-policy/>.





Such change in the methodology will be announced on the Solactive webpage under the Section “Announcement”, which is available at <https://www.solactive.com/news/announcements/>. The date of the last amendment of this Index is contained in this Guideline.

## 2.3 CHANGES IN CALCULATION METHOD

The application by the Index Administrator of the method described in this document is final and binding. The Index Administrator shall apply the method described above for the composition and calculation of the Index. However, it cannot be excluded that the market environment, supervisory, legal, financial or tax reasons may require changes to be made to this method. The Index Administrator may also make changes to the terms and conditions of the Index and the method applied to calculate the Index that it deems to be necessary and desirable in order to prevent obvious or demonstrable error or to remedy, correct or supplement incorrect terms and conditions. The Index Administrator is not obliged to provide information on any such modifications or changes. Despite the modifications and changes, the Index Administrator will take the appropriate steps to ensure a calculation method is applied that is consistent with the method described above.

## 2.4 TERMINATION

Solactive makes the greatest possible efforts to ensure the resilience and continued integrity of its indices over time. Where necessary, Solactive follows a clearly defined and transparent procedure to adapt index methodologies to changing underlying markets (see Section 5.2 “Methodology Review”) in order to maintain continued reliability and comparability of the indices. Nevertheless, if no other options are available the orderly cessation of the Index may be indicated. This is usually the case when the underlying market or economic reality, which the Index is set to measure or to reflect, changes substantially and in a way not foreseeable at the time of inception of the Index, the Index rules, and particularly the selection criteria, can no longer be applied coherently or the Index is no longer used as the underlying value for financial instruments, investment funds and financial contracts.

Solactive has established and maintains clear guidelines on how to identify situations in which the cessation of the Index is unavoidable, how stakeholders are to be informed and consulted and the procedures to be followed for a termination or the transition to an alternative index. Details are specified in the Solactive Termination Policy, which is incorporated by reference and available on the Solactive website: <https://www.solactive.com/documents/termination-policy/>.

## 2.5 OVERSIGHT

An index committee composed of staff from Solactive and its subsidiaries (the “Index Committee”) is responsible for decisions regarding any amendments to the rules of the Index. Any such amendment, which may result in an amendment of the Guideline, must be submitted to the Index Committee for prior approval and will be made in compliance with the Methodology Policy, which is available on the Solactive website: <https://www.solactive.com/documents/methodology-policy/>.



## 2.6 SANCTIONS

Sanctions can make it difficult or even impossible for users of an Index to trade securities included or represented in the Index on certain markets. By their nature, sanctions can take various forms and can either be comprehensive or selective. They can include broad based trade restrictions or target selected individuals or entities that prevent new investment in or require a divestment from certain markets, securities or financial instruments. Solactive reviews sanctions and their impact on the Indices on a case by-case basis. As a general rule, Solactive only considers sanctions imposed by U.S., U.K. and/or European Union authorities. Securities and financial instruments impacted by sanctions may be treated as follows (but not limited to):

- freezing of their current weight or number of shares for the duration of the sanctions; and/or
- deletion from the Indices; and/or
- becoming ineligible for inclusion in Indices.
- exclusion from specific global or regional Indices.

In all cases, Solactive announces to clients the specific treatment when new sanctions are imposed or removed with effect on the Indices. For Indices that are publicly available on the Solactive website a corresponding notice on the treatment will be published at the website <https://www.solactive.com/news/announcements/>.

## 2.7 SECTION FOR EMERGING/DEVELOPED COUNTRIES

Solactive framework is used to classify markets according to common economic, financial and institutional characteristics and to assess the respective levels of market development. Based on the framework presented below, countries can be classified as Developed, Emerging or Frontier.

Solactive will consider the factors in the table below as criteria in their annual market development review:

|                          |                               | Developed   | Emerging  | Frontier  |
|--------------------------|-------------------------------|---|---|---|
| Economic development     | GNI per capita                | Countries must fall into the top third of the World Bank country universe   | Countries must fall into the top 90% of the World Bank country universe   | Countries not falling into the top 90% of the World Bank country universe   |
|                          | Human Development Index (HDI) | Minimum HDI score of 0.70 out of a total of 1, i.e., High Human Development                                       | Minimum HDI score of 0.55 out of a total of 1, i.e., Medium Human Development                                     | HDI score below 0.55 out of a total of 1, i.e., below Medium Human Development                                      |
| Market size & liquidity  | Market capitalisation         | Countries must fall into the top 55% of the FactSet universe of stocks screened by domestic market capitalisation | Countries must fall into the top 70% of the FactSet universe of stocks screened by domestic market capitalisation | Countries not falling into the top 70% of the FactSet universe of stocks screened by domestic market capitalisation |
|                          | Average daily volume (ADV)    | Countries must have minimum 6-month ADV of USD 56.9 mn of the FactSet universe of stocks                          | Countries must have minimum 6-month ADV of USD 22.8 mn of the FactSet universe of stocks                          | Countries with a 6-month ADV below USD 22.8 mn of the FactSet universe of stocks                                    |
| Capital market structure | Short selling                 | Must be allowed in the country  |   |   |
|                          | Capital repatriation          | No capital repatriation or surrender requirements on capital transactions   |   |   |
|                          | Stable economic environment   | Main currency of debt issuance, credit rating   |   |   |



All countries that do not fall into Developed or Emerging markets according to the above framework, may be considered for classification as Frontier. Countries can only be classified under one category of market development i.e. a country classified as Developed cannot be Emerging or Frontier. More information at <https://www.solactive.com/documents/>

## 2.8 CORPORATE AND GOVERNMENT CLASSIFICATION

Solactive AG classifies the issuer type by using multiple data vendors data and data points by following the principles below:

**Corporate Bonds:** Corporate bonds refer to debt securities issued by either public or private corporations and no direct influence of government or any government entities.

**Government Bonds:** Government bonds refer to debt securities issued by government entities. Depending on the index guideline, Solactive AG index can follow any of these categories or sub part of the categories in their indices. If the category is used, it will be specified in the guidelines under the Selection of the Index Components as an inclusion or exclusion criteria.

### *Category 1: Issuer is a government entity*

Solactive AG defines of a government entity as organizations falling under the sector:

- Sovereign,
  - Sub-Sovereign: General Government, Municipality, Province/State, National Agency, State Agency, Local Agency, and
  - Supranational
- , or those associated with Federal and Federally-Sponsored Credit Agencies.

### *Category 2: Issuer is a government entity or is a government-owned entity*

Category 2 comprises entities categorized as government in category 1, as well as government-owned entities.

A government-owned entity is defined as:

**For public issuer entities:** where the government entity holds more than 50% of the shares outstanding of the issuer entity

**For non-Public issuer entities:** when ownership information is unavailable for non-public entities, the parent/subsidiary relationships are determined based on the information provided by the companies themselves.

### *Category 3: Issuer is government-related*

Category 3 is the strictest classification. If the issuer is:

- classified as government,
- owned by a government entity,
- guaranteed or sponsored by the government,



The issuer will be classified as a government related entity. For the avoidance of doubt, any issuer classified as government by Category 1 and/or 2, will be automatically classified as government for Category 3 as well.

***Government Guaranteed:***

The issue or the issuer receives a formal commitment made by a government or government agency or a group of governments/ government agencies to back or secure financial obligations. The guarantee means that if the issuer defaults on the bond, the government will step in to ensure the bondholders are paid, providing a high level of security to investors. The government's explicit guarantee provides investors with confidence in the bond's safety and stability.

***Government Sponsored:***

A government-sponsored bond is a type of bond issued by a government-sponsored entity, which is a financial institution or corporation with government backing. These bonds are typically used to raise funds for specific purposes, such as supporting housing finance or agricultural development.

## 3 LIMITATIONS AND EXCEPTIONS

### 3.1 DISRUPTION POLICY

This policy sets out the rules and procedures SOLACTIVE will apply during conditions of MARKET STRESS occurring in the calculation process of INDICES administered by SOLACTIVE. MARKET STRESS can arise due to a variety of reasons and take several forms, but generally results in inaccurate or delayed prices for one or more components of an INDEX. As a consequence, the replication of certain indices may be affected due to the lack of liquidity/tradability of certain index components, and SOLACTIVE'S clients may not be able to trade or have difficulties trading relevant securities on certain markets.

SOLACTIVE INDICES may also be directly affected by suspensions or other disruptions, as one or more of the Index components may be prohibited from trading for a longer time, thereby impairing the representativeness of the INDEX. In order to maintain the quality of its Index methodologies, SOLACTIVE has decided to apply strict rules on how to deal with affected INDEX components. Accordingly, SOLACTIVE aims at creating a generic framework of resilient rules that effectively govern such incidents, which further contributes to a highly rule-based methodology and to protecting the integrity of SOLACTIVE INDICES.

### 3.2 SUSPENSION OR TRADING HALT OF AN INDIVIDUAL INDEX COMPONENT

SOLACTIVE defines a 'Trading Halt' as any situation in which the trading of an individual INDEX component is intentionally halted or the INDEX component is suspended from trading for a period of time. Such a TRADING HALT may occur for a variety of reasons, depending on the jurisdiction, the stock exchange and the relevant security. It may be ordered by a supervisory authority based on its statutory powers (e.g. the SEC orders a trading suspension according to Section 12(k) of the



Securities Exchange Act 1934) or the management of an exchange (e.g. in accordance with Section 25 of the German Stock Exchange Act (Börsengesetz), or in accordance with their individual stock exchange rules).

### 3.3 UNPLANNED MARKET CLOSURE

A 'Market Closure', in contrast, affects not only a single INDEX component but the whole market or segments of the market. MARKET CLOSURES can be further divided into planned and unplanned MARKET CLOSURES. The former refers mainly to days on which the relevant exchange is not open for trading as scheduled, while the latter may occur unplanned due to a variety of reasons, inter alia, including: • a systems failure; • a natural or man-made disaster; • armed conflict; • an act of terrorism; • a riot or labour disruption; or • any similar intervening circumstances. With respect to the maintenance and calculation of its INDICES, SOLACTIVE sets out different treatments for unplanned MARKET CLOSURES without taking their reasons into account. Any planned MARKET CLOSURES do not fall within the scope of this policy; their respective treatment, if any, is defined at the level of the individual Indices in their relevant INDEX guidelines.

More information about disruption policy can be found here at <https://www.solactive.com/documents/>

### 3.4 INPUT DATA POLICY

The quality of an Index and the accuracy and reliability of its calculation depend, among other factors, on precise and correct Input Data. The BMR requires Solactive, in its capacity as an administrator of Indices serving as benchmarks, to have in place robust procedures for the control of Input Data. This policy defines clear guidelines regarding the types of Input Data, the priority of use of the different types of Input Data, and the exercise of expert judgement to ensure that the Input Data is sufficient to represent accurately and reliably the market or economic reality that an Index is intended to measure, as well as the compliance of the Input Data with the relevant Index methodology. Furthermore, the policy establishes measures to monitor, where feasible, Input Data prior to the publication of an Index and to validate Input Data after publication, including, where applicable, comparing data against historical patterns to ensure the integrity and accuracy of the Index. Finally, the policy contains rules for the case Solactive considers that the Input Data does not represent the market or economic reality that the relevant Index is intended to measure, as well as the potential measures to take to address such an event. These measures include, but are not limited to, changing the Input Data or the methodology in order to ensure that the Input Data does represent such market or economic reality, or ceasing to provide the relevant Index

More information about input data policy can be found here at <https://www.solactive.com/documents/>

### 3.5 COMPLAINTS PROCEDURE POLICY

Although Solactive strives to provide the administered indices to the fullest satisfaction of its clients, market participants and investors in financial instruments that have the indices as reference objects,



and in a manner that does not give rise to Complaints, Solactive is aware and acknowledges that it cannot be excluded that the actions of Solactive may adversely affect its clients and other parties and that this could give rise to formal or informal Complaints. Complaints may be submitted to Solactive regarding - but not limited to - any of the following:

- the accuracy of Index calculation;
- whether the Index appropriately represents the market, segment or strategy it seeks to measure;
- a proposed change to the Index determination process;
- an application of the methodology in relation to a specific Index determination;
- other decisions in relation to the Index determination process;
- the Index composition;
- any Index changes in the course of an ordinary or extraordinary index rebalancing;
- the tax treatment including withholding taxes;
- any licensing issues, including all claims made by any legal entities that their intellectual property has been violated by Solactive.

More information about complaints procedure policy can be found here at <https://www.solactive.com/documents/>

### 3.6 CONFLICTS OF INTEREST POLICY

Solactive is committed to high standards in the administration of Indices as well as to conducting its business with the highest degree of ethics and integrity in order to ensure the accuracy and integrity of its Indices. Although the Indices are generally subject to rule-based processes, Conflicts of Interest may arise in certain situations (e.g. where the exercise of discretion is required in any part of the determination process of the Index, or in case of weak governance regimes). In order to ensure the accuracy and integrity of the Indices, it is necessary to identify and manage existing as well as potential Conflicts of Interest. As such, Solactive maintains several policies, procedures and controls to ensure that all Indices are compliant with the BMR.

More information about conflicts of interest policy can be found here at <https://www.solactive.com/documents/>

## 4 CORPORATE ACTIONS

This section outlines the treatment of Corporate Actions that may result in changes in the Index between two Rebalance Days. Corporate Actions are implemented on the day they are effective, and sufficient information is available. The Corporate Actions that occur on weekends or on holidays are implemented on the next Business Day.

In the following sections, a brief definition for each Corporate Action is provided along with a description of the relevant index adjustment to account for such Corporate Action.



## 4.1 EARLY REDEMPTION: FULL CALL / FULL TENDER / FULL BUYBACK

### 4.1.1 Definition

A Call option embedded in a bond provides the Issuer with the right to redeem the bond before maturity under certain predetermined conditions. A regular call means that the bond may be repurchased on a predefined date at a predefined price. Another type of this Corporate Action is a Conditional Call, a notice of redemption in which the redemption is subject to a specific condition being satisfied. With this call type, the bond issuer retains the right to cancel the redemption. Make Whole Call is a type of Call that implies a special 'MWC provision' in the debt indenture which allows the issuer to redeem the bond early at a level that does not disadvantage the bond holder. A Make Whole Call can occur anytime regardless of the bond call schedule.

While a Call can be exercised without bondholders' consent (provided that the bond is callable), a Tender Offer represents an offer made by the Issuer to its bondholders to repurchase all or some of its bonds at a specified price within a certain time period. The second most common type of Early Redemption along with a Tender Offer is a Buyback program initiated by the Issuer. In this case the Issuer repurchases a portion of its debt at the price available on the bond market (including private trading transactions).

In order to ensure the tradability of the Index, Solactive defines an Early Redemption as full if 90% or more of the bond's Amount Outstanding is redeemed in any of the aforementioned Corporate Action types. Any Early Redemption resulting in a repurchase lower than 90% is considered to be partial.

### 4.1.2 Adjustment

Unscheduled redemptions receive different treatments depending on:

> Type of the Early Redemption: full/partial

Only full Early Redemptions, as defined by Solactive, lead to intramonth Index adjustments. Partial Early Redemptions have no effect on the Index Composition and weights until the next Ordinary Rebalance. For the avoidance of doubt, partially called or repurchased bonds may be removed from the Index on the next Rebalance Day provided that they no longer meet the Index Component Requirements on the Selection Day as a result of the decrease in the Amount Outstanding.

However, if several partial calls and/or debt repurchases take place between two Rebalance Days or if a partial Call or debt repurchase is followed by a full Call or debt repurchase so that the resulting Amount Outstanding of the bond falls below 10% of its initial value on the last Selection Day, the Index is adjusted assuming that the bond's full amount was called/repurchased at the price of the latest Corporate Action. If part of the bond's Amount Outstanding is called and another part is repurchased on the same date but at different prices with the combination of the two events resulting in a full redemption, the full bond Amount Outstanding is called at the weighted average price of the Call and Tender/Buyback Corporate Actions. In instances where the bond exhibits varying outstanding amounts across different indices due to distinct last selection days, we will





utilize the most recent outstanding amount data to ascertain the remaining outstanding amount percentage.

➤ Type of the index cash reinvestment approach: direct/periodic

The Direct Reinvestment Index Formula implies direct reinvestment of the redemption proceeds with respect to Index Components into the Index. Clean Price and accrued interest of bond  $i$  are set to zero for the calculation of a Total Return Index (see Section 1.2.1) whereas cash incorporates the redemption proceeds including any payments for coupons or accrued interest. If a Corporate Action takes place on a non-Business Day, the accrued interest as of the effective date of the Corporate Action is used for the cash calculation. The cash increment of bond  $i$  is calculated as follows:

$$Cash_{i,t} = (RedemptionPrice_{i,t} + AI_{i,t}) \quad (33)$$

On the next Business Day  $t + 1$ , the bond is removed from the Index with its weight being distributed among the remaining Index Components on a pro rata basis thus leading to an increase of their individual weightings, other things equal.

According to the Periodic Reinvestment Index Formula, redemption proceeds with respect to Index Components are held as a Cash Component from the effective date up to the next Rebalance Day when the Cash Component is proportionally reinvested into the Index. Clean Price and accrued interest of bond  $i$  are set to zero for Total Return and Price Return calculations (see section 1.2.2) whereas the cash incorporates the redemption proceeds together with the accrued interest. If the Corporate Action did not take place on a Business Day, accrued interest for the cash will be calculated as of the effective date of the Corporate Action. On the Rebalance Day the period's accumulated cash is set back to zero. The cash increment of bond  $i$  is calculated as follows:

$$Cash_{i,t} = (RedemptionPrice_{i,t} + AI_{i,t} + CAP_{i,t} + CPAdj_{i,t}) \cdot SinkingFactor_{i,t} \cdot Amt_{i,SD} \cdot CF_{i,SD} \cdot FX_{i,t} \quad (34)$$

➤ Redemption Type (only relevant for full Calls): conditional/regular

The information on the Conditional Call might be not available on the effective date. In the event of unavailability of reliable information with respect to the Conditional Call, the respective adjustment will be postponed until reliable information is published by the Issuer of the bond but up to 5 Business Days after the Call has occurred, unless stated otherwise in the Index Guideline. This procedure is intended to achieve the correct treatment of such events in low transparency transactions, where it is often observed that the Issuer is unable to meet the necessary conditions to proceed with the Call.

If a Conditional Call occurs on a Selection Day, the bond will not be considered for the new Index Composition in the event of unavailability of reliable information with respect to the Conditional Call. This treatment aims to avoid considering a bond expected to be called in a new Index Composition.





In case the status of the Conditional Call changes after the Index was adjusted to account for the Conditional Call, the bond might be considered on the next Selection Day provided that it still meets the selection criteria. The Cash Component will not be adjusted.

## 4.2 EXCHANGE OFFER

### 4.2.1 Definition

A bond Exchange Offer is a type of a Tender Offer where the Issuer offers its bondholders to exchange their existing bonds for an asset other than cash (the cash exchange is described above as a Tender Offer). Among the assets offered in the exchange there may be other bonds, stocks, warrants, or a combination of these. ID changes are considered a type of exchange where only bond's identifiers are changed due to events like merger and takeover.

### 4.2.2 Adjustment

Treatment of Exchange Offers will vary from case to case, depending on:

- > Type of the Exchange: mandatory/optional, full/partial

Only mandatory Exchange Offers for 90% or more of the bond's Amount Outstanding will result in an adjustment of the Index. Optional and partial offers are not considered to be events that affect the Index Composition. For the avoidance of doubt, optionally or partially exchanged bonds can be removed from the Index on the next Rebalance Day provided that they no longer meet the Index Component Requirements (usually due to decrease in the Amount Outstanding).

- > Asset type received as a compensation

If a bond  $i$  is fully exchanged into shares, warrants, cash, or a combination of these with other bonds, the bond will be removed from the Index at the latest available price. The proceeds will be treated as Cash Component and reinvested into the Index in the same manner as described above for a Call/Tender Offer Corporate Action (in this case, the redemption price will equal the bond's latest available price).

If 90% or more of the Amount Outstanding is exchanged for another bond series, the new bond receives the weight of the exchanged bond. Should the new bond have different parameters (coupon, maturity date, coupon payment frequency etc...) , the exchanged bond will be removed from the Index at the latest available price.

## 4.3 DISTRESSED DEBT EXCHANGE OFFER

### 4.3.1 Definition

A Distressed Debt Exchange (DDE) is a form of debt exchange in which bondholders agree to reduce the principal amount of debt securities in order to obtain higher payment priority in the form of secured debt. When offering the Distressed Debt Exchange, the Issuer of the bond may aim to increase its financial stability and liquidity, extend time to maturity of the bonds and avoid breaching of covenants.



### 4.3.2 Adjustment

In case more than 90% of the Amount Outstanding is exchanged in a Distressed Debt Exchange with the new bond having different characteristics (maturity, coupon or Amount Outstanding), the exchanged bond will be redeemed at the latest available price with the proceeds held as Cash Component and reinvested in accordance with the relevant index calculation formula.

## 4.4 DEFAULT CORPORATE ACTION

### 4.4.1 Definition

Default Corporate Action occurs when the Issuer fails to meet its coupon payment obligation or repay the principal of the bond at maturity within a certain period of time. Generally, after a coupon/principal payment failure occurs, the Issuer is granted a period of time ('Grace Period') to cure the default by making the payment. During this period, the bond is considered to be in Technical Default. If not cured within the Grace Period the failure becomes an Event of Default.

### 4.4.2 Adjustment

If the Issuer fails to meet its coupon payment obligation, the bond's status will be changed to "Flat Trading". In case the coupon was added to the paid cash in an Index and has not been reinvested at the time the information on the missed payment became available, the cash will be removed from the Index going forward. In the state of Flat Trading, a bond buyer is exempted from the responsibility of paying the interest that has accrued since the last interest payment. When a bond is defined to be "Flat Trading" between two Rebalance Days, the respective accrued interests and coupons will be set to zero. If the Issuer pays the missed interest within the Grace Period, the Flat Trading status will be removed and the accrued interest will be calculated again.

If a bond's default is confirmed, the bond's status will be changed to "In Default". In this case, the bond will remain part of the Index until the next Rebalance Day.

## 4.5 DEFAULT OUTCOME

### 4.5.1 Definition

Default Outcome is repayment of the defaulted debt through cash and/or financial securities. Cash payments are derived from the restructuring process of a defaulted Issuer. There can be several types of default outcomes:

- > Default Outcome paid with cash
- > Default Outcome paid with financial instruments only or in combination with cash

### 4.5.2 Adjustment

The treatment of the Default Outcome depends on the compensation received by bondholders.

- > Default Outcome paid with cash



If a Default Corporate Action results in a cash payment whilst the bond is an Index Component, the cash distributions are treated as Cash Component and are reinvested into the Index based on cash reinvestment approach (direct / periodic reinvestment). Specifically, if a defaulted bond  $i$  pays cash, the respective payment is reflected in the Index total return as part of the Cash Component on the effective date of the Default Outcome.

- Default Outcome paid with financial instruments only or in combination with cash

If a Default Outcome results in delivery of financial instruments or in their delivery in combination with cash, the bond will be removed from the Index at the latest available price with the proceeds treated as Cash Component and reinvested into the Index in the same manner as described above for a Call/Tender Offer Corporate Action (where the redemption price will be equal to the latest available price).

## 4.6 FUNGE

### 4.6.1 Definition

Funge is a Corporate Action when the Parent bond absorbs the Fungible Bond so that its Amount Outstanding is increased, incorporating the Fungible Bond.

### 4.6.2 Adjustment

Treatment of the Funge depends on whether both Parent Bond and the Fungible Bond are part of the same Index:

- The Parent bond and the Fungible Bond are both Index Components:

In the case when both securities are Index Components, between two Rebalance Days the Fungible Bond will become inactive and have an Amount Outstanding set to zero, while the Parent Bond will reflect an increase in the Amount Outstanding equal to the funged amount. On the next Rebalance Day the Fungible Bond will be removed from the Index, while the Parent Bond will remain and reflect the latest Amount Outstanding, as long as it fulfils the Index Component Requirements.

- The Parent bond is an Index Component and the Fungible Bond is not:

No adjustment will occur. On the next Rebalance Day, the increased Amount Outstanding will be reflected for the Parent Bond, as long as it is part of the new Index Composition.

- The Parent bond is not an Index Component but the Fungible Bond is:

If the Fungible Bond is part of the Index, but the Parent Bond is not, the Fungible Bond will be removed from the Index at the latest available price.

## 4.7 PAYMENT-IN-KIND

### 4.7.1 Definition

Payment-in-Kind Bonds pay interest in additional bonds rather than in cash. This implies no cash interest payments made by the Issuer during the bond lifetime, with the only cash outflow at maturity when the bond's principal is redeemed.



#### 4.7.2 Adjustment

Assuming the additional bonds will be sold immediately and the proceeds will be reinvested in the Index, Payments-in-kind are therefore considered as regular interest payments in the Cash Component in all total return calculations.

### 4.8 CONVERSION OF BONDS

#### 4.8.1 Definition

Convertible bonds are bonds that can be converted into equity of the bond Issuer or equivalent amount of cash under certain conditions.

Contingent Convertible Capital Securities or CoCo bonds are securities that will be converted into equity of the Issuer of such securities or are written down if a pre-defined trigger event occurs.

#### 4.8.2 Adjustment

In the event of a conversion, the bond will be removed from the Index at the latest available price, emulating a Call Corporate Action for which the redemption price is equal to the latest available price.

### 4.9 DEBT ISSUANCES

Debt issuances of an existing bond and new issuances will not be considered until the next Selection Day unless stated otherwise in the Index Guideline.

Debt issuances with the Issue date between the Selection Day and the Rebalance Day can be included in the selection process given that their prices are available on Selection Day.

### 4.10 BOND MATURITY BETWEEN TWO REBALANCE DAYS

The standard treatment for bonds maturing between two Rebalance Days is deletion, unless indicated otherwise in the Index Guideline.

If a bond matures between two Rebalance Days, this bond will be removed from the index composition with its weight distributed among the remaining constituents on a pro rata basis. In case of Periodic Reinvestment Index Formula, the cash will be kept till the next Rebalance and then reinvested. In case of Direct Reinvestment Index Formula, the cash will be reinvested on the next Business Day. This is the standard treatment, unless indicated otherwise in the Index Guideline.



#### 4.11 DEBT RE-OPENING

Re-opening outstanding issues and increasing the notional amount, which occur between two Rebalance Days, are not considered in the index calculation until the next Rebalance, if not specified differently in the Index Guideline.



## 5 DEFINITIONS

### 5.1 GENERAL TERMS AND DEFINITIONS

**“144(a) Bonds”** are privately placed bonds in the US reserved only for US investors.

**“Accrued Interest”** is the amount of interest earned but not yet paid out on any date between its last paid coupon and its next coupon payment.

**“Amount Outstanding”** is the face value of the respective bond.

**“Announcement Day”** is always one Business Day after Selection Day.

**“AT1 bonds”** stand for Additional Tier-1 are a form of “contingent-convertible” (Coco) bonds.

**“Base Value”** is a Market Value on the Rebalance Day with Amount Outstanding as of Selection Day.

**“Bond Maturity”** is an event when the Issuer repays the relevant principal and interest of the bond.

**“Bullet Bond”** is a type of bond where the entire principal and its corresponding interest is paid out on its maturity date, as opposed to a standard amortizing bond, where payments are made periodically throughout the life of the bond. Bullet bonds are necessarily non-callable.

**“Business Day”** is any day other than a Saturday or Sunday and other than holidays schedule specified in the Index Guideline. Business Day definition might differ in accordance with the Index Guideline.

**“Buyback”** is an event when the Issuer redeems its debt by repurchasing bonds in the secondary market.

**“Call Date”** is the first date where the issuer has the option to redeem the bond back for a pre-determined price.

**“Call”** is an option embedded in a bond that provides the Issuer with the right to redeem the bond before maturity under certain predetermined conditions.

**“Callable Bond”** is a type of bond where the issuer can redeem back for a pre-determined price (typically, face value). Due to the nature of this provision, it carries inherent reinvestment risk for the bond holder.

**“Capitalization Rate”** is rate at which the principal of Capitalizing Bonds increases due to conversion of coupon payments into capital (principal).

**“Capitalizing Bonds”** are bonds that have a percentage of coupon payments converted into capital (principal).

**“Cash Component”** is an aggregated cash consisting of all payments made by Index Components.

**“CDOs”** stands for Collateralized Debt Obligations. They are structured finance products that are backed by a pool of loans and other assets. CLOs (Collateralized Loan Obligations) are a type of CDO.



**“Clean Price”** is a price of a bond that does not include any accrued interest.

**“Composite Rating”** is a method of rating securities where the average rating is used in the event where at least two NRSROs have provided a rating for the security.

**“Contingent Convertible Capital Securities (CoCo)”** are bonds that will be converted into equity of the Issuer or written down if a certain trigger event occurs.

**“Convertible Bonds”** are bonds that can be converted into equity of the Issuer or an equivalent amount of cash under certain conditions.

**“Convexity”** is a measure of the change of a bond’s duration, given a change in interest rates.

**“Corporate Actions”** for bonds are unscheduled payments, other than standard coupon payments that may include calls, puts, repurchases, exchanges or consent solicitations for example.

**“Country of Domicile”** is the country in which the bond’s issuer resides. It is not necessarily the case that Country of Domicile is also the Country of Risk.

**“Country of Risk”** is the country where most of the bond’s default risk is derived. It is not necessarily the case that Country of Risk is also the Country of Domicile.

**“Coupon Payment Frequency”** is the frequency in which the bond makes its interest or coupon payments.

**“Coupon”** is the recurring payment that is made to the bond holder. It is typically denoted as a percentage of the Face Value. It is also associated with the interest that the bond is paying.

**“Covered Bonds”** are a type of bond that is secured by the issuer’s assets that are listed on their balance sheet. A key feature of a covered bond is that the asset’s risk is not transferred over to the covered bondholder, as it would be for a securitized bond.

**“Currency”** is the denomination of a bond’s principal or coupon payments.

**“Default Corporate Action”** occurs when the Issuer fails to meet its coupon payment obligation, repay the principal at maturity within a certain period of time, known as the Grace Period.

**“Default Outcome”** is the full or partial repayment of the defaulted debt through cash and/or financial instruments .

**“Dirty Price”** is Clean Price of a bond plus any accrued interest.

**“Distressed Debt Exchange Offer”** is a form of debt exchange when bondholders agree to reduce the principal amount of debt securities in order to obtain higher payment priority in the form of secured debt.



**“Dual Currency Bond”** is a bond that makes principal and interest payments in two different currencies.

**“Duration”** is a measure of the change of a bond’s price, given a change in interest rates.

**“Early Redemption”** includes any event that leads to a redemption of a bond before the scheduled maturity date.

**“Equity Clawbacks”** are a mechanism to allow the issuer to repay a portion of the outstanding bonds using funds raised from an equity offering.

**“Event of Default”** occurs if the Issuer fails to make the payment within the Grace Period.

**“(Event) Effective Date”** is the date on which the event takes place. Typically, in reference to Corporate Actions.

**“Exchange Offer”** means that the holder of a bond is invited to exchange the existing bond to another security and/or cash.

**“Exchange-Traded Notes”** are a type of fixed income instrument that does not make periodic payments but pays out the full return at maturity.

**“Ex-dividend date”** is the date when the bond starts to trade without the coupon.

**“Ex-Dividend Period”** is a period of time several days in advance of the coupon payment date during which the coupon due on such payment date is detached from the bond.

**“Extendible bond”** is a type of bond that includes a provision that allows the bondholder to extend its initial maturity to a later date.

**“Face Value”** is the dollar value of the bond when it is issued, as well as the dollar amount that the issuer pays as principal. Typically, it is denominated in \$100 or \$1000.

**“Fixed-Rate Coupon”** is an interest payment that remains static throughout the life of the bond.

**“Fixing Time”** is the time point when the prices are fixed for index calculation. Fixing Time is approximately as defined in the document List of Bond Pricing Provider and Markets Fixing Time defined under the following link: <https://www.solactive.com/documents/bond-pricing-provider-and-markets-fixing-time/>

**“Flat Trading”** is the bonds’ status if the Issuer fails to meet its coupon payment obligation. In this case accrued interest is set to zero.

**“Floating Rate Notes”** are bonds with a floating coupon rate, i.e. the coupon payments fluctuate in accordance with the underlying level of a pre-specified interest rate.





**“Floating-Rate Coupon”** is an interest payment that changes based on a benchmark rate throughout the life of the bond. A typical floating rate is a fixed margin over a changing variable rate, such as a given overnight rate.

**“Funge”** is an event when the Parent bond absorbs the Fungible Bond.

**“Fungible Bond”** is a new bond into which the Parent Bond is interchanged. It has all the same specifications as an existing issue (bonds with the same parameters can be issued in different tranches).

**“Grace Period”** is a time frame after missing coupon or principal payment, within which the issuer has the possibility to fulfill its obligation to avoid entering into default.

**“Index Closing”** is the time at which Index Level is determined on a Business Day.

**“Index Component Requirement”** are selection rules stated in the Index Guideline.

**“Index Components”** are financial instruments that satisfy Index Component Requirements in accordance with the rules stated in the Index Guideline.

**“Index Composition”** comprises all Index Components.

**“Index Currency”** is the currency in which the Index is denominated. All individual bond currencies are converted into the Index Currency at the fixings for exchange rates specified in the Index Guideline.

**“Index Guideline”** is a document containing all relevant information regarding the particular Index.

**“Index Level”** is the result of the determination of the Index at the Index Closing.

**“Index Price Quotation”** is the quotation (bid/mid/ask) used for the index calculation between the Rebalance Days as specified in the Index Guideline.

**“Index”** is any fixed income index owned, administrated or calculated by Solactive AG.

**“Inflation-Linked Bonds”** is a type of bond where its interest payments or principal payment is linked to an inflation index.

**“IOSCO Principles”** International Organization of Securities Commissions (<https://www.solactive.com/wp-content/uploads/2020/02/IOSCO-principles-for-financial-benchmarks.pdf>)

**“Issue date”** is the date when a new bond is publicly known to settle.

**“Issuer”** is an entity that issues bonds for the purposes of raising funds.



**“Last Evaluated Price”** is the evaluated Bid/Ask/Mid price by the designated Pricing Provider at Fixing Time as specified in the Index Guideline.

**“LRCN”** stands for Limited Recourse Capital Note. They are a type of Coco bond unique to the Canadian market. A unique feature of LRCNs is that they are expected to have at least 60-year maturities.

**“Make Whole Call”** is a type of call where a lump sum payment is made to the bond holder. However, the lump sum payment is the entire principal in addition to any unpaid interest payments, discounted back to the date on which the lump sum payment is made. This provision attempts to mitigate reinvestment risk.

**“Maple bonds”** are bonds that are denominated in Canadian dollars. Foreign institutions can issue Maple bonds.

**“Market Value”** is the weighted sum of market capitalization of Index Components and determined as the product of the Amount Outstanding and the Last Evaluated Price adjusted for pre-defined factors (individual bonds currencies, Sinking Factors and other).

**“Maturity”** is the date when the principal is paid out to the investor, along with any remaining accrued interest. After maturity, it is either renewed or it ceases to exist.

**“NRSRO”** stands for Nationally Recognized Statistical Rating Organization. They are a group of credit rating agencies that have been approved by the SEC.

**“NVCC bonds”** stand for Non Viability Contingent Convertibles. These are issued by Canadian banks and are convertible as soon as a regulatory trigger event occurs. These events have been determined by Office of the Superintendent of Financial Institutions (OSFI). They are a type of Coco bond.

**“Ordinary Rebalance”** is a regular process of reviewing the Index Composition in accordance with the Index Component Requirements on the Selection Day.

**“Par Value”** is the same as Face Value.

**“Parent Bond”** is a bond that is funged into a new issue in accordance with predefined conditions.

**“Parent Issuer”** is the company that holds a majority stake or control of the bond issuer.

**“Payment in Kind (PIK) Bonds”** are a type of bond that make interest payments in additional bonds instead of in cash.

**“Payment-In-Kind Bonds”** are bonds that pay interest in additional bonds rather than in cash.

**“Payment-In-Kind”** is an event when Payment-In-Kind Bonds pay interest in form of additional bonds.



**“Perpetual maturity”** is a type of bond that has no maturity date.

**“Preferred Security”** is a coupon-paying security that receives priority over common stockholders of an issuer in the event of a default.

**“Price Return (PR) Index”** reflects Clean Price movements of the index constituents disregarding coupon payments, accrued interest and only accounting for bond redemption proceeds resulting from Corporate Actions taking place between two Rebalance Days.

**“Price return”** is the rate of return of a given constituent or index that is attributed only to movements of its clean price.

**“Pricing Provider”** is, in respect of an Index Component, specified in the List of Bond Pricing Provider which is incorporated by reference and available on the SOLACTIVE website (<https://www.solactive.com/documents/bond-pricing-provider-and-markets-fixing-time/>), if not specified otherwise in the Index Guidelines.

**“Private Placement”** is a security offering that was sold to one or a small group of pre-selected institutional investor(s) instead of in a public or open market.

**“Putable bonds”** are a type of bond that allows the bond holder to “put” or retire the bond back to its issuer. Due to the nature of this provision, it carries inherent liquidity risk for the issuer.

**“Rebalance Day”** is the date when new Index Composition becomes effective after the respective Index Closing as specified in the Index Guideline.

**“Reg S Bonds”** are bonds issued in the Eurobond market for international investors.

**“Re-opening”** is the issuance of additional amounts for a previously issued bond.

**“Retail Bond”** is an unsecured debt of the issuing company, mostly issued to private and retail investors. Due to their illiquidity and small size, they are excluded from the indices unless otherwise stated in the index guidelines.

**“SEC”** stands for the Securities and Exchange Commission. They are a regulatory body responsible for financial regulation, and specifically an enforcement body against financial market manipulation.

**“Securitized bonds”** are a type of bond that is securitized by a pool of assets. A key feature of a securitized bond is that that asset’s quality and credit risk are transferred to the securitized bond holder. If the assets behind these bonds default, the bond itself is in default.

**“Selection Day”** is the date when the new Index Composition is determined as specified in the Index Guideline.

**“Senior Debt”** is debt that will be repaid to debtholders before subordinated debt is repaid back to its debtholders in the event of a default.



**“Settlement Convention”** is number of days between the date when a trade is settled and the date when the transaction occurs used for the Index calculation as specified in the Index Guideline.

**“Sinkable Bonds”** are bonds that are backed by a fund that sets aside money on a regular basis. A sinkable bond issuer is required to buy a certain amount of the bond back from the purchaser at various points throughout the life of the bond.

**“Sinking Factor”** is a rate at which principal of Sinking Bond is reduced.

**“Step Up Coupon Bonds”** are a type of bond that pays lower interest payments but includes a provision that allows for higher interest payments at periodic intervals.

**“Subordinated Issues”** is debt that is subordinate to any debt that is more senior, and thus will be paid after all senior issues have been repaid.

**“TARGET 2”** is the real-time gross settlement system owner and operated by the Euro system.

**“Technical Default”** is a state during the Grace Period resulted from the Issuer failing to make the payment on the due date.

**“Tender Offer”** means that a bondholder is invited to tender the bond for a specific price at a specific time before the scheduled maturity date.

**“Total Return (TR) Index”** measures all the returns generated by the Index Components, including any price movements, coupon income and redemption payments.

**“Total return”** is the actual rate of return of a given constituent or index. Typically, an investor can attribute total return to different components such as price return, income return, etc.

**“Ultimate Parent Issuer”** is the company that holds a majority stake or control of the bond parent issuer.

**“Weighting Day”** is the Selection Day if not specified otherwise in the Index Guideline.

**“Zero-Coupon”** is a type of bond that does not make any interest payments, only the principal payment at maturity.

## 5.2 HOLIDAY CALENDAR DEFINITIONS

**“IIAC”** stands for Investment Industry Association of Canada. They are the national association representing investment firms that provide products and services to Canadian retail and institutional investors. Its holiday schedule is set out on the following website (or any successor page): <https://iiac-accvm.ca/market-closure-schedule/>

**“SIFMA”** stands for Securities Industry and Financial Markets Association, a leading trade association for financial institution firms. Its holiday schedule is set out on the following website (or any successor page): <https://www.sifma.org/resources/general/holiday-schedule/>



**“Target 2 Securities European Banking Holidays”** are New Year’s Day, Good Friday, Easter Monday, Labor Day, Christmas Day and Boxing Day. Its holiday schedule is set out on the following website (or any successor page):

<https://www.ecb.europa.eu/paym/target/target2/profuse/calendar/html/index.en.html>

**“XASX” Australian Stock Exchange holidays** is Australia’s primary securities exchange. Its holiday schedule is set out on the following website (or any successor page):

<https://www.asx.com.au/markets/market-resources/trading-hours-calendar/cash-market-trading-hours/trading-calendar>

**“XETR” Deutsche Börse holidays** is a trading venue operated by the Frankfurt Stock Exchange. Its holiday schedule is set out on the following website (or any successor page):

<https://www.xetra.com/xetra-en/trading/trading-calendar-and-trading-hours>

**“XLON” London Stock Exchange holidays** is London, England’s primary securities exchange. Its holiday schedule is set out on the following website (or any successor page):

<https://www.londonstockexchange.com/equities-trading/business-days>

**“XLUX” Luxembourg holidays** is Luxembourg’s primary securities exchange. Its holiday schedule is set out on the following website (or any successor page): <https://www.luxse.com/trading/opening-hours-and-closing-days>

**“XNYS” New York Stock Exchange holidays** is the world’s largest securities exchange by market capitalization, located in the Financial District in New York City. Its holiday schedule is set out on the following website (or any successor page): <https://www.nyse.com/markets/hours-calendars>

**“XSTO” Stockholm Stock Exchange holidays**, also known as Nasdaq Stockholm, is a securities exchange located in Stockholm, Sweden. Its holiday schedule is set out on the following website (or any successor page): <https://www.nasdaqomxnordic.com/tradinghours>

**“XTSE” Toronto Stock Exchange holidays** is Toronto’s primary securities exchange. Its holiday schedule is set out on the following website (or any successor page): <https://www.tsx.com/trading/calendars-and-trading-hours/calendar>



## 6 HISTORY OF BOND INDEX METHODOLOGY CHANGES

| Version | Date              | Description  |
|---------|-------------------|--|
| 1.3     | 22 September 2022 | Modification of Bond Index Methodology*  |
| 1.4     | 06 October 2023   | Expansion of Bond Index Methodology  |
| 2.0     | 21 December 2023  | Additional Section for Issuer Classification   |
| 2.1     | 25 September 2024 | Adding description, removing direct links and referring to Documents page for the most updated files |
| 2.2     | 17 January 2025   | Unmaterial format changes  |

\* All versions prior to this version are considered historical versions

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