# TLREF

# TURKISH LIRA OVERNIGHT REFERENCE RATE METHODOLOGY

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## 1. PURPOSE

Turkish Lira Overnight Reference Rate (TLREF) is created in order to meet the need of Turkish Lira short-term reference rate that can be used as underlying or benchmark in financial products, debt instruments and various types of financial contracts. TLREF is a measure of the rate at which Turkish banks lend and borrow from each other TL in circumstances where credit, liquidity and other risks are minimal (Underlying Interest).

## 2. SCOPE AND CALCULATION METHOD

### 2.1 Scope

In order to use the transactions that comply with the corresponding market conditions the overnight repo transactions, that are secured by TL denominated government debt securities and realized on Borsa İstanbul Repo-Reverse Repo Market as of 15:30, with the starting value date of the same day, are used in the TLREF calculations. The following types of transactions are not included in the calculations and transaction types other than those listed below are considered as Eligible Transactions.

- ➢ Cross trade transactions
- ➢ Non cleared transactions
- ➢ Cancelled transactions
- ➢ Trade report transactions

### 2.2 Calculation Method

The Turkish Lira Overnight Reference Rate (TLREF) is calculated as the volume-weighted mean rate, based on the central 70% of the volume-weighted distribution of rates as follows:

a)  All Eligible Transactions traded on any given business day are ranked from the smallest to the largest with respect to the nominal interest rate reported on these transactions.

b)  The top and the bottom 15% of the traded volumes (associated to the highest and the lowest interest rates) are detected as outliers and removed from the observations.

c)  For the transactions which are at the upper and lower bounds, only the part of trading volume which falls in central 70% are included in the calculation.

d)  TLREF is calculated as the volume weighted mean of the remaining sample as follows:

$$\text{TLREF} = \sum_{i=1}^{n} (R_i * V_i)/V$$

Where:

$R_i$ is the interest rate;
$V_i$ is the volume corresponding to the rate $R$;
$V$ is the total volume used for the calculation (sum of $V_i$).

e)  TLREF is reported in percentage per annum (on an actual/365 day count convention).

### 2.3 Calculation and Dissemination Times

The calculations are made as of 15:30 on the days that BIST Repo-Reverse Repo Market is open. The TLREF value is announced via BISTECH Data Dissemination System at 15:50 on trading days and at 12:35 on half days. The reports showing TLREF values are shared from "Data Store" (http://datastore.borsaistanbul.com/) and at "Data/TLREF Data" page on Borsa İstanbul's website (https://www.borsaistanbul.com/en/home-page) after 16:00 on trading days and after 12:45 on half days.

### 2.4 BIST TLREF Index

BIST TLREF Index is created in order to track the return of TLREF rate. Since the return of TLREF rate will be realized on the next trading day, BIST TLREF index reflects the return that will be realized on the next trading day.

The following formula is used in the calculation of index:

$$Index_t = Index_{t-1} \times [1 + TLREF_t \times \frac{g}{365}]$$

$Index_t$: Value of the index at day t

$TLREF_t$ : TLREF rate at day t

$g$ : Duration of overnight repo transactions at day t

Calculated index values are shared in a similar way and time as specified in the article 2.3 for TLREF rate.

### 2.5 Starting Index / Rate Calculation

The starting date of calculation of TLREF rate is December 28, 2018 and the starting date of dissemination is June 17, 2019. The starting date of calculation and dissemination of BIST TLREF Index is June 17, 2019 and the starting value of BIST TLREF Index is 1000, as of June 14, 2019.

### 2.6 Data Precision

|  | Data Precision |
| --- | --- |
| TLREF Rates | Rounded to 4 decimal places |
| BIST TLREF Index Values | Rounded to 5 decimal places |

### 3. OTHER

### 3.1 TLREF Committee

a)  TLREF Committee (Committee) is established in order to oversee the activities regarding the calculation and dissemination of TLREF rate and BIST TLREF Index and undertake studies to make necessary changes in the rules based on the market developments, and needs and requirements of the market participants.

b)  The Committee reviews, at least annually, the current methodology with a view to ensuring that it continues adequately to measure the Underlying Interest.

c) Decisions by the Committee are taken with majority of the votes. The Committee is made up of representatives of the Central Bank of the Republic of Türkiye (CBRT), Republic of Türkiye Ministry of Treasury and Finance, The Banks Association of Türkiye, Turkish Capital Markets Association, Banking Regulation and Supervison of Agency, İstanbul Settlement and Custody Bank and Borsa İstanbul.

d) Any Committee member, who has the opinion that the TLREF rate, which is based on the overnight repo rate in the Borsa İstanbul Repo-Reverse Repo Market, does not in any way reflect the effective overnight borrowing / lending interest rate due to CBRT's monetary policy practices or other reasons, shall promptly express this opinion to the Committee. The Committee evaluates the reasoning of the member and by majority of the votes, adopts the TLREF rate generated by the current methodology, or adopts and announces a new rate representing the effective overnight borrowing / lending rate as TLREF rate. Notice about this situation is announced on Borsa İstanbul's website.

### 3.2 Insufficiency of Input Data

Borsa İstanbul will consider that the data collected on a given day are sufficient to calculate the TLREF rate unless:

a)     The total number of Eligible Transactions is below 5,

b)     The total number of counterparties is below 5 and

c)     The total volume of the Eligible Transactions is below TL 5 billion.

If these data sufficiency conditions are not met, the TLREF rate will be determined as: The level of the Weighted Average Cost of the CBRT Funding rate plus the mean of the spread of the TLREF to the Weighted Average Cost of the CBRT Funding rate (TLREF - Weighted Average Cost of the CBRT Funding rate), over the previous five publication days.

If the Weighted Average Cost of the CBRT Funding rate, which is published on a daily basis, cannot be reached due to any reason on the day of data insufficiency, TLREF calculation continues to be calculated with the last announced the Weighted Average Cost of the CBRT Funding rate.

In the event that this contingency methodology is used, this will be clearly indicated in the TLREF page on Borsa İstanbul's website.

This methodology is only intended to be used for relatively short-term contingency events. If such an event was expected to be prolonged, the TLREF committee would consider the appropriate response at the time, with reference to the review and evolution process outlined in Section 3.1-d.

### 3.3 Delay in Calculation/Technical Problem

In the case of a problem in the calculation due to any reason and, as a result, unavailability of related reports and values at the scheduled times, the announcements about the delay and the solution are made on the Borsa İstanbul's website at the time until 18:00.

### 3.4 Temporary Suspension

In cases where there is a problem with the calculations due to any reason and the TLREF rate cannot continue to be calculated temporarily, the TLREF Committee evaluates the issue and determines the actions to be taken. The decisions are announced on the Borsa İstanbul website.

### 3.5 Permanent Cessation

The TLREF Committee may decide to cease the calculation due to the fact that TLREF does not represent the changes aimed to measure, data insufficiency, or changes in applicable laws or market structure, or for other reasons. In this case, "Cessation of Financial Benchmarks" titled Article 8 of "Financial Benchmarks Management Procedure" is applied.

### 3.6 Retroactive Correction in Calculated Values

If an error is detected in a published value, only same day retroactive correction is made by the TLREF Committee's decision and the corrected values are republished. The announcement about the correction is made on the Borsa İstanbul's website.

### 3.7 Follow-up and Management

Maintenance of TLREF is provided by Borsa İstanbul Index Directorate. Borsa İstanbul as the administrator of TLREF rate and BIST TLREF Index regarding this methodology has responsibility for the process of calculating and publishing the rate and the index.

### 3.8 Changes in the Methodology

All changes about TLREF Methodology are announced on Borsa İstanbul's website with the approval of TLREF Committee.

### 3.9 Nonregulated Subjects

All practices about the subjects, which are not clearly explained or regulated in this document, are decided by TLREF Committee and announced on Borsa İstanbul's website.

### 4. EFFECTIVE DATE

This Methodology takes effect on December 14, 2022.