BIST RISK CONTROL INDICES METHODOLOGY

BORSA İSTANBUL

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1. INTRODUCTION

1.1. Purpose

BIST Risk Control Indices are created provide investors with the opportunity to invest in the underlying equity index at a predetermined target risk level (target volatility).

These Indices are created using two components; one considered risky and the other risk free. The weight of the risky asset in the portfolio is adjusted daily according to changes in its return volatility, with the aim of keeping the portfolio's volatility (risk level) constant. During periods of high volatility, the weight of the underlying index (the risky asset) is reduced; conversely, during periods of low volatility, the weight of the underlying index is increased.

1.2. Administration

Borsa İstanbul is the owner of the intellectual property rights of all indices 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 BIST Risk Control Indices.

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. 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 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.

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's advice.

2. ABBREVIATIONS, DEFINITIONS AND GENERAL RULES

2.1. Abbreviations

Included in this Methodology;

- Borsa, Borsa İstanbul: Borsa İstanbul A.Ş.,
- Methodology: BIST Risk Control Indices Methodology,
- Repo Index: BIST-KYD Repo (Net) Index
- The Committee: Financial Benchmarks Committee

expresses.

2.2. Definition and Terms

- **Volatility:** Volatility is used to express the risk level. It is assumed that risk increases during periods of high volatility and decreases during periods of low volatility. In financial markets, it refers to the variability of asset prices within a given time period. High volatility indicates that price change rapidly and significantly, while low volatility indicates that price movements are more stable and predictable.
- **Target volatility (Target Risk Level):** This represents the fixed risk level that the index aims to maintain. Within the scope of this Methodology, the target risk level for indices calculated under this framework may be set at 10%, 15%, 20%, 25% or 30%
- **Realized Volatility (Realized Risk Level):** This refers to the volatility of the underlying index over the specified time periods. For indices calculated under this Methodology, 21-day and 63-day realized volatility values are used.

2.3. Calculation and Dissemination Frequency

BIST Risk Control Indices are calculated on business days when both the equity and repo/reverse repo markets are open. When calculating the index returns for the first business day following a day after either or both of these markets are closed, the closing value from the last trading day on which both markets were open is used as the previous day's values.

BIST Risk Control Indices are calculated and disseminated at the end of day.

2.4. Data Precision

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

Data	Data Precision
Volatility Values	Rounded to 2 decimal places
Risk Control Index Values	Rounded to 4 decimal places
Underlying Index Values	Rounded to 12 decimal places
Repo Index Value	Rounded to 12 decimal places
Underlying Index Weighting	Rounded to 4 decimal places

3. CALCULATED INDICES; STARTING DATES AND VALUES

BIST Risk Control Indices are calculated in two types as "Gross Return" and "Excess Return". The codes and names of these indices are given in Annex-1 Index List.

4. CALCULATION METHODOLOGY

Two types of BIST Risk Control Indices are calculated; Excess Return and Gross Return and trading costs are ignored while calculating the return of BIST Risk Control Indices. I

4.1. BIST Risk Control Indices (Gross Return)

BIST Risk Control Indices (Gross Return) are calculated to reflect the daily returns of the underlying index and repo index in proportion to their respective weights within the portfolio.

Risk Control Indices (Gross Return) is calculated using the formula below:

$$RK_t = (1 + RKG_t) \text{ x } RK_{t-1}$$

$$RKG_t = [(W_t(DE_t/DE_{t-1} - 1)) + ((1 - W_t)(RE_{t-1}/RE_{t-2} - 1))]$$

RKt : Value of Risk Control Index (Gross Return) on day t
RKGt : Return of Risk Control Index (Gross Return) on day t
DEt : Closing value of the underlying index on day t
REt : Closing value of BIST-KYD Repo Index (Net) on day t
Wt : The weight of the underlying index on day t within the Risk Control Index

Since BIST-KYD Repo (Net) Index value on day t shows the return on day t+1, the return of repo index is calculated using previous days' values.

4.2. BIST Risk Control Indices (Excess Return)

BIST Risk Control Indices (Excess Return) reflects only the return of the underlying index proportional to its weight in the index portfolio. It is calculated using the formula below:

$$RK_t = (1 + RKG_t) \text{ x } RK_{t-1}$$

$$RKG_t = (W_t(DE_t/DE_{t-1} - 1))$$

RKt : Value of Risk Control Index (Excess Return) on day t
RKGt : Return of Risk Control Index (Excess Return) on day t
DEt : Closing value of the underlying index on day t
Wt : The weight of the underlying index on day t within the Risk Control Index

4.3. Weight of the Underlying Index

Weight of the underlying index (W_t), is calculated by dividing the target risk level (HRS) to the realized risk level (GRS_{t-2}) of the underlying index. The calculated value is also limited by the predefined maximum weight limit (k/100). Maximum weight of the underlying index is 150% in all BIST Risk Control Indices.

Weight of the underlying index in the Risk Control Index is calculated using the formula below:

$$W_t = \text{Min}((k/100), (HRS\ /GRS_{t-2}))$$

k : Maximum weight of the underlying index (%)
HRS : Target Risk Level (Target Volatility) (%)
GRSt : Realized Risk Level (Realized Volatility) of the underlying index on day t (%)

It is assumed that rebalancing of the weights in the index portfolio is done on day t-1 (based on the volatility values of day t-2) and the return of the rebalanced index is realized on day t. Thus, realized volatility level of day t-2 is used while calculating weight of the underlying index on day t.

4.4. Calculation of Realized Risk Level (Volatility)

In order to be able to take both short and long-term volatility levels into account, the maximum of 21- and 63-day historical volatility values are used in BIST Risk Control Indices as shown in the formula below.

$$GRS_t = \text{Max}\ (\ Vol_{t,21}, Vol_{t,63})$$

$Vol_{t,21}$: 21 day historical volatility value on day t

$Vol_{t,63}$: 63 day historical volatility value on day t

Below formulas are used in the calculation of risk level (volatility) of the underlying index.

$$Vol_{t,n} = \sqrt{252 \times \frac{1}{n} \times \sum_{i=1}^{n} (R_{t-i+1} - \overline{R}_{t,n})^2}$$

$$R_t = InE_t - InE_{t-1}$$

$$\overline{R}_{t,n} = \frac{1}{n} \times \sum_{i=1}^{n} R_{t-i+1}$$

$Vol_{t,n}$: Realized volatility of the underlying index on day t (including day t)
E_t : Closing value of the underlying index on day t
n : Number of days used in the calculation of realized volatility of the underlying index

5. CORRECTION IN INDEX VALUES

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. UPDATE FREQUENCY

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

7. EFFECTIVE DATE

This Methodology takes effect on November 24, 2025. The current version of the Methodology should be confirmed on the Borsa İstanbul corporate website, Indices - Methodologies and Changes page.

Annex-1: Index List

Index Name	Index Code	ISIN Code	Underlying Index	Target Risk Level (%)	Underlying Index Maximum Weight Limit (%)	Calculation and Publication Interval	Index Base Value	Index Base Date
BIST 30 RC %10 (EXCESS RETURN)	RK030G10	TRAXIST01788	BIST 30	10	150	Once in a day	12.31.2003	100
BIST 30 RC %15 (EXCESS RETURN)	RK030G15	TRAXIST01796	BIST 30	15	150	Once in a day	12.31.2003	100
BIST 30 RC %20 (EXCESS RETURN)	RK030G20	TRAXIST01804	BIST 30	20	150	Once in a day	12.31.2003	100
BIST 30 RC %25 (EXCESS RETURN)	RK030G25	TRAXIST01812	BIST 30	25	150	Once in a day	12.31.2003	100
BIST 30 RC %30 (EXCESS RETURN)	RK030G30	TRAXIST01820	BIST 30	30	150	Once in a day	12.31.2003	100
BIST 100 RC %10 (EXCESS RETURN)	RK100G10	TRAXIST01887	BIST 100	10	150	Once in a day	12.31.2003	100
BIST 100 RC %15 (EXCESS RETURN)	RK100G15	TRAXIST01895	BIST 100	15	150	Once in a day	12.31.2003	100
BIST 100 RC %20 (EXCESS RETURN)	RK100G20	TRAXIST01911	BIST 100	20	150	Once in a day	12.31.2003	100
BIST 100 RC %25 (EXCESS RETURN)	RK100G25	TRAXIST01929	BIST 100	25	150	Once in a day	12.31.2003	100
BIST 100 RC %30 (EXCESS RETURN)	RK100G30	TRAXIST01937	BIST 100	30	150	Once in a day	12.31.2003	100
BIST 30 RC %10 (GROSS RETURN)	RK030T10	TRAXIST01838	BIST 30	10	150	Once in a day	12.31.2003	100
BIST 30 RC %15 (GROSS RETURN)	RK030T15	TRAXIST01846	BIST 30	15	150	Once in a day	12.31.2003	100
BIST 30 RC %20 (GROSS RETURN)	RK030T20	TRAXIST01853	BIST 30	20	150	Once in a day	12.31.2003	100
BIST 30 RC %25 (GROSS RETURN)	RK030T25	TRAXIST01861	BIST 30	25	150	Once in a day	12.31.2003	100
BIST 30 RC %30 (GROSS RETURN)	RK030T30	TRAXIST01879	BIST 30	30	150	Once in a day	12.31.2003	100
BIST 100 RC %10 (GROSS RETURN)	RK100T10	TRAXIST01945	BIST 100	10	150	Once in a day	12.31.2003	100
BIST 100 RC %15 (GROSS RETURN)	RK100T15	TRAXIST01952	BIST 100	15	150	Once in a day	12.31.2003	100
BIST 100 RC %20 (GROSS RETURN)	RK100T20	TRAXIST01960	BIST 100	20	150	Once in a day	12.31.2003	100
BIST 100 RC %25 (GROSS RETURN)	RK100T25	TRAXIST01978	BIST 100	25	150	Once in a day	12.31.2003	100
BIST 100 RC %30 (GROSS RETURN)	RK100T30	TRAXIST01986	BIST 100	30	150	Once in a day	12.31.2003	100

The indices in the table are calculated separately as “Gross Return” and “Excess Return”.


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