

# KAZAKHSTAN STOCK EXCHANGE

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**Approved**

decision No. 127/1 of the Board  
of Kazakhstan Stock Exchange

November 28, 2002

## **NOTICE**

The Method in English has been translated by employees of Kazakhstan Stock Exchange for information purposes only. In case of any incompliance of this translation with the Method original version in Russian, the latter prevails.

## **METHOD**

### **Calculation of Bond Yield and Bond Transaction Sum**

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Almaty

2002

## LIST OF AMENDMENTS

**1. Change and additions No. 1:**

- approved by decision No. 30/1 of the Board of Kazakhstan Stock Exchange dated March 11, 2003;
- effective March 11, 2003.

**2. Changes and additions No. 2:**

- approved by decision No. 2/0 of the Board of Kazakhstan Stock Exchange dated January 7, 2005;
- effective January 1, 2005.

**3. Changes No. 3:**

- approved by decision No. 13/1 of the Board of Kazakhstan Stock Exchange dated January 25, 2008;
- effective January 28, 2008.

This method has been developed for needs of Kazakhstan Stock Exchange (hereafter – the Exchange) for purposes of uniform calculation of bond yield and bond transaction sums (*this passage was changed by the Exchange Council decision of January 15, 2004*).

### Chapter 1. GENERAL PROVISIONS

1. For purposes hereof a bond shall mean any security admitted to circulation on the Exchange (regardless of issuer's type) with pre-determined circulation term, and verifying a right of its holder in accordance with terms of issue of the security:
  - 1) to receive in cash the principle from an issuer after a security circulation term end;
  - 2) to receive from a security issuer an interest in the form of discount – a positive difference between nominal value of the security and its placement price, payable simultaneously with the nominal value of the security and within the nominal value – or a coupon – a sum payable (once or several times) in excess of the nominal value of the security within and/or at the end of circulation.
2. Concepts used herein shall mean the following:
  - 1) **"time base"** – a term defining the number of days between some dates based on duration of one calculation year, month or a period, applicable at calculation of bond yield and bond transaction sums;
  - 2) **"bond yield"** – expected bond yield for buyer at maturity (circulation term end) of the bond, without account of reinvestment of sums, received as interest thereon; expressed in APR;
  - 3) **"target yield"** – floating coupon bond yield, calculated on the basis of parameters known as on the moment of such calculation, values of which for purposes of such calculation are spread for the entire circulation term of the bond;
  - 4) **"indexed nominal value"** – indexed bond nominal value, indexed to some index;
  - 5) **"coupon period"** – a period, in which one coupon is paid on one coupon bond;
  - 6) **"discount bond"** – a bond, placed at a price below nominal value and verifying a right of a bondholder to receive its nominal value at the end of a determined circulation term; an interest on such bond is a discount – a positive difference between bond nominal value and its placement price;
  - 7) **"indexed bond"** – a bond, nominal value of which and/or an interest thereon according to terms of issue are subject to change after a certain index has been changed (indexation to a certain indicator);
  - 8) **"coupon bond"** – a bond, entitling a holder to a bond nominal value at the end of a predetermined bond circulation term, and to an interest in the form of a coupon (coupons);
  - 9) **"floating coupon bond"** – a coupon indexed bond, a coupon rate on which according to its issue terms changes within its circulation term; coupon rate is set for a limited number of coupon periods and, accordingly, is not known in regard of other coupon periods;
  - 10) **"calculation year"** – a conditional period in days, roughly equal to one year and is used for bond yield calculation; consists of 12 calculation months;
  - 11) **"calculation day"** – one day of a settlement year;
  - 12) **"calculation month"** – one month of a settlement year;
  - 13) **"weighted average dollar rate"** – weighted average price of all deals in USD, concluded in the main (morning) trade session with settlement on the trade day, except for provided in item 5 hereof.
  - 14) **"trading system"** – an Exchange program and technical complex allowing to conclude deals in all financial instruments circulating on the Exchange;
  - 15) **"dirty price"** – coupon bond price, including accrued (accrued, not paid) interest thereon;
  - 16) **"net price"** – coupon bond price, excluding accrued (accrued, not paid) interest thereon.

3. Bond yield is applicable:
  - 1) as a price criterion (likewise the price, expressed in percent to nominal bond value), at which bonds are trading and, correspondingly, the trading system is being adjusted;
  - 2) as an indicator applicable to calculate a stock index (a stock market index);
  - 3) in other cases according to internal documents of the Exchange.
4. Bond transaction sum is used to make calculations on bond transactions.
5. In case no deals were concluded in USD in the main (morning) trade session in USD with settlement on the trade day, the last weighted average USD rate determined in accordance with sub-item 13) of item 2 hereof shall be used as a weighted average rate, except if banks – Exchange USD correspondents do not settle USD deals on the trade day, weighted average price of all deals in USD, concluded in the main (morning) trade session in USD with settlement T+n, where T – a day of trade in USD, n – duration of a break in banks settling USD – Exchange USD correspondents (days) shall be used as weighted average dollar rate.

### **Chapter 2. BOND YIELD CALCULATION**

6. Discount bond yield shall be calculated on the time base set with terms of issue of the bonds or in accordance with chapter 5 hereof, according to formula:

$$Y = \frac{100 - P_i}{P_i} \times \frac{T_0}{T_n} \times 100\% , \text{ where}$$

- Y – bond yield, in APR;
- P<sub>i</sub> – bond price, in percent to bond nominal value;
- T<sub>0</sub> – calculation year, in days;
- T<sub>n</sub> – days between the bond trade date and maturity (circulation term end) of the bond.

7. Coupon bond yield shall be calculated on the time base, specified in terms of issue of the bonds or in accordance with chapter 5 hereof, by reverse method according to the below mentioned formula for calculation of "dirty" price by approximate evaluations (except as provided in chapter 5 hereof):

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

- P – bond dirty "price", calculated in accordance with item 8 hereof, in percent to bond nominal value;
  - i – coupon period order number, beginning the current coupon period;
  - n – the number of coupon periods in bond circulation term;
  - Y – bond yield, in APR;
  - m – basis ratio, calculated in accordance with item 9 hereof;
  - K<sub>i</sub> – coupon rate on bond for one coupon period, calculated in accordance with item 10 hereof, in APR;
  - T<sub>ki</sub> – days between the bond trade date and next date of coupon payment thereon;
  - T<sub>0</sub> – settlement year, days;
  - T<sub>n</sub> – days between the bond trade date and maturity (circulation term end) of the bond.
8. Coupon bond "dirty" price shall be calculated as a sum of its "net" price and accrued interest thereon according to the formula:

$$P = P_c + \left(K \times \frac{T_k}{T_0}\right), \text{ where}$$

$P_c$  – bond "net" price, in percent to bond nominal value;

$K$  – bond coupon rate on calculation year, in APR.

$T_k$  – days between last bond coupon payment and the bond trade date.

9. Basis ratio  $m$  is calculated according to formula:

$$m = \frac{T_0}{T_i}, \text{ where}$$

$T_i$  – coupon period, days.

10. Coupon rate for one coupon period  $K_i$  is calculated according to formula:

$$K_i = \frac{K}{m}$$

11. Floating coupon bond yield shall be calculated as a forecast yield based on the specified coupon rate for the current coupon period.

**Chapter 3. BOND TRANSACTION SUM CALCULATION**

12. Bonds trade in the trading system in "net" prices in percent to bond nominal value (except as provided in chapter 5 hereof).
13. At bond trade (in orders for deals and in concluded deals) a product of the number of bonds in a deal in natural terms (in securities) and one bond nominal value shall be used as the amount of bonds.
14. Bond trade sum shall be determined according to the following algorithm:

- 1) volume of trade on "net" price shall be defined as a product of "net" price of one bond and the number of bonds in the trade, determined in accordance with item 13 hereof (with account to item 15 hereof);
- 2) accrued interest on bonds that are a subject of the trade shall be calculated according to the formula:

$$I_{acc} = N \times K \times \frac{T_{k/n}}{T_0}, \text{ where}$$

- $I_{acc}$  – accrued interest on bonds;
- $N$  – the number of bonds in the trade, in accordance with item 13 hereof (with account to item 15 hereof);
- $K$  – interest rate (for coupon or discount) on bonds for calculation year, in APR;
- $T_{k/n}$  – days between the last coupon payment date and the specified bond trade date (for coupon bonds) or the number of days between the specified trade date and maturity of bonds (for discount bonds);
- $T_0$  – duration of calculation year.
- 3) trade volume on "net" price, determined in accordance with sub-item 1) of this item, shall be added to accrued interest on bonds, calculated in accordance with sub-item 2) of this item;
  - 4) in case bonds are denominated in foreign currency, the sum received in accordance with sub-item 3) of this item shall be recalculated in KZT in accordance with chapter 4 hereof;
  - 5) the resultant according to sub-item 3) of this item (in regard foreign currency denominated bonds – in accordance with sub-item 4) of this item), shall be rounded to the second decimal according to rules of mathematical rounding (digits less than five shall be reduced to null, and five and digits exceeding five shall be increased to ten).
15. At calculation of the trade sum of indexed bonds, nominal value of which is indexed to some indicator with an everyday known value (for example, on weighted average dollar rate), the bond amount shall be a product of the number of bonds in the trade in natural terms (in securities) and indexed nominal value of one such bond.

**Chapter 4. RECALCULATION OF TRANSACTION SUMS OF FOREIGN CURRENCY  
DENOMINATED BONDS IN TENGE**

16. Sums of transactions in dollar denominated bonds, issued in accordance with foreign legislation, shall be recalculated to the tenge according to weighted average dollar rate.
17. Sums of transactions in bonds – Kazakhstan government securities, denominated in foreign currency and issued in accordance with the Kazakhstan legislation, shall be recalculated to the tenge based on the official rate of the Kazakhstan National Bank, set in regard of the currency for purposes of accounting, customs and tax payments.
18. Sums of transactions in Kazakhstan corporate bonds, denominated in foreign currency and issued in accordance with the Kazakhstan legislation, shall be recalculated to the tenge on the rate to be determined by the Exchange on the basis of terms of issue of the bonds.
19. Sums of transactions in bonds, denominated in other, than the dollar, foreign currency and settled in such currency, shall be recalculated to the tenge on the rate determined according to the following algorithm (except as provided in item 20 hereof):
  - 1) at 11.00 Almaty time the Exchange Information and Analysis Department shall fix the ask rate for such currency in USD, released at a terminal of information system REUTERS; in case of absence of such information at the terminal or malfunction of the terminal, Internet-sites, reliable as the Department think for accuracy of foreign currency rates, shall be used as back-up sources of such information (*this sub-item was changed by the Exchange Board decision dated January 25, 2008*);
  - 2) demand rate for such currency received in accordance with sub-item 1) of this item shall be provided to the Exchange Trade Department, which then calculates the rate of such currency to the tenge according to the following formula (*this passage was changed by the Exchange Board decision dated January 25, 2008*):

$$R_{KZT} = \bar{R} \times R_{USD}, \text{ where}$$

- $R_{KZT}$  – rate of this currency in the tenge;
- $\bar{R}$  – weighted average dollar rate;
- $R_{USD}$  – ask rate for such currency in USD;
- 3) rate of such currency in the tenge received in accordance with sub-item 2) of this item shall be rounded to the fourth decimal according to rules of mathematical rounding and entered in the trading system.
20. Sums of transactions in bonds denominated in euro zone country currency shall be recalculated according to the rate determined based on the following algorithm:
  - 1) EUR/KZT according to the algorithm set in item 19 hereof;
  - 2) the rate in the tenge then shall be divided by the current rate of the euro in this currency fixed by the European Council Union and released at [www.europa.eu.int](http://www.europa.eu.int);
  - 3) the rate of such currency received in accordance with sub-item 2) of this item shall then be rounded to the fourth decimal according to rules of mathematical rounding and entered into the trading system.

## Chapter 5. PRACTICE

21. In accordance with terms of issue and item 2 hereof the securities mentioned below shall be classified as follows:
  - 1) Kazakhstan government short-term treasury obligations (MEKKAM) – discount bonds;
  - 2) Kazakhstan National Bank short-term notes – discount bonds;
  - 3) Kazakhstan government mid-term treasury obligations (MEOKAM) – coupon bonds;
  - 3–1) Kazakhstan government long-term treasury obligations (MEUKAM) – coupon bonds (*this sub-item was included by the Exchange Board decision dated January 7, 2005*);
  - 4) (*this sub-item was excluded by the Exchange Board decision dated January 7, 2005*);
  - 5) securities issued by local district authorities of the Republic of Kazakhstan – coupon bonds or coupon indexed bonds (depending on issue terms);
  - 6) Kazakhstan international securities – coupon bonds;
  - 7) international securities issued by organizations of the Republic of Kazakhstan – coupon bonds;
  - 8) securities of international financial organizations – coupon bonds;
  - 8–1) government special purpose compensation obligations (MAOKO), nominal value of which and interest on which is indexed on the basis of the official dollar rate, – coupon indexed bonds (*this sub-item was included by the Exchange Board decision dated March 11, 2003*);
  - 9) Kazakhstan government indexed treasury obligations (MEIKAM), interest on which is indexed to inflation rate, and which mature at nominal value, – coupon indexed bonds (*this sub-item was changed by the Exchange Board decision dated January 7, 2005*);
  - 10) Kazakhstan government mid-term indexed treasury obligations (MOIKAM) – coupon indexed bonds (*this sub-item was included by the Exchange Board decision dated January 7, 2005*);
  - 11) Kazakhstan government long-term indexed treasury obligations (MUIKAM) – coupon indexed bonds (*this sub-item was included by the Exchange Board decision dated January 7, 2005*);
  - 12) Kazakhstan government long-term savings treasury obligations (MEUJKAM) – coupon indexed bonds (*this sub-item was included by the Exchange Board decision dated January 7, 2005*).
22. In accordance with terms of issue and sub-item 9) of item 2 hereof collateralized bonds issued by Kazakhstan Mortgage Company of the first issue, coupon rate on which is revised each half year, which mature at nominal value, and bonds similar in characteristics shall be considered as floating coupon bonds.
23. In accordance with terms of issue and sub-items 7) and 9) of item 2 hereof bonds issued by Temirbank in the first issue and Subsidiary Bank Alfa-Bank of the first issue, coupon rate on which is revised accordingly once every year or once every one and a half year, which mature at nominal value, indexed to weighted average dollar rate, and bonds similar in characteristics shall be considered as floating coupon bonds.
24. At calculation of yield of short-term notes issued by the Kazakhstan National Bank and transaction amounts therein the Exchange will apply time base "actual number of calendar days before maturity / 364 days in one base year".
25. At calculation of yield of MEKKAM and transaction amounts therein the Exchange shall apply time base "actual number of calendar days before maturity / 365 days in one base year".
26. At calculation of yield of MEOKAM issued before April 2, 2001 and transaction amounts therein the Exchange shall apply time base "actual number of calendar days before maturity / 364 days in one base year".
27. At calculation of yield of MEOKAM issued after April 2, 2001 and transaction amounts therein the

Exchange shall apply time base "actual number of calendar days before maturity / 365 days in one base year". At that the number of days in the first and in every next successive odd half year coupon periods shall be counted as 182, and in the second and in every successive even half year period shall be counted as – 183 (*this item was changed by the Exchange Board decision on January 7, 2005*).

28. At calculation of yield of other, apart from those listed in items 24–27 hereof, bonds and transaction amounts therein the Exchange, as a rule, shall apply the time base, set with terms of issue of the bonds, however, may apply other base, if this is required for optimization of settings of the Trading system, corresponding changes and additions are made hereto. As the principle base the Exchange shall apply time base "30 days in a month / 360 days in a year". At that, days between some dates shall be counted according to a so-called "European" algorithm:

- 1) each date shall be represented in a digit set "Year<sub>n</sub>.Month<sub>n</sub>.Day<sub>n</sub>", where indicator "Year<sub>n</sub>" occupies 4 positions, indicator "Month<sub>n</sub>" – 2 positions and indicator "Day<sub>n</sub>" – 2 positions (e.g., September 1, 2002 shall be represented as "2002.09.01");
- 2) days between two dates shall be calculated as:

$$Y \times 360 + M \times 30 + D, \text{ where:}$$

- Y – full years between the dates, equal to  $\{\text{Year}_2 - \text{Year}_1 - 1\}$ ;
- M – full months between the two dates net of months, calculated at computation of indicator Y, equal to  $\{(12 - \text{Month}_1) + (\text{Month}_2 - 1)\}$ ;
- D – days between the two dates net of dates accounted at computation of indicators Y and M, equal to  $\{(30 - \text{Day}_1) + \text{Day}_2\}$ .

At that, if a Day<sub>1</sub> equals 31, then  $(30 - \text{Day}_1)$  shall be considered equal to 0, and Day<sub>2</sub> equal to 31, then Day<sub>2</sub> shall be considered equal to 30.

29. Items 7 and 12 hereof do not apply to MAOKO, MEIKAM, MOIKAM, MUIKAM and MEUJKAM, yield of which is not calculated and which are trading in the trading system at "dirty" prices in percent to one bond nominal value, set by trade participants in their orders for conclusion of deals in the bonds (*this item was changed by the Exchange Board decision dated March 11, 2003 and January 7, 2005*).

President

A. Joldasbekov