BIST COMMODITY AND COMMODITY DENOMINATED SECURITIES INDICES METHODOLOGY

TABLE OF CONTENTS

1. INTRODUCTION AND PURPOSE

1.1. Introduction

Borsa İstanbul has full control over all indices calculated under this Methodology and 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 Directorate carries out the works and operations to ensure the continuity of BIST Commodity and Commodity Denominated Securities Indices.

Lists of constituent commodity and commodity denominated securities in the indices are determined and used in the index calculations by Borsa İstanbul according to the Methodology. If the commodity denominated securities to be included in the indices cannot be determined due to lack of data or in case of unusual market conditions, the indices continue to be calculated with the current list. In case of the absence of any constituent for any of indices, indices are continued with the latest recorded value.

1.1.1. 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.

1.1.2. Changes to the Index Methodology

The Methodology is regularly reviewed by Financial Benchmarks Committee to ensure that it continues to best reflect the change that each 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. Borsa İstanbul has implemented a governance and oversight structure with committees and policies to review the Methodology and conduct consultations with Stakeholders as needed.

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.

1.2. Purpose

BIST KMKTP Gold and BIST Spot Gold Indices, which are calculated within the scope of BIST Commodity and Commodity Denominated Securities Indices, are created in order to measure daily returns of gold prices; BIST Spot Silver Index is created in order to measure daily returns of silver prices; BIST Spot Platinum Index is created in order to measure daily returns of platinum prices; BIST Spot Palladium Index is created in order to measure daily returns of palladium prices; and BIST Gold Denominated Lease Certificate and BIST Gold Bond Indices are created in order to measure daily returns of gold denominated lease certificates and gold bonds issued by HMB and by HMVKŞ.

2. ABBREVIATIONS AND DEFINITIONS

2.1. Abbreviations

Included in this Methodology;

- DSM: Borsa İstanbul Debt Securities Market,

- Borsa, Borsa İstanbul: Borsa İstanbul A.Ş.,

- HMB: Republic of Türkiye Ministry of Treasury and Finance,

- HMVKŞ: Republic of Türkiye Ministry of Treasury and Finance Asset Leasing Company,

- IOSCO: International Organization of Securities Commissions,

- PMD: Borsa İstanbul Precious Metals and Diamond Market,

- Methodology: BIST Commodity and Commodity Denominated Securities Indices Methodology,

- LBMA: London Bullion Market Association,

- LSEG Data Terminal: LSEG Data & Analytics Workspace Data Terminal,

- TRY: Turkish Lira,

- USD: American Dollar,

- XAU: Code for Ounce of Gold,

- XAG: Code for Ounce of Silver,

- XPT: Code for Ounce for Platinum,

- XPD: Code for Ounce of Palladium,

expresses.

2.2. Definitions and Terms

Included in this Methodology;

- Index: It refers to indicators which are regularly determined and published or made available by application of a specific formula or another calculation method or by assessment through use of certain assets, prices, returns or rates included therein (also including estimated prices or interest rates, standing orders or other values or observations),

- Fixing: The pricing process in which the value of a particular financial instrument is fixed, usually with reference to a certain time of day,

- Financial Benchmark: An index, price, ratio or the like that is regularly calculated using a specific formula or calculation method; that is available to users for a fee or free of charge; that is used in determining the value of a capital market instrument, financial contract or product, in monitoring its returns, in determining the amount of payment to be made based on them, in determining the asset allocation or portfolio or in calculating performance bonuses; that any stock exchange undertakes to manage,

- Daily Return: The return of an asset or investment on a specific day,

- Redemption: Redemption is the repayment of the accrued interest and principal of the security on the maturity date determined at the time of issue of the security,

- Lease Certificates: Securities issued by the asset leasing company in order to provide financing of all kinds of assets and rights, and which enable the owners to have rights in proportion to their shares of the income obtained from this asset or right,

- Coupon Rate: The interest rate paid by fixed income securities such as bonds or bonds in certain periods,

- Nominal Amount: The nominal value written on a financial instrument, its principal,

- T+0: The day a financial transaction occurs,

- Settlement Price: Settlement price is the price used in calculating the clearing amount of the transaction,

- Default: Default refers to the situation where the security is not paid when the coupon or principal payment date arrives,

- Maturity: Maturity refers to a finite period at the end of which the instrument will no longer exist and the principal is repaid with interest,

- Dated Date: The date on which interest accrued on debt instruments begins to accrue,

- Yield to Maturity (YTM): Internal rate of return calculated assuming a bond will be held until maturity,

- Value: Settlement date for the realized transactions,

expresses.

3. CALCULATED INDICES

3.1. BIST Commodity Indices

In the scope of BIST Commodity Indices, BIST KMKTP Gold, BIST Spot Gold, BIST Spot Silver, BIST Spot Platinum and BIST Spot Palladium indices are calculated. BIST KMKTP Gold Index is calculated based on the USD/Ounce trade prices of gold transactions realized in PMD and Index measures returns of gold prices in USD/Ounce. BIST Spot Gold, BIST Spot Silver, BIST Spot Platinum and BIST Spot Palladium Indices are calculated based on the converted TRY/gram prices of USD/Ounce prices realized in international markets and indices measure returns of prices in TRY/Gram. The codes and names of these indices are given in Annex Index List.

Prices Used in Index Calculations and Data Hierarchy: In the calculation of the BIST KMKTP Gold Index, trade prices of same day value USD/Ounce gold transactions in PMD which have 995/1000 fineness, LBMA in and out, main vault, standard 1 kg bullion gold properties are used. In the calculation of the indices, fixing transactions are not taken into consideration. If there is no related transaction in the market or the prices used in the indices cannot be reached due to the existence of unusual market conditions, the indices continue to be calculated with the latest USD/Ounce prices used.

In the BIST Spot Gold, BIST Spot Silver, BIST Spot Platinum and BIST Spot Palladium Indices, average of following USD/Ounce price quotations disseminated real time in the LSEG Data Terminal is used.

For BIST Spot Gold;

      Bid prices disseminated through symbol of XAU=BID

      Ask prices disseminated through symbol of XAU=ASK

For BIST Spot Silver;

      Bid prices disseminated through symbol of XAG=BID

      Ask prices disseminated through symbol of XAG=ASK

For BIST Spot Platinum;

Bid prices disseminated through symbol of XPT=BID

Ask prices disseminated through symbol of XPT=ASK

For BIST Spot Palladium;

Bid prices disseminated through symbol of XPD=BID

Ask prices disseminated through symbol of XPD=ASK

Average of following USD/TRY price quatations disseminated real time in the LSEG Data Terminal is used in order to convert USD/Ounce prices to TRY/Gram prices.

Bid prices disseminated through symbol of TRYBB=

Ask prices disseminated through symbol of TRYBA=

If the prices from LSEG Data Terminal remain the same or the prices cannot be reached due to the existence of unusual market conditions, the indices continue to be calculated with the latest USD/Ounce and USD/TRY price quotations.

3.2. BIST Commodity Denominated Securities Indices

In the scope of BIST Commodity Denominated Securities Indices, BIST Gold Denominated Lease Certificates and BIST Gold Bond Indices are calculated. BIST Gold Denominated Lease Certificate and BIST Gold Bond Indices are created in order to measure the returns of gold lease certificates and bonds as a whole based on same day value prices of gold denominated lease certificates and gold bonds traded in the DSM issued in grams of gold by HMB or HMVKŞ. BIST Gold Denominated Lease Certificate Index measures Turkish Lira-denominated returns including gold and lease yields, while the BIST Gold Bond Index measures Turkish Lira-denominated returns including gold and interest yields. The codes and names of the indices are given in Annex Index List.

Value Dates of the Indices: Indices are calculated with T+0 value date prices.

Maturity Breakdown of Indices: There is no distinction of the indices in terms of maturity lengths.

Prices Used in Index Calculations and Data Hierarchy: In the BIST Gold Denominated Lease Certificate Index and BIST Gold Bond Index, nominal prices in grams of gold are calculated from the last settlement prices of transactions announced in DSM Outright Purchases and Sales Normal Orders Market and Watchlist Market converted to TRY/Gram with USD/Ounce and USD/TRY prices used in calculations of BIST Spot Gold Index. Real time prices in TRY of securities are calculated based on corresponding nominal prices together with real time gold and currency prices.

Cross trades, trade reports, non-cleared transactions and cancelled trades are excluded from the index calculations. Trade cancellations made after 14:00 session closing time for same day value transactions affect

prices of securities in indices so they are taken into account in index calculations. Prices of securities in TRY/Gram is recalculated using real time USD/Ounce and USD/TRY prices at the time of trade cancellation.

If a bond does not have any same day settled transaction in any day or the prices of the bonds included in the indices cannot be reached due to the existence of unusual market conditions, in order to find forward carried nominal price in grams of gold, last nominal price in grams of gold is carried forward under the assumption that yield will stay same until the maturity. Forward carried nominal price is taken as a base price for the security in the calculation of prices used in indices with using real time USD/Ounce and USD/TRY. If the prices of the real time USD/Ounce and USD/TRY cannot be reached due to the existence of unusual market conditions, TRY prices used in indices continue to be calculated with the latest USD/Ounce spot gold and USD/TRY price quotations.

Prices Used When Including Securities in Indices: Gold bonds and gold denominated lease certificates are added to indices with prices calculated from issue price using USD/Ounce and USD/TRY prices on the first settlement date. Return of the security starts to be reflected to the indices effective from the next business day after the first settlement date. Return of the security starts to be reflected on the indices effective from the next business day after the first settlement date. If a bond has no transaction throughout the business day, it is valued with the forward TRY-denominated T+0 price carried from the issue price valid on the first settlement date.

Weighting Method: Indices are market value weighted indices. For gold nominated lease certificates and gold bonds, the market value of the securities is calculated by multiplying the total nominal amount by the settlement price.

Exclusion From Indices: Gold bonds and gold denominated lease certificates remain in the indices for the last time at the maturity date, or if it is holiday than the next business day with the face amount. Face amount is calculated through multiplying nominal amount with prices used in index at the maturity date. Prices in index at the maturity date are calculated based on sum of nominal 100 gram and coupon or lease amount together with USD/Ounce and USD/TRY prices at the maturity date.

Nominal Amounts: Total nominal amount of gold bonds and gold denominated lease certificates are the total issued amounts issued by HMB or HMVKŞ. Reissues and buybacks are considered in calculation of total issued amounts.

4. CALCULATION METHODOLOGY

4.1. BIST Commodity Indices Calculation Method

4.1.1. BIST KMKTP Gold Index

BIST KMKTP Gold Index is calculated on the basis of following formula:

$$Index_t = Index_{Base} * \left(\frac{Price_t}{Price_{Base}}\right)$$

$Index_t$: Index value on day t

$Index_{Base}$: Base value of the gold index of 1000

$Price_t$: Price of USD/Ounce denominated trades with same day value date at PMD

$Price_{base}$: 434.9 USD/Ounce gold price of USD/

Ounce transactions with same day value date on the index start date

4.1.2. BIST Spot Gold, BIST Spot Silver, BIST Spot Platinum and BIST Spot Palladium Indices

BIST Spot Commodity Indices are calculated on the basis of following formula:

$$Index_t = Price_t * Exchange\ Rate_t * CC_{gr}$$

$Index_t$: Index value on day t

$Price_t$: Average of bid (XAU = BID, XAG = BID, XPT = BID, XPD = BID) and ask (XAU = ASK, XAG = ASK, XPT = ASK, XPD = ASK) USD/Ounce prices for Gold, Silver, Platinum and Palladium

$Exchange\ Rate_t$: Average of bid (TRYBB =) and ask (TRYBA =) USD/TRY prices

CC_{gr}: (1/31.1034768) Ounce/Gram conversion coefficient

4.2. BIST Commodity Denominated Securities Indices Calculation Method

BIST Gold Denominated Lease Certificate and BIST Gold Bond Indices are calculated on the basis of following formula:

$$Index_t = Index_{t-1} \times \left(1 + \frac{\sum_{i=1}^{n} w_{i,t-1} \times r_{i,t}}{\sum_{i=1}^{n} w_{i,t-1}}\right)$$

$Index_t$: Value of index on day t

$w_{i,t-1}$: Market value of security i on day t-1

$$w_{i,t-1} = N_{i,t-1} \times P_{i,t-1}$$

$N_{i,t-1}$: Nominal amount of security i on day $t-1$

$P_{i,t-1}$: Settlement price of security i on day $t-1$

n: Number of securities in indices

$r_{i,t}$: Return of security i on day t

$$r_{i,t} = (P_{i,t} / P_{i,t-1}) - 1$$

$$P_{i,t} = \text{Price}_t * \text{Exchange Rate}_t * CC_{gr} * \text{Nominal} /100$$

$P_{i,t}$: Price used in indices for security i on day t

Price_t: Average of bid (XAU=BID) and ask (XAU=ASK) USD/Ounce prices

Exchange Rate_t: Average of bid (TRYBB =) and ask (TRYBA =) USD/TRY prices

CC_{gr}: (1/31.1034768) Ounce/Gram conversion coefficient

Nominal: Price in grams of gold calculated from trades in DSM

4.3. BIST Commodity and Commodity Denominated Indices Data Precision

Data Precision of the parameters used in the index calculation and publication are shown at the table below.

DATA PRECISION	
Index Value	Rounded to 5 decimal places

5. CORRECTION IN INDEX VALUES

No retroactive correction is made in the index values calculated and published in real time. Retroactive correction in the index values calculated and published at the end of day can be permitted only by the decision of the Borsa İstanbul Management.

6. EFFECTIVE DATE

This Methodology takes effect on December 16, 2024. The current version of the Methodology should be confirmed on the Borsa İstanbul corporate website (www.borsaistanbul.com), Indices - Methodologies and Changes page.

7. APPENDIX

The List of Indices covered by this Methodology is given by the table in Annex.

Annex Index List

Index Group	Index Name	Index Code	ISIN Code	Exchange Rate	Weighting Unit	Calculation and Publication Interval	Calculation Hours on Normal Working Days	Calculation Hours on Half Working Days
BIST COMMODITY INDICES	BIST KMKTP GOLD	ATKMP	TRAXIST02638	USD	Ounce	Every 10 seconds	09:00-16:00	09:00-13:00
BIST COMMODITY INDICES	BIST SPOT GOLD	ALTSPT	TRAXIST03594	TRY	Gram	Every 10 seconds	10:00-18:05	10:00-12:35
BIST COMMODITY INDICES	BIST SPOT SILVER	GMSSPT	TRAXIST04519	TRY	Gram	Every 10 seconds	10:00-18:05	10:00-12:35
BIST COMMODITY INDICES	BIST SPOT PLATINUM	PLTSPT	TRAXIST04527	TRY	Gram	Every 10 seconds	10:00-18:05	10:00-12:35
BIST COMMODITY INDICES	BIST SPOT PALLADIUM	PLDSPT	TRAXIST04535	TRY	Gram	Every 10 seconds	10:00-18:05	10:00-12:35
BIST COMMODITY DENOMINATED SECURITIES INDICES	BIST GOLD DENOMINATED LEASE CERTIFICATE	ALTKST	TRAXIST03578	TRY	-	Every 10 seconds	10:00-18:05	10:00-12:35
BIST COMMODITY DENOMINATED SECURITIES INDICES	BIST GOLD BOND	ALTTHV	TRAXIST03586	TRY	-	Every 10 seconds	10:00-18:05	10:00-12:35