Guideline

Solactive Candriam Factors Sustainable Sovereign Euro Bond Index

Version 1.2 dated December 7th, 2017

Contents

This document contains the underlying principles and regulations regarding the structure and operation of the Solactive Candriam Factors Sustainable Sovereign Euro Bond Index. Solactive AG shall make every effort to implement the relevant regulations. Solactive AG does not offer any explicit or tacit guarantee or assurance, neither pertaining to the results from the use of the index nor the index value at any given point in time nor in any other respect. The Solactive Candriam Factors Sustainable Sovereign Euro Bond Index is the sole property of Solactive AG. Solactive AG strives to the best of its ability to ensure the correctness of the calculation. There is no obligation for Solactive AG – irrespective of possible obligations to issuers – to advise third parties, including investors and/or financial intermediaries, of any errors in the index. The calculation and publication of the index by Solactive AG is not a recommendation for capital investment and does not contain any assurance or opinion of Solactive AG regarding a possible investment in a financial instrument based on this index.

Introduction

This document is to be used as a guideline with regard to the composition, calculation and management of the Solactive Candriam Factors Sustainable Sovereign Euro Bond Index. Any changes made to the guideline are initiated by the Committee specified in section 1.6. The Solactive Candriam Factors Sustainable Sovereign Euro Bond Index is the sole property of Solactive AG. The Solactive Candriam Factors Sustainable Sovereign Euro Bond Index is calculated and published by Solactive AG. The name "Solactive" is copyrighted.

1 Index specifications

The Solactive Candriam Factors Sustainable Euro Corporate Bond Index is a rules-based index. The Index is engineered to exploit the return potential of EUR denominated sovereign debt securities using a non-conventional weighting scheme. The universe of eligible countries is derived by applying the sustainable and responsible investing ("SRI") criteria developed by Candriam Belgium S.A. Only investment grade debt of members of the European Economic Area (EEA) is considered.

The Solactive Candriam Factors Sustainable Sovereign Euro Bond Index is a Total Return Index, i.e. coupon payments will be reinvested directly in the index.

1.1 Name and ISIN

The Solactive Candriam Factors Sustainable Sovereign Euro Bond Index is distributed under ISIN *DE000SLA3C08*, the WKN is *SLA3C0*. The Index is published in Reuters under the code *.SOLCASBE* and in Bloomberg under the code *SOLCASBE Index.*

1.2 Initial value

The index will be calculated every Business Day starting *June 30 2017*. Before this date the index values are backfilled, with the index value based on 100 as at the close of trading on *December 31th 2015.*

1.3 Distribution

The Solactive Candriam Factors Sustainable Sovereign Euro Bond Index is published via the price marketing services of Boerse Stuttgart AG and is distributed to all affiliated vendors.

1.4 Prices and calculation frequency

The Solactive Candriam Factors Sustainable Sovereign Euro Bond Index is calculated based on the Evaluated Bid Price (see 4.2 Further Definitions) of the respective Index Components. The index is calculated and distributed once every Business Day. Bond and index analytical values are calculated each Business Days using the Last Evaluated Price. New bonds are included in the index at their Evaluated Ask Price.

Updated index values and other statistics will not be distributed. In the event that the data required for index calculation purposes is not available or that there are troubles regarding the price marketing of Solactive AG or Stuttgart Stock exchange the index cannot be distributed.

1.5 Weighting

The weights of the Index Components are determined using a multi-level approach. The Final Weight of an issuer (Issuing country) is the sum of its Fundamental Weight and a specific Factor Tilt.

For each issuer the Fundamental Weight is derived from two macroeconomic factors[1]. The factors are:

- Gross Domestic Product (GDP)*
- Population*

The weight of each factor is determined by putting an issuer's factor value relative to the sum of all factor values of a specific factor. Expressed as formula a factor weight is determined:

$$UFW_{j,i} = \frac{x_{j,i}}{\sum_{j=1}^{n} x_{j,i}} \text{ } with \text{ } i = 1,2$$

where

$UFW_{j,i}$ is the Unadjusted Fundamental Weight of factor i of issuer j
$x_{j,i}$ is the factor value i of issuer j
n is the total number of issuers

The Fundamental Weight of each issuer is the average of the two factors:

$$FW_j = \frac{\sum_{i=1}^{2} UFW_{j,i}}{2}$$

where

FW_j is the Fundamental Weight of issuer j

For each issuer (Issuing country) the Factor Tilt is derived from three factors:

- Low Volatility: The weighted average Modified Duration of all eligible issues of the respective issuer
- Quality: Real GDP Growth and Net lending (+)/ net borrowing (-) balance* of the issuer
- Value: The percentage difference of Yield to Maturity (YTM) to the fitted YTM estimated via the cross-sectional regression model:

$$YTM_{j,t} = \alpha + \beta_1 * \frac{Debt_j}{GDP_j} + \beta_2 * mDur_{j,t} + \varepsilon$$

where

$YTM_{j,t}$ is the weighted average YTM of all eligible issues of issuer j on the Selection Day t
$\frac{Debt_j}{GDP_j}$ is the Debt to GDP ratio* of issuer j
$mDur_{j,t}$ is the weighted average Modified Duration of all issues of issuer j on the Selection Day t
α is the regression intercept
β_1 and β_2 are the regression coefficients and
ε is the error term

The fitted YTM of each issuer is calculated using the estimated coefficients:

$$\overline{YTM_{J,t}} = \hat{\alpha} + \widehat{\beta_1} * \frac{Debt_j}{GDP_j} + \widehat{\beta_2} * mDur_{j,t}$$

[1] The data is retrieved from the IMF Word Economic Outlook database. The most recent data is used. http://www.imf.org/external/ns/cs.aspx?id=28
* Value is a moving average of monthly observations from the previous 36 months

The Value Factor is then calculated as the difference of the fitted YTM and the actual YTM:

$$VAL_{j,t} = \overline{YTM_{j,t}} - YTM_{j,t}$$

Each issuer (Issuing country) is ranked on each factor. For each issuer an average of all factor percentile ranks is calculated. Based on this average all issuers are sorted into quintiles. Depending on the quintile an issuer is assigned to, an adjustment to the Fundamental Weight is done:

Quintile	1	2	3	4	5
Adjustment	+10%	+5%	+/-0%	-5%	-10%

The Final Weight of each issuer is the sum of the Fundamental Weight and the Adjustment:

$$Final\ Weight_{j,t} = FW_j + \left(\frac{Adjustment_l}{n_{Q_i}}\right)\ with\ i = \{1,2,3,4,5\}$$

where

n_{Q_i} is the number of countries in quintile i to which issuer j is assigned.

Finally, the calculated weights are scaled so that the sum of them equals 1. Each issuer is subject to a cap, which depends on the number eligible bonds:

$$Capped\ Final\ Weight_{j,t} = MIN(Final\ Weight_{j,t}\ , b_j * 1\%)$$

where

b_j is the number of eligible bonds of issuer j.

Each issue is weighted by its market value (amount outstanding). If the sum of all issue weights of a single issuer exceeds the Capped Final Weight, the issuer weight is capped. In that case, the capped weight is redistributed proportionally among the remaining issuers.

1.6 Decision-making bodies

A Committee composed of staff from Solactive AG is responsible for decisions regarding the composition of the Solactive Candriam Factors Sustainable Sovereign Euro Bond Index, as well as any amendments to the rules (hereinafter referred to as the "**Committee**" or the "**Index Committee**"). The Committee will also determine the future composition of the Solactive Candriam Factors Sustainable Sovereign Euro Bond Index if any Extraordinary Event (see chapter 2.3) occurs, as well as the implementation of any necessary adjustments.

Members of the Committee can recommend at any time changes to the composition of the Index or to the guideline and submit them to the Committee for approval. Any change of the guideline will be announced on the web page http://www.solactive.com.

1.7 Publication

All specifications and information relevant for calculating the index are made available on the http://www.solactive.com web page and sub-pages.

1.8 Historical data

Historical data will be maintained from *December 31th 2015.*

1.9 Licencing

Licences to use the index as the underlying value for derivative instruments are issued to stock exchanges, banks, financial services providers and investment houses by Solactive AG.

2 Composition of the Index

2.1 Selection of the Index Components

At the launch of the index, all financial instruments which meet the requirements of the Selection Pool are eligible for inclusion in the index. Instruments issued prior to the Selection Day and which meet the criteria of the Selection Pool as defined under 4.1 will be added on the quarterly Adjustment Day to the Selection Pool. Additionally, on the quarterly Selection Day, the Index Committee will evaluate whether all current Index Components still meet the requirements of the Selection Pool. Any Index Components that do not pass this screen will be removed from the Index on the next Adjustment day.

An updated list of eligible countries is posted on the website (http://indexiq.candriam.com) quarterly, approximately five days prior to each Rebalance Date of the index. Once the list is publicly available, Solactive uses the information to complete the index creation process by applying the weighting methodology outlined in 1.5.

Extraordinary adjustments are possible as described under 2.3.

2.2 Ordinary adjustment

The composition of the Index is ordinarily adjusted four times a year on the last business day of March, June, September, and the second business day in January. The composition of the Index is reviewed on the Selection Day, which is the 2nd Friday in March, June, September and December. Necessary changes are announced.

Solactive AG shall publish any changes made to the Index composition on Business Day following the Selection Day and consequently with sufficient notice before the Adjustment Day.

2.3 Extraordinary adjustment

The Index Committee will decide about the future composition and the implementation of any necessary adjustments of the Solactive Candriam Factors Sustainable Sovereign Euro Bond Index if an Extraordinary Event (early redemption, credit event etc.) regarding one or more index constituents occurs. See details under 3.3 Adjustments

The Index Committee will decide on the future composition of the Solactive Candriam Factors Sustainable Sovereign Euro Bond Index as well as the Business Day which marks the starting of the new adjusted index composition.

3 Calculation of the Index

3.1.1 Index formula

The Solactive Candriam Factors Sustainable Sovereign Euro Bond Index is an index whose value reflects the relative changes in bond values. Therefore, the composition and weighting is adjusted every quarter.

As a formula:

$$Totalretum_{t,i} = \frac{Price_{t,i} + ACCInt_{t,i} + PaidCash_{t,i}}{Price_{t-1,i} + ACCInt_{t-1,i}} \cdot \frac{FX_{t,i}}{FX_{t-1,i}} - 1$$

$$Weighting_{t,i} = \frac{MarketValue_{t,i} \cdot Cap_{SD,i}}{\sum_{i=1}^{a} MarketValue_{t,i} \cdot Cap_{SD,i}} = \frac{(Price_{t,i} + ACCInt_{t,i}) * Amount_{SD,i} * Cap_{SD,i} \cdot FX_{t,i}}{\sum_{i=1}^{a} (Price_{t,i} + ACCInt_{t,i}) * Amount_{SD,i} * Cap_{SD,i} \cdot FX_{t,i}}$$

$$Index_t = Index_{t-1} * (1 + \sum_{i=1}^{a} (Totalretum_{t,i} * weighting_{t-1,i})$$

Whereas:

$Totalretum_{t,i}$	= Total return of the bond i on trading day t
$Index_t$	= Value of the index on trading day t
$Index_{t-1}$	= Value of the index on trading day t-1
$Price_{t,i}$	= Last Evaluated Price of the bond i on trading day t
$Price_{t-1,i}$	= Last Evaluated Price of the bond i on trading day t-1
$ACCInt_{t,i}$	= Accrued Interest of the bond i on trading day t (for avoidance of doubt the index takes into account a settlement convention t +2)
$ACCInt_{t-1,i}$	= Accrued Interest of the bond i on trading day t-1 (for avoidance of doubt the index takes into account a settlement convention t +2)
$Weighting_{t,i}$	= Weighting of the bond i on trading day t
$Weighting_{t,i}$	= Weighting of the bond i on trading day t-1
$Amount_{SD,i}$	= Amount Outstanding of bond i on the last Selection Day SD
$Cap_{SD,i}$	= Capping Factor which helps to adjust the weights as defined under 1.5
$FX_{t,i}$	= Foreign Exchange Rate of bond i on trading day t
$FX_{t,i}$	= Foreign Exchange Rate of bond i on trading day t-1

$PaidCash_{i,t}$ = a) Value of the coupon payment for bond i on trading day t

b) If a bond i will be removed from the index, the resulting payment of the bond will be included in the paid cash component

3.2 Accuracy

The value of the index will be rounded to two decimal places.

According to the terms of the bond, the Index Calculator will take the following conventions into account:
Act/Act
Act/360
Act/365
30/360
ISMA 30/360

The index does not take taxes into account and assumes gross coupon payments.

Accrued interests are calculated with settlement convention t+2

3.3 Adjustments

Indices need to be adjusted for systematic changes in prices once these become effective. The Committee will decide from time to time if the Solactive Candriam Factors Sustainable Sovereign Euro Bond Index needs to be adjusted.

The following corporate actions will result in changes or adjustments to an index as indicated below between Adjustment Days:

(a) Full Tender or Early Redemption: The bond proceeds will be reinvested into the index on the effective date. For the avoidance of doubt a tender must be mandatory, the pure offer to tender a bond will not lead to an adaption of the index.*
On the effective date price and accrued interest are 0 and the proceeds (tender/redemption price + accrued interest/coupon) are considered as “Paid Cash” in the return formula (see 3.1.1). On the next calculation day the bond is removed from the index and weightings are calculated according to the formula in 3.1.1. The new higher weightings of the remaining constituents imply the direct reinvestment of the redeemed bond into all other Index Components.

(b) Flat Trading: A bond is flat trading if the bond issuer will not meet its coupon payment obligation which means that the buyer of a bond is not responsible for paying the interest that has accrued since the last payment. If a bond is defined to be “flat trading” between two adjustment days the respective accrued interests and coupons will be set to 0. The bond will not be removed until the next adjustment date.

(c) Defaulted Bonds: If the status of a bond changes to “In Default”, the bond will remain as part of the index or portfolio at the last available evaluated price provided by the pricing source until the next regular index adjustment day.

(d) Exchange Offers:

1) optional exchange offers are not treated in the index;*
2) mandatory exchange offers: In case less than 90% of the amount outstanding is exchanged the exchange will not be considered in the index.
3) mandatory exchange offers: In case more than 90% of the amount outstanding is exchanged the exchange will be considered in the index calculation by exchanging the relevant bonds, so that the new bond will receive the weight of the old exchanged bond.

The capping factor of the new bond is calculated based on the following formula:

$$CapFactor_{t,new} = \frac{(\Pr ice_{t,old} + ACCInt_{t,old}) * Amount_{SD,old} * Cap_{SD,old}}{(\Pr ice_{t,new} + ACCInt_{t,new}) * Amount_{t,new}}$$

(e) Fungible Bonds:

1) The parent bond and the sub-tranche are both index constituents: Both bonds are kept in the index until the next Adjustment Day. On the next Adjustment Day, the new bond will be removed and the Amount Outstanding of the parent bond will be increased by the amount of the new bond issue.
2) The parent bond is an index constituent and the sub-tranche is not: On the next Adjustment Day, the Amount Outstanding of the parent bond will be increased by the amount of the sub-tranche.
3) The parent bond is not an index constituent but the sub-tranches: On the next Adjustment Day, the sub-tranche leaves the index and the parent bond enters the index including the Amount Outstanding added from the sub-tranche (assuming that it meets the requirements of the Selection Pool).

(f) Payment-in-Kind Bonds: These bonds pay interest in additional bonds rather than in cash. Assuming the additional bonds will be sold immediately and the proceeds will be reinvested in the index, payments-in-kind are therefore considered as cash in the Paid Cash component in all Total Return calculations.

Note: Debt issuances of an existing bond will not be considered until the next Adjustment Day.

*For the avoidance of doubt, an optional tender or exchange offer may lead to an index adjustment after the end of the submission period. In case the tender or exchange has been successful for at least 90% of the Amount outstanding, the bond will be removed from the index/exchanged into the relevant bond.

4. Definitions

4.1 index-specific definitions

The **"Selection Pool"** comprises bonds that fulfill the following conditions:

(a) The issuer (Issuing country) is a member of the European Economic Area (EEA) and part of the Candriam Investors Group SRI Country Report. The universe is publicly accessible via http://indexiq.candriam.com.
(b) Sovereign issue
(c) Denominated in EUR
(d) Amount Outstanding of at least 1bn EUR
(e) Bullet, Callable, and Puttable bonds are eligible
(f) Time to maturity of at least 18 months for new issues entering the index. The minimum time to maturity for bonds in the index is 12 months.
(g) Bonds that switch from fixed to floating rate coupons qualify provided they are callable within the fixed rate period and have at least one year prior to the date the bond transitions from a fixed to a floating rate coupon structure.
(h) A minimum rating of BBB- by Standard & Poor's or Baa3 by Moody's Investors Service is required. For the avoidance of doubt if one of the rating agencies rates the bond as Investment Grade it is eligible for inclusion in the index.
(i) Fixed Coupon Bonds, Zero Coupon Bonds, Payment-In-Kind Bonds and Step-Up Coupon Bonds are eligible for inclusion in the index.
(j) Sinking Fund Bonds, Floating Rate Bonds, Inflation-linked Bonds are not eligible for inclusion in the index.
(k) Callable perpetual securities qualify for inclusion in the index provided they are at least one year from the next call date.
(l) For a bond to be included in the index, a price must be available from a recognized bond price provider as determined by the Index Committee.

4.2 Further definitions

"Adjustment Day" is the last business day of March, June, September, and the second business day in January

"Amount Outstanding" is the face value of the respective bond.

"Bearer Bonds" are unregistered debt securities.

A **"Eurobond"** is a bond denominated in a currency not native to the issuer's home country.

A **"Business Day**" in relation to the index is each day Monday to Friday except common European banking holidays. Common European banking holidays are Good Friday, Easter Monday, Christmas Day, Boxing Day and New Year's Day.

"Call" means that a bond with a callable feature will be redeemed before the actual maturity date of the bond. The callable feature allows the issuer of the bond to retain the privilege of redeeming the bond before the actual maturity date.

"Contingent Convertible Capital Securities" are bonds that will be converted into equity if a certain trigger event takes place or written down.

"Convertible Bonds" are bonds that can be converted into a predetermined amount of the company's equity at certain times during its life.

"Covered Bonds" are bonds backed by cash flows or mortgages or public sector loans.

A **"Credit Event"** is the suspension of debt service, insolvency or failure to pay on time.

"Early Redemption" includes every event that leads to a redemption of a bond before the actual maturity date.

"Ex-dividend" means that the next coupon is detached from the bond several days in advance of the coupon payment date.

"Exchange Offer" means that the holder of a bond is invited to exchange the existing bond to another debt security.

In particular, an **"Extraordinary Event"** is
- an early redemption of the bond
- a credit event

"Fixed Coupon Bonds" are bonds with a fixed coupon rate, as opposed to floating rate coupons.

A bond is **"Flat Trading"** if the bond issuer will not meet its coupon payment obligation which means that the buyer of a bond is not responsible for paying the interest that has accrued since the last payment.

"Floating Rate Bonds" are bonds with a variable or floating interest rate, i.e. coupons fluctuate in line with the underlying level of interest rates, as opposed to fixed-rate coupons.

A **"Fungible Bond"** is a new issue that has all the same specifications as an existing issue (bonds with the same parameters can be issued in different tranches). At a specific date the tranches will be combined into one bond. After this date the parent tranche will include the Amount Outstanding of all new tranches.

A bond is "**In Default**" when the issuer is not able to fulfil its bond payment obligations anymore after the 30 days' grace period.

The **"Index Calculator"** is Solactive AG or any other appropriately appointed successor in this function.

"Index Components" are all bonds in the Selection Pool.

The **"Index Currency"** is EUR.

"Inflation-linked Bonds" are bonds whose principal is indexed to inflation.

"Investment Grade" are all ratings above or equal to BBB- by Standard & Poor's or Baa3 by Moody's Investors Service.

"Issuer" is the issuing entity of the respective bond.

"Last Evaluated Price" generally is (aside from the rules referred to in "Extraordinary Events") the last available Evaluated Bid Price.

"Payment-In-Kind Bonds" are a type of bonds that pay interest in additional bonds rather than in cash.

"Preferred Securities" combine both debt and equity characteristics.

"Securitized Bonds" are bonds secured against specific assets or receivables (ABS), mortgages (MBS) or cash flows.

"Selection Day" is the 2nd Friday in March, June, September and December.

"Sinking Fund 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.

“Step-Up Coupon Bonds” are bonds whose coupons increase while the bond is outstanding. The coupon amounts are determined at issuance.

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

A **“Total Return Index”** measures the performance of the index components by assuming that all distributions are reinvested into the index, i.e. the index does not only reflect pure price movements.

“Zero Coupon Bonds” do not pay interest but are issued at a discount.

5 Appendix

5.1 Contact data

Information regarding the Solactive Candriam Factors Sustainable Sovereign Euro Bond Index concept

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Further information about the index can also be obtained via the following link: https://www.solactive.com/ or http://indexiq.candriam.com

5.2 Calculation of the Index – change in calculation method

The application by the index calculator of the method described in this document is final and binding. The index calculator 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 calculator may also make changes to the terms and conditions of the index and the method applied to calculate the index, which he 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 calculator is not obliged to provide information on any such modifications or changes. The Index calculator will make announcements regarding the amendment of the index guideline. Despite the modifications and changes the index calculator will take the appropriate steps to ensure a calculation method is applied that is consistent with the method described above.