

KAZAKHSTAN STOCK EXCHANGE

Approved

by a decision of the Board
of Kazakhstan Stock Exchange
(minutes No.7
dated April 11, 2018)

Effective as of

April 12, 2018

METHODOLOGY

for calculating the weighted
average rate of return on illiquid
debt securities and determining
their fair value

Almaty

2018

This Methodology determines the procedure for calculating the values of the weighted average rate of return on corporate debt securities that are in the official list of Kazakhstan Stock Exchange JSC (hereinafter - the Exchange), for the purpose of:

- 1) determining the fair value of illiquid debt securities of organizations - residents of the Republic of Kazakhstan in accordance with the Rules for accounting and valuation of pension assets approved by the Resolution of the Board of the National Bank of the Republic of Kazakhstan dated February 26, 2014 No. 24;
- 2) for other purposes stipulated by the internal documents of the Exchange.

Chapter 1. GENERAL PROVISIONS

1. The concepts used in this Methodology are identical to the concepts defined by the Exchange internal document "Methodology for calculating the yield of bonds and the amount of transactions with bonds" and the Rules for accounting and valuation of pension assets.
2. The weighted average rates of return on debt securities are determined by the Management Board of the Exchange, taking into account the value of indicator Y, calculated in accordance with this Methodology.
3. Weighted average rates of return on debt securities are determined for securities of each category of the "debt securities" sectors of the "main" and "alternative" markets of the official list of the Exchange (hereinafter - the List), taking into account the segregation established by clause 4 of this Methodology.
4. Within each category of the "debt securities" sectors of the "main" and "alternative" markets of the List, the weighted average rate of return on debt securities is determined separately for each of the following groups of securities:
 - 1) non-indexed debt securities denominated in tenge;
 - 2) debt securities denominated in tenge and indexed by inflation, or with a floating rate that does not depend on the exchange rate of tenge to foreign currency;
 - 3) debt securities denominated in tenge and indexed at the rate of tenge to foreign currency, and debt securities denominated in foreign currency.
5. Indicator Y is calculated at the beginning of each calendar quarter for each group of securities out of those specified in clause 4 of this Methodology.

To calculate the Y indicator of each group of securities, the parameters of transactions concluded within 12 full calendar months preceding the settlement date with securities that belonged to this group on the date of the transaction (subject to the restrictions established by Chapter 2 of this Methodology) are used.
6. The weighted average rates of return on debt securities are determined by the Board of the Exchange for one calendar quarter no later than the 10th business day of the first month of this quarter and are published on the Exchange website no later than the specified day.
7. The fair value of illiquid debt securities of organizations - residents of the Republic of Kazakhstan is determined in accordance with paragraph 17 of this Methodology on the first business day of the calendar week and is published on the Exchange website no later than 18:00 hours of Astana city time on that day.

Chapter 2. APPLICABLE LIMITATIONS

8. When calculating the values of indicators Y:
 - 1) trades related to repo transactions are not taken into account;
 - 2) only executed transactions are taken into account, concluded in the Exchange's trading system by methods of open trades in securities of the List as of the date of this transaction.
9. To ensure the adequacy of the values of the weighted average rate of return to the objective market level of return on the List securities, the parameters of the following transactions are excluded from the calculation of the values of indicator Y:
 - 1) for which the yield to maturity for the buyer, calculated in accordance with chapter 2 of the Methodology for calculating the yield of bonds and the amounts of transactions with bonds, is higher or lower, respectively, the upper or lower boundaries of the confidence interval determined in accordance with paragraph 10 of this Methodology;
 - 2) the amount of each of which, calculated in accordance with chapters 3 and 4 of the Methodology for calculating the yield of bonds and the amounts of transactions with bonds, is greater or less, respectively, the upper or lower boundaries of the confidence interval determined in accordance with paragraph 10 of this Methodology.
10. The exclusion of the parameters of transactions specified in clause 9 of this Methodology from the calculation of the values of the indicator Y is carried out in two stages:
 - 1) at the first stage, the parameters of transactions specified in subparagraph 1) of paragraph 9 of this Methodology are excluded;
 - 2) at the second stage, the parameters of transactions specified in subparagraph 2) of paragraph 9 of this Methodology are excluded.
11. The upper limit of the confidence interval of the yield to maturity values for a buyer in securities transactions is calculated using the formula:

$$Y_{\max} = e^{(\bar{Y} + 2,57 * \delta)};$$

the lower limit of the confidence interval of the yield to maturity values for a buyer in securities transactions is calculated using the formula:

$$Y_{\min} = e^{(\bar{Y} - 2,57 * \delta)}, \text{ where}$$

- Y_{\max} – the upper limit of the confidence interval of the yield values, in percent per annum;
- Y_{\min} – the lower limit of the confidence interval of the profitability values, in percent per annum;
- e – base of natural logarithm;
- \bar{Y} – the arithmetical average mean of the natural logarithms of the values of the yield to maturity for a buyer on transactions with securities;
- δ – standard deviation of natural logarithms of values of yield to maturity for a buyer on transactions with securities.

12. The upper limit of the confidence interval for the values of the amounts of transactions in securities is calculated by the formula:

$$V_{\max} = e^{(\bar{V} + 2,57 * \delta')};$$

the lower limit of the confidence interval of the values of the amounts of transactions in securities of the Exchange is calculated by the formula:

$$V_{\min} = e^{(\bar{V} - 2,57 * \delta')}, \text{ where}$$

- V_{\max} – the upper limit of the confidence interval for the values of the transaction amounts in tenge;
- V_{\min} – the lower limit of the confidence interval for the values of transaction amounts in tenge;
- e – base of natural logarithm;
- \bar{V} – the arithmetic mean of the natural logarithms of the values of the amounts of transactions with securities;
- δ' – standard deviation of natural logarithms of the values of the amounts of securities transactions.

Chapter 3. DETERMINATION OF WEIGHTED AVERAGE RATES OF PROFITABILITY OF DEBT SECURITIES

13. The values of Y indicators are calculated by the formula:

$$Y = \frac{\sum_{i=1}^n (V_i \times Y_i)}{\sum_{i=1}^n V_i}, \text{ where:}$$

- Y – weighted average rate of return in percentage per annum;
- n – number of transactions with securities;
- V_i – the amount of the i-th transaction in Kazakhstan tenge, calculated in accordance with chapters 3 and 4 of the Methodology for calculating the yield of bonds and the amount of transactions with bonds;
- Y_i – the bond yield to maturity for the buyer under the i-th transaction, calculated in accordance with Chapter 2 of the Methodology for calculating the bond yield and the amount of bond transactions.
14. The value of the Y indicator is not calculated for any group of securities if no transactions have been concluded with the securities of this group during the full 12 calendar months preceding the calculation date.
15. The Board of the Exchange determines the weighted average rate of return in accordance with the calculated indicator Y for each group of securities out of those specified in clause 4 of this Methodology.
16. In the event that the value of indicator Y for any group of securities out of those specified in clause 4 of this Methodology is not calculated on the basis specified in clause 14 of this Methodology, or the value of indicator Y is unrepresentative, the Exchange Board has the right not to determine the weighted average rate of return for securities of this group or determine it based on:
- 1) the value of the current weighted average rate of return on securities of this group;
 - 2) recommendations of the Committee on Indices and Valuation of Securities in relation to the level of profitability of debt securities of this group;

- 3) the amount of the value of the base rate established by the National Bank of the Republic of Kazakhstan, and the premium to it, determined by the Committee on Indices and Evaluation of Securities by expert means.

Chapter 4. CALCULATION OF THE FAIR VALUE OF NON-LIQUID DEBT SECURITIES

17. The fair value of the List's illiquid debt securities is calculated using the formula:

$$P = \sum_i^n \frac{K_i}{\left(1 + \frac{Y}{100m}\right)^{\frac{mT_{ki}}{T_0}}} + \frac{100}{\left(1 + \frac{Y}{100m}\right)^{\frac{mT_n}{T_0}}}, \text{ where}$$

- P** – fair value of a debt security of any denomination, as a percentage of its par value;
- I** – serial number of the coupon period;
- N** – the number of coupon periods during the circulation period of a security of this denomination;
- Y** – weighted average rate of return on debt securities of the group to which the security of this denomination belongs;
- T₀** – the length of the estimated year, in days;
- T_n** – the number of days between the settlement date and the maturity date of a security of this denomination;
- T_{ki}** – the number of days between the settlement date and the date of payment of the next coupon for securities of this denomination;
- m** – the ratio of the length of the accounting year, in days to the length of the coupon period, in days;
- K_i** – the ratio of the coupon rate on securities of this denomination for the current accounting year, in percent per annum, to the "m" indicator.

Chapter 5. FINAL PROVISIONS

18. The Information and Statistics Department is responsible for the timely introduction of amendments and / or additions (updating) to this Methodology.
19. This Methodology is subject to updating as necessary, but at least once every three years.

Chairperson of the Board

A. Aldambergen