

Guideline relating to

ZyFin Turkey Sovereign Bond Laddered Index

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This document contains the underlying principles and regulations regarding the structure and operation of the ZyFin Turkey Sovereign Bond Laddered 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 ZyFin Turkey Sovereign Bond Laddered Index is the sole property of ZyFin Research. 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. The index provider does not accept any payments from potential index components for inclusion in the index.

Introduction

This document is to be used as a guideline with regard to the composition, calculation and management of the *ZyFin Turkey Sovereign Bond Laddered Index*. Any changes made to the guideline are initiated by the Committee specified in section 1.6. The *ZyFin Turkey Sovereign Bond Laddered Index* is the sole property of ZyFin Research. The *ZyFin Turkey Sovereign Bond Laddered Index* is calculated and published by Solactive AG.

1 Index specifications

The *ZyFin Turkey Sovereign Bond Laddered Index* is a rules-based, market value weighted index engineered to mirror the performance of Turkish Government Bonds denominated in TRL. The index is calculated in USD.

The *ZyFin Turkey Sovereign Bond Laddered Index* is a Total Return Index, i.e. coupon payments are reinvested in the index on each adjustment day.

1.1 Name and RIC

The '*ZyFin Turkey Sovereign Bond Laddered Index*' is published in Reuters under the code ".ZYFTSBLI" and ISIN DE000SLA0K01.

1.2 Initial value

The index is calculated every Business Day starting July 28, 2015. Before this date the index values are back-tested until July 27, 2015, with the base value as 1000 and base date as *January 31, 2010*.

1.3 Distribution

The *ZyFin Turkey Sovereign Bond Laddered 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 *ZyFin Turkey Sovereign Bond Laddered Index* is calculated based on the Evaluated Mid Price (see 4.2 Further Definitions) of the respective Index Components. The index is calculated and distributed once every Business Day.

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 Components are weighted equally on each adjustment date. The *ZyFin Turkey Sovereign Bond Laddered Index* is divided into three baskets where each one contains two bonds. The Index includes six components. The three baskets have a target maturity of 2y, 5y and 10 years. In the event that the weight of one or more index components breaches the trigger of 20%, the Index will be rebalanced so that an Equal weighting will be reached on the respective Trigger day. The reweighting will become effective seven business days after the Trigger event was taking place

1.6 Decision-making bodies

A Committee composed of staff from Solactive AG is responsible for decisions regarding the composition of the ZyFin Turkey Sovereign Bond Laddered 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 ZyFin Turkey Sovereign Bond Laddered 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 is maintained from *January 31st, 2010*. The Index was back-tested starting on the January 31st, 2010 (with a value of 1000) and went into live calculation on the July 28th, 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 ZyFin.

2 Composition of the Index

2.1 Selection of the Index Components

On the Selection Day, all bonds which meet the requirements of the Selection Pool (Refer below for definition) are eligible for inclusion in the index. For each bond in the Selection Pool, the time to maturity is calculated. The bonds are grouped according to their time to maturity into three baskets: 2y, 5y and 10y. For the avoidance of doubt a bond having a time to maturity for example of 3.5y will be included in the 2-y basket.

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

- (a) Turkish Government Bond denominated in TRL
- (b) Amount Outstanding of at least 100 m TRL
- (c) Fixed Coupon Bonds are eligible for inclusion in the index.
- (d) 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.
- (e) Sinking Fund Bonds, Floating Rate Bonds, Convertible Bonds, Inflation-linked Bonds, Contingent Capital Securities, Covered Bonds, Preferred Securities, Securitized or Collateralized Bonds or Collateralized Debt Obligations (CDOs) are not eligible for inclusion in the index.
- (f) Private placements are not eligible for inclusion in the index.

From each basket, the two bonds which satisfy Selection Pool conditions and are closest to the target maturity are chosen as index components. The Index Components are weighted equally on each adjustment date. If not two bonds per basket are available the index committee decides about a successor or the inclusion of less bonds in the basket.

The new index composition (index components) and weights are published along with applicable effective date (adjustment date) on the relevant websites. On the adjustment date (in this case, 7th business date from selection date), index adjustment is done to consider new composition with applicable weight of each component in the index. The weights of the securities in the index may undergo change during two rebalancing dates due to market movement. Index rebalancing may also happen in case of extraordinary events as mentioned in the index guidelines.

Extraordinary adjustments are possible as described under 2.3.

2.2 Ordinary adjustment

The composition of the index is ordinarily reviewed on the quarterly Selection Day, which occurs on the last Business day of the month January, April, July and October. Any change to the index are implemented on the Adjustment Day, the seventh business day after the selection day.

2.3 Extraordinary adjustment

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

The Index Committee will decide on the future composition of the ZyFin Turkey Sovereign Bond Laddered Index as well as the Business Day which marks the starting of the new adjusted index composition.

Index re-balancing shall be triggered before the selection day in the event of any one index component breaching 20% weightage. Under this circumstance, constituent weights to be realigned (equal weightage) after providing seven business days' notice to market participants.

3 Calculation of the Index

3.1.1 Index formula

The *ZyFin Turkey Sovereign Bond Laddered 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:

$$Index_{i,t} = Index_{i,n} \frac{MarketValue_{i,t} + PaidCash_{i,t}}{BaseValue_n}$$

$$MarketValue_{i,t} = \sum_{i=1}^a (DirtyPrice_{i,t} + CAdj_{i,t}) \cdot Amount_{i,n} \cdot Capfactor_{i,n}$$

$$PaidCash_t = \sum_{i=1}^a Coupon_{i,t} \cdot Amount_{i,n} \cdot Capfactor_{i,n}$$

$$BaseValue_n = \sum_{i=1}^a (DirtyPrice_{i,n} + CAdj_{i,t}) \cdot Amount_{i,n} \cdot Capfactor_{i,n}$$

Whereas:

$Index_t$ = Value of the index on Business Day t.

$Index_n$ = Value of the index on the last Adjustment Day n.

$BaseValue_n$ = Value

$CAdj_{i,t}$ = Variable Coupon Adjustment Factor i on Business Day t is 0 if a bond enters the index during an ex-dividend period. If the bond is already in the index during the ex-dividend period, the Variable Coupon Adjustment Factor equals the coupon amount.

$DirtyPrice_{i,t}$ = Dirty Price of the bond i on Business Day t, whereas Dirty Price t is the sum of the clean price of the bond i on Business Day t and the accrued interest on Business Day t.

$DirtyPrice_{i,n}$ = Dirty Price of the bond i on the last Adjustment Day n, whereas Dirty Price is the sum of the clean price of the bond i on the last Adjustment Day n and the accrued interest on the last Adjustment Day n.

$Amount_{i,n}$ = Amount Outstanding of the respective bond as defined on the last Adjustment Day n.

$PaidCash_t$ = a) Value of the coupon payments between Adjustment Days.
b) If a bond i will be removed from the index between Adjustment Days, the resulting payment of the bond will be included in the Paid Cash component of the index.
On the next Adjustment Day "Paid Cash" will be reinvested in the index.

$Coupon_{i,t}$ = Coupon payment of bond i between payment date and Adjustment Day n. In case there is no coupon payment, Coupon i,t is 0.

$Capfactor_{i,n}$ = Weighting Factor that results in an equal weighting of the composition on the selection day. The Capfactor will also be reset between two adjustment days if a trigger event is taking place.

3.2 Accuracy

The value of the index are rounded to 2 decimal places.

According to the terms of the bond, the Index Calculator takes 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+0.

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 *ZyFin Turkey Sovereign Bond Laddered 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) Early Redemption or Full Call: The bond proceeds will be held as “Paid Cash” and reinvested into the index on the following Adjustment Day. For the avoidance of doubt a Tender must be mandatory, the pure offer to tender a bond will not lead to an adjustment of the index.

(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 Day.

(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: Optional Exchange Offers will not result in an adjustment of the index.
- 2) Mandatory Exchanges Offers:
 - a. 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.
 - b. In the case when less than 90% of the Amount Outstanding is exchanged the exchange will not be considered to be an event that affects the relevant bond’s position in the index.

(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.

(g) Ex-dividend Bonds: "Ex-dividend" means that the next coupon is detached from the bond several days in advance of the coupon payment date. Between ex-date and pay-date a buyer of the bond does not get the right to receive the next coupon. Therefore, accrued interest is negative during that period. However, the coupon will be paid to the original bondholder, i.e. if a bond is already in the index the next coupon payment is held separate in the Variable Coupon Adjustment Factor $CPAdj_{j,t}$. If the bond enters the index during the ex-dividend period $CPAdj_{j,t}$ is zero as the next coupon payment will not accrue to the index.

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

4. Definitions

“Adjustment Day” is the day seven Business Day after the Selection Day.

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

“Bearer Bonds” are unregistered debt securities.

A **“Business Day”** in relation to the index is each day other than a Saturday or Sunday.

“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.

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.

“Fungible Bond” 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 USD.

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

“Investment Grade” are all ratings above 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 Mid Price.

“Paid Cash” is either the value of the coupon payments between Adjustment Days or the resulting payment when a bond is removed from the index between Adjustment Days. On the next Adjustment Day “Paid Cash” will be reinvested in the index.

“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 last business day in January, April, July and October.

“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.

“Trigger Event” means an event where one index component reaches a weighting of more than 20% between two adjustment days. A trigger event is monitored by Zyfin Research.

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 ZyFin Turkey Sovereign Bond Laddered Index concept

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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.