

TLREF

TURKISH LIRA OVERNIGHT REFERENCE RATE
METHODOLOGY



BORSA
İSTANBUL

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1. INTRODUCTION

1.1 Purpose

TLREF Turkish Lira Overnight Reference Rate 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. The primary purpose of TLREF is to determine the Turkish Lira borrowing/lending interest rate under conditions where credit, liquidity, or other risks are minimal.

1.2 Administration

Borsa İstanbul is the owner of the intellectual property rights of TLREF rate and BIST TLREF Index calculated under this Methodology and as the administrator with full control, is responsible for all processes related to the creation, calculation and publication of these indices and their compliance with the "Principles for Financial Benchmarks" of the International Organization of Securities Commissions (IOSCO). Information on the compliance of the Financial Benchmarks calculated by Borsa İstanbul with the principles of IOSCO can be accessed from the Borsa İstanbul corporate website, [Indices - Compliance with IOSCO Principles](#) page.

Borsa İstanbul Index Department carries out the works and operations to ensure the continuity of TLREF rate and BIST TLREF Index.

1.3 Financial Benchmarks Committee

Financial Benchmarks Committee formed and appointed by Borsa İstanbul for the sake of development of opinions and proposals on all and any issues that may be included in the scope of control and oversight of Financial Benchmarks, in order to perform the control and oversight functions described in Article 8 "Control Framework" and Article 9 "Internal Oversight" of Borsa İstanbul A.Ş. Directive on Financial Benchmarks Compliant with IOSCO Principles.

Financial Benchmarks Committee provides governance and internal oversight in regarding all aspects of Financial Benchmark determination activity. Duties and responsibilities of the Financial Benchmarks Committee are basically comprised of determination and announcement of Financial Benchmarks, and creation of Financial Benchmarks, and determination of Methodology, and calculation of Financial Benchmarks, and publishing and dissemination of Financial Benchmarks, and conduct of related operations for reporting and submission to the Decision-making Body referred to in Article 4 of Borsa İstanbul A.Ş. Financial Benchmarks Management Procedure. The Committee gathers at least once every four months. Duties, responsibilities and the membership structure of Financial Benchmarks Committee are stated in Article 5 of Borsa İstanbul A.Ş. Financial Benchmarks Management Procedure. All practices can be accessed from the Borsa İstanbul corporate website, [Indices - Compliance with IOSCO Principles](#) page.

1.4 TLREF Committee

TLREF Committee is established in order to oversee the activities regarding the calculation and dissemination of TLREF rate and to make recommendations by conducting studies on necessary changes in determining the TLREF rate, taking into account developments in the market, emerging new conditions, and demands.

TLREF Committee is made up of one representative each selected by the Republic of Türkiye Ministry of Treasury and Finance, the Central Bank of the Republic of Türkiye, Banking Regulation and Supervision of Agency, the Banks Association of Türkiye, Turkish Capital Markets Association İstanbul Settlement and Custody Bank and Borsa İstanbul. The procedures and principles governing the work of the TLREF Committee are set out in the TLREF Committee Working Procedures and Principles. Decisions of the TLREF Committee are taken by consensus and enter into force upon approval by Borsa İstanbul Management. The secretariat of the TLREF Committee is managed by the Banks Association of Türkiye.

Any member of the TLREF Committee, who concludes that the TLREF rate does not reflect the effective overnight borrowing / lending interest rate or who believes that it deviates significantly from this rate, shall promptly express this opinion to the Committee. The Committee shall assess the situation, taking into account the arguments supporting this opinion.

1.5 Changes to the Index Methodology

Borsa İstanbul has implemented a governance and oversight structure with committees and policies to review the Methodology and conduct consultations with Stakeholders as needed.

The Methodology is regularly reviewed (at least once a year) by Financial Benchmarks Committee and/or TLREF Committee to ensure that it continues to best reflect the change that TLREF Rate and BIST TLREF Index aims to measure.

Needs for revision in the Methodology may arise as a result of change requests from Subscribers or Stakeholders and periodic or non-periodic reviews within the scope of the oversight of the Financial Benchmarks.

All changes that are decided to be made in the Methodology are made publicly available on Borsa İstanbul corporate website, [Indices - Methodologies and Changes](#) page, accompanied by the relevant explanations and rationale for the revision, before being implemented.

All practices about the Methodology are established and announced by Borsa İstanbul Management with Financial Benchmarks Committee and/or TLREF Committee advice.

2. ABBREVIATIONS, DEFINITIONS AND GENERAL RULES

2.1 Abbreviations

Included in this Methodology;

- Borsa, Borsa İstanbul: Borsa İstanbul A.Ş.,
- CBRT: Central Bank of the Republic of Türkiye
- Financial Benchmark: Indices, prices, rates and similar other items which are regularly calculated by using a specific formula or another calculation method, and are presented to users against remuneration or free of charge, and are used in determination of value of a certain capital market instrument, financial contract or product, or in tracking of its rates of return, or in determination of the amount of payment to be made in reliance thereupon, or in determination of asset distribution or portfolio, or in calculation of performance premiums,
- Financial Benchmarks Committee: The Committee formed and appointed by Borsa İstanbul for evaluating and implementing relevant opinions and proposals on all and any issues that may be included in the scope of control and oversight of Financial Benchmarks, in order to perform the control and oversight functions described in Article 8 “Control Framework” and Article 9 “Internal Oversight” of Borsa İstanbul A.Ş. Directive on Financial Benchmarks Compliant with IOSCO Principles,
- IOSCO: International Organization of Securities Commissions,
- Methodology: TLREF Turkish Lira Overnight Reference Rate Methodology,
- Stakeholder(s): Subscribers and other persons or entities who own contracts or financial instruments that reference a Financial Benchmark,
- Subscriber(s): A person or entity that purchases Financial Benchmark determination services from Borsa İstanbul Financial Benchmarks,
- TLREF, TLREF rate: TLREF Turkish Lira Overnight Reference Rate,
- TLREF Committee: The Committee which is established in order to oversee the activities regarding the calculation and dissemination of TLREF rate and to make recommendations by conducting studies on necessary changes in determining the TLREF rate, taking into account developments in the market, emerging new conditions, and demands and which is made up of one representative each selected by the Republic of Türkiye Ministry of Treasury and Finance, the Central Bank of the Republic of Türkiye Banking Regulation and Supervision of Agency, the Banks Association of Türkiye, Turkish Capital Markets Association İstanbul Settlement and Custody Bank and Borsa İstanbul.

expresses.

2.2 Calculation and Dissemination Times

The calculations are made as of 03:30 PM on the days that BIST Repo-Reverse Repo Market is open. The TLREF rate and BIST TLREF Index, calculated as described in sections 3.2 and 3.3 using data as of 03:30 PM, are published via the BISTECH Data Dissemination System at 03:50 PM on full business days and at 12:35 PM on half business 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 PM on half days.

2.3 Data Precision

Data	Data Precision
TLREF Rate	Rounded to 4 decimal places
BIST TLREF Index Value	Rounded to 5 decimal places

2.4 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.

3. CALCULATION METHOD

3.1 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 CBRT liquidity bills 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

3.2 TLREF Calculation Method

TLREF is calculated as follows:

- Eligible Transactions (Described in Section 3.1) 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.
- 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.
- 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.
- TLREF is calculated as the volume weighted mean of the remaining sample as follows:

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

R_i : interest rate

V_i : volume corresponding to the rate R_i

V : total volume used for the calculation (sum of V_i).

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

3.3 BIST TLREF Index Calculation Method

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:

$$\text{Index}_t = \text{Index}_{t-1} \times \left[1 + \text{TLREF}_t \times \frac{g}{365} \right]$$

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.

4. OTHER

4.1 Insufficiency of Input Data

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

- The total number of Eligible Transactions is below 5,
- The total number of counterparties is below 5 and
- 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 Funding Cost of the CBRT Funding plus the mean of the spread of the TLREF to the Weighted Average Funding Cost of the CBRT Funding (TLREF - Weighted Average Funding Cost of the CBRT Funding), over the previous five publication days.

If the Weighted Average Funding Cost of the CBRT Funding, 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 Funding Cost of the CBRT Funding.

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 Financial Benchmarks Committee or/and TLREF committee would consider the matter. Decisions taken and finalized with the approval by Borsa İstanbul Management and will be announced on the Borsa İstanbul website.

4.2 Delay in Calculation or 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.

4.3 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 Financial Benchmarks Committee or/and TLREF Committee evaluates the issue and determines the actions to be taken. Decisions taken and finalized with the approval by Borsa İstanbul Management and will be announced on the Borsa İstanbul website.

4.4 Permanent Cessation

Financial Benchmarks Committee or/and TLREF Committee may decide to cease the calculation due to the fact that TLREF rate and/or BIST TLREF Index 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. Decisions taken and finalized with the approval by Borsa İstanbul Management and will be announced on the Borsa İstanbul website.

4.5 Retroactive Correction in Disseminated Values

If an error is detected in a published value of TLREF rate or BIST TLREF Index, only same day retroactive correction is made by the Borsa İstanbul Management’s decision and the corrected values are republished. The announcement about the correction is made on the Borsa İstanbul’s website.

5. UPDATE FREQUENCY

This Methodology is reviewed at least once a year and updated as needed.

6. EFFECTIVE DATE

This Methodology takes effect on January 29, 2026. The current version of the Methodology should be confirmed on the Borsa İstanbul corporate website, [Indices - Methodologies and Changes](#) page.

