KAZAKHSTAN STOCK EXCHANGE JSC

A p p r o v e d

by a decision of the Management Board
of Kazakhstan Stock Exchange JSC

(Minutes No. 126 of the meeting
dated November 3, 2022)

effective

as of November 4, 2022

N O T I C E

This Methodology 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 Methodology original version in Russian, the latter prevails.

METHODOLOGY

for determining and evaluating the sizes of clearing funds

city of Almaty

2022

This Methodology for determining and evaluating the sizes of clearing funds (hereinafter – the Methodology) has been developed in accordance with the Act of the Republic of Kazakhstan "On the Securities Market", the Rules for the implementation of clearing activities on transactions with financial instruments, the Requirements for the risk management system of a clearing organization, the conditions and procedure for monitoring[1], control and management of risks in a clearing organization[2], Requirements for the risk management system of the central counterparty, conditions and procedure for monitoring, control and management of risks of the central counterparty[3] and an internal document of Kazakhstan Stock Exchange JSC (hereinafter – the Exchange) called the Rules for carrying out clearing activities on transactions with financial instruments (hereinafter – the Clearing Rules) and establishes the procedure for determining and evaluating the sizes of clearing reserve or guarantee funds of the central counterparty.

Chapter 1. GENERAL PROVISIONS

1. This Methodology uses concepts defined by the regulatory legal acts of the Republic of Kazakhstan, the Clearing Rules and other internal documents of the Exchange.
2. This Methodology is used to determine and evaluate the adequacy of the sizes of clearing funds formed in the markets where the Exchange carries out clearing activities (hereinafter – clearing funds), except for property pool guarantee funds, the procedure for determining and evaluating which is approved by the Clearing Rules and an internal document of the Exchange "Instruction for the issue, offering, circulation and redemption of general collateral certificates".
3. Determining and evaluating the adequacy of the sizes of clearing funds is carried out annually as of January 1 of the year following the reporting year, no later than a calendar month from the date of publication of the Exchange's audited statements for the historical period of the sample for assessing the adequacy of clearing funds (hereinafter referred to as the reporting period) .
4. As part of determining and assessing the adequacy of the sizes of clearing funds, the following is carried out:
    1) determining the most significant risk factors affecting the Exchange's ability to fulfill its obligations as the central counterparty;
    2) monitoring the adequacy of clearing guarantee funds, formed at the expense of contributions from clearing participants, for each individual stock exchange market;
    3) monitoring the sufficiency of clearing reserve funds formed at the expense of the Exchange's own funds.
5. Determining the most significant risk factors affecting the Exchange's ability to fulfill its obligations as the central counterparty is carried out in accordance with Chapter 2 of this Methodology .
6. Monitoring the adequacy of the sizes of clearing funds is carried out in accordance with Chapter 4 of this Methodology.
7. Based on the results of monitoring the adequacy of clearing funds, the Exchange may decide to put into effect measures aimed at managing the Exchange's risks and including, but not limited to, the following:
    1) increase in the requirements for the amount of margin collateral of clearing participants and/or the method for determining the amount of margin collateral for clearing participants;
    2) increase in the size of reserve funds and/ or revision of approaches to determining the size

[1] Approved by the Resolution No. 254 of the Board of the National Bank of the Republic of Kazakhstan dated October 29, 2018.

[2] Approved by the Resolution No. 59 of the Board of the National Bank of the Republic of Kazakhstan dated February 24, 2012.

[3] Approved by the Resolution No. 11 of the Board of the National Bank of the Republic of Kazakhstan dated January 28, 2016.

of reserve funds in one or more markets;

3) increase in the amount of contributions to the guarantee fund and/or revision of approaches to determining the amount of contributions to the guarantee fund;

4) other measures aimed at reducing the risks of the Exchange.

8. The Exchange has the right to make an extraordinary evaluation of the adequacy of the sizes of clearing funds based on a decision of the Management Board of the Exchanges and adopted on the basis of a recommendation of the Market Risk Committee of the Exchange (hereinafter – the Committee) in the following cases:

1) with a significant increase in price volatility and/or a decrease in the liquidity of instruments that are the subject of obligations under transactions concluded with the participation of the central counterparty;

2) with a significant increase in the concentration of net positions of clearing participants;

3) in other cases on the basis of a separate decision of the Exchange's Management Board.

9. Criteria for a significant increase in price volatility and/or decrease in liquidity of instruments that are the subject of obligations under trades concluded with the participation of the central counterparty and/or increase in the concentration of net positions of clearing participants, specified in item 8 of this Methodology, are established based on a decision of the Committee.

10. The formation of a sample for an extraordinary evaluation of the adequacy of the sizes of clearing funds in the event of the occurrence of events specified in sub-items 1) and 2) of item 8 of this Methodology is carried out as of the date following the date of occurrence of these conditions, the evaluation of the adequacy of clearing funds is carried out no later than one calendar month from the date of adoption of the decision by the Exchange's Management Board on the extraordinary evaluation of adequacy.

11. An extraordinary evaluation of the adequacy of the sizes of clearing funds at occurrence of the events specified in sub-item 3) of item 8 of this Methodology is carried out as of the date specified in a separate decision of the Exchange's Board.

12. An extraordinary evaluation of the adequacy of the sizes of clearing funds is carried out regardless of the period of the previous evaluation of the adequacy of clearing funds and does not cancel the next regular assessment.

13. To calculate the parameters required to evaluate the sizes of clearing funds (hereinafter – statistical parameters), the Exchange uses information on the risk parameters established on the exchange markets, transactions concluded by clearing participants, available collateral on the accounts of clearing participants, as well as the audited statements of the Exchange as of the first day of the year following the reporting period.

14. The basic fundamental parameters used to evaluate the statistical parameters when assessing the adequacy of clearing funds are:

1) reporting period equal to one calendar year;

2) the historical period of evaluation of extreme conditions in each exchange market equal to ten years;

3) the level of confidence equal to at least 99 %;

15. The Committee may set fundamental parameters that are different from the basic fundamental parameters, but not less than those specified in item 14 of this Methodology.

16. In the absence of the necessary data for the period under review, the Exchange has the right to evaluate the sizes of clearing funds based on other available data with similar parameters.

17. Calculated values are rounded according to the rules of mathematical rounding (digits up to five are reduced to zero, and numbers from five and above are increased to ten) with precision as follows:

1) statistical parameters: up to two decimal places;

2) the amounts of additional contributions of clearing participants to guarantee funds,

as well as the amount of additional contributions of the Exchange to reserve funds: up to 500 thousand tenge.

Chapter 2. IDENTIFYING THE MOST SIGNIFICANT RISK FACTORS

18. Market risk factors that have a significant impact on the Exchange's ability to fulfill its obligations as the central counterparty (hereinafter – risk factors) are changes in the settlement prices of financial instruments.

19. The definition of risk factors is carried out in the context of groups of financial instruments of each individual stock exchange market based on historical data:

    1) at the next revision as of January 1 of the year following the reporting one;

    2) in case of extraordinary review as of the date specified in a separate decision of the Exchange's Management Board.

20. The definition of risk factors is carried out taking into account the following approaches:

    1) to determine historical scenarios, data on the values of risk factors for the historical period established by the Committee for evaluating extreme conditions in each stock exchange market are used;

    2) when determining historical scenarios, events are indicated for the historical period of the evaluation of extreme conditions, which are unrealistic, taking into account the economic situation as of the date of the evaluation of the adequacy of clearing funds;

    3) hypothetical scenarios are determined on the basis of historical scenarios as a set of individual factors, not necessarily interconnected, that took place during the historical period of evaluation of extreme conditions, as well as taking into account other information about possible changes in risk factors in extreme conditions;

    4) for the formation of scenarios, the change in the values of risk factors as a result of changes in market conditions is determined, which is expected during the risk assessment horizons established for determining market risk rates in accordance with the Methodology for determining risk parameters;

    5) in order to identify an acceptable variety of realistic scenarios, limiting ranges of hypothetical scenarios are determined taking into account the risk assessment horizons;

    6) to determine risk factors, all financial instruments are divided into groups subject to the following conditions:

        – financial instruments with different quote currencies of the financial instrument belong to different groups;

        – financial instruments belonging to different groups that are sensitive to changes in interest rates are not combined into one group with other financial instruments that are not sensitive to changes in interest rates;

    7) distribution of financial instruments by issuers and the following types is used as groups of financial instruments:

        – government securities of the Republic of Kazakhstan (hereinafter – GS) – debt securities issued by the Ministry of Finance of the Republic of Kazakhstan, the National Bank of the Republic of Kazakhstan or local executive bodies, which were included in the official list of the Exchange for the analyzed period;

        – debt securities issued by international financial organizations (hereinafter – MFO GS);

        – corporate securities (hereinafter – CS) – securities (except for MFO GS) issued by issuers of the Republic of Kazakhstan, included in the official list of the Exchange, for which trading was opened in the analyzed period.

21. In the process of determining risk factors on the basis of basic fundamental parameters or on the basis of fundamental parameters established by the Committee, if the Committee makes an

appropriate decision, selections are formed for each individual financial instrument:

1) relative changes in the settlement prices of financial instruments between trading days T – (T-1) and T – (T-2) according to the formula:

$$\Delta P_T = \max\left\{\left|\frac{P_T - P_{T-1}}{P_{T-1}}\right| ; \left|\frac{P_T - P_{T-2}}{P_{T-2}}\right|\right\},$$

where

ΔP_T – values of the formed selection – absolute change in the settlement price on the trading day T from the settlement price on the trading day T-1 and the settlement price on the trading day T-2 in portion terms;

max – the mathematical function that determines the largest of the values specified in brackets;

P_T – the settlement price on the trading day T;

P_{T-1} – the settlement price on the trading day T-1;

P_{T-2} – the settlement price on the trading day T-2;

2) absolute changes in settlement prices in the form of yields according to the formula:

$$\Delta P^*_T = \max\left\{\left|P^*_T - P^*_{T-1}\right| ; \left|P^*_T - P^*_{T-2}\right|\right\},$$

where:

ΔP^*_T – values of the selection being formed – the relative change in the settlement price in the form of yields on the trading day T from the settlement price on the trading day T-1 and the settlement price on the trading day T-2 in portion terms;

max – the mathematical function that determines the largest of the values indicated in brackets;

P^*_T – the settlement price on the trading day T;

P^*_{T-1} – the settlement price on the trading day T-1;

P^*_{T-2} – the settlement price on the trading day T-2.

22. Based on the selections obtained in accordance with item 21 of this Methodology, the largest changes in settlement prices among financial instruments of one group ΔP_{max} for each individual group of financial instruments over the historical period, assessment of extreme conditions, on the basis of which scenarios of possible changes in risk factors are formed.

23. For each stock exchange market, based on the analysis of historical and hypothetical changes (scenarios) of one or more of the risk factors, the Exchange determines the most probable and significant scenarios that will be used to assess the adequacy of clearing funds .

24. The scenarios used during the regular or extraordinary evaluation of the adequacy of clearing funds are approved by the decision of the Committee.

Chapter 3. DETERMINING THE MAXIMUM AVERAGE LOSSES OF CLEARING MEMBERS

25. Based on the results of each settlement day T for the reporting period, for each clearing participant k in the category "with partial collateral" of a certain stock exchange market, the total amounts of potential uncovered losses are calculated at the implementation of scenarios of changes in risk factors ΔP_{max} (hereinafter – ΔP_{max} scenarios), formed in accordance with Chapter 2 of this Methodology, for all open positions and all financial instruments on all trading and clearing accounts in accordance with the following procedure:

1) for each trading and clearing account, the amount of potential losses in the implementation of ΔP_{max} scenarios is determined by the formula:

$$Loss_{T,k,j}=(\Delta P_{max,\ фи1}*abs\ (ОП_{фи1,k,j})+\Delta P_{max,\ фи2}*abs\ (ОП_{фи2,k,j})+...+\Delta P_{max,\ фиm1}*abs\ (ОП_{фиm1,k,j})$$

where:

abs – the mathematical function that calculates the modulus of numbers given in brackets;

$ОП_{фи,k,j}$ – the amount of the open net position on the k-th clearing participant for all claims and obligations on a financial instrument of the same type on the j -th trading and clearing account, which arose as a result of transactions made by the clearing participant in a financial instrument of the same type as of the end of the trading day T;

$\Delta P_{max,\ фи}$ – change in the value of a financial instrument, when implementing the scenario formed in accordance with Chapter 2 of this Methodology, for the group that includes the specified financial instrument;

k – sequence number of the clearing participant;

j – the number of the trading and clearing account for which there are open net positions on the settlement day T.

2) for each trading and clearing account, the amount of collateral deposited during the implementation of ΔP_{max} scenarios, expressed in tenge, is determined according to the formula:

$$O_{T,k,j,\Delta P_{max}}=(1-\Delta P_{max,\ фи1}) \times 0_{фи1,k,j}+(1-\Delta P_{max,\ фи2}) \times 0_{фи2,k,j}+...+(1-\Delta P_{max,\ фиm2}) \times 0_{фиm2,k,j},$$

where

$O_{фи,k,j}$ – the amount of collateral deposited by the k-th clearing participant in a financial instrument of the same type on the j-th trading and clearing account of the specified clearing participant as of the end of the trading day T;

3) for each trading and clearing account, the amount of potential uncovered losses during the implementation of ΔP_{max} scenarios is determined by the formula:

$$ULoss_{T,k,j}=\begin{cases} 0, \text{ if } O_{T,k,\Delta P_{max}}-Loss_{T,k,j}\geq 0 \\ O_{T,k,\Delta P_{max}}-Loss_{T,k,j}, \text{ if } O_{T,k,\Delta P_{max}}-Loss_{T,k,j}<0 \end{cases}$$

4) for each clearing participant for all its trading and clearing accounts, the total amount of potential uncovered losses in the implementation of scenarios ΔP_{max} based on the results of trading day T is determined by the formula:

$$ULoss_{T,k} = ULoss_{T,k,j1} + ULoss_{T,k,j2}+...+ULoss_{T,k,jl}.$$

26. For each clearing participant k in the "partially collateralized" category of a certain stock exchange market, the maximum aggregate amount of potential uncovered losses in the implementation of ΔP_{max} scenarios for the reporting period is calculated according to the formula:

$$ULoss_{max,k}=max(ULoss_{T1,k};ULoss_{T2,k};...;ULoss_{Tf,k}),$$

where:

max – a mathematical function that determines the maximum value of a numerical sequence.

27. The sum of the maximum losses of N clearing participants is determined according to the following algorithm:

1) for the entire selection of clearing participants in the "partially collateralized" category, N clearing participants are determined with the largest values of the maximum total amount of potential uncovered losses in the implementation of Δ Pmax scenarios for the reporting period;

2) the sum of the maximum losses of N clearing participants is determined as the sum of the largest values of the maximum aggregate amount of potential uncovered losses for the specified clearing participants in the implementation of Δ Pmax scenarios:

$$ULossN_{max} = ULoss_{max,k1} + ULoss_{max,k2} + ... + ULoss_{max,kN},$$

where:

N – the number of participants with the largest losses in the market under consideration. In order to assess the adequacy of clearing funds, this parameter is set to two by default. For additional analysis, a different value of the specified parameter can be set depending on the goals of the analysis.

Chapter 4. DETERMINATION OF CLEARING FUNDS ADEQUACY INDICATORS

28. To evaluate the adequacy of clearing funds, the Exchange calculates the following key indicators based on the scenarios determined in accordance with Chapter 2 of this Methodology:

    1) loss coverage ratio of clearing funds for individual exchange markets;

    2) adequacy ratios of guarantee funds for individual exchange markets;

    3) reserve fund adequacy ratios for individual exchange markets.

29. The main indicators provided for in item 28 of this Methodology are determined according to the following formulas:

    1) loss ratio of clearing funds in a separate stock exchange market:

$$K_{loss} = \frac{ULossN_{max}}{GF+RF},$$

    2) to the sufficiency ratio of the clearing guarantee fund in a separate stock exchange market:

$$K_{GF} = \frac{GF}{ULossN_{max}},$$

    3) the sufficiency ratio of the clearing reserve fund in a separate stock exchange market:

$$K_{RF} = \frac{RF}{ULossN_{max}},$$

    where:

    $ULossN_{max}$ – the sum of the maximum losses of N clearing participants in a separate stock exchange market;

    GF – clearing guarantee fund on a separate stock exchange market formed as of the reporting date;

    RF – clearing reserve fund in a separate stock exchange market formed as of the reporting date.

30. As of the reporting date, clearing funds formed on a separate stock exchange market are recognized as sufficient, provided that the loss ratio of clearing funds on the specified exchange market is not more than 1 (one).

31. If, as of the reporting date, the loss coverage ratio of clearing funds in a particular stock exchange market exceeds the value of 1 (one):

    1) the value of formed clearing funds in a separate stock exchange market as of the reporting date is recognized as insufficient;

    2) replenishment of clearing funds is required from one or more of the following sources:

        – additional contributions of clearing participants to the guarantee fund of the specified stock exchange market;

        – replenishment of the reserve fund of the indicated stock exchange market at the expense of the Exchange's own funds.

32. To determine the sources of replenishment of clearing funds, the calculation of the adequacy

ratio of guarantee funds and the adequacy ratio of reserve funds for the specified stock exchange market is carried out.

33. The required values of the guarantee funds adequacy ratio and the reserve funds adequacy ratio for a particular stock exchange market are determined based on the shares of guarantee and reserve funds established by the Exchange's Management Board in the total clearing funds on the specified stock exchange market according to the following formulas:

$$w_{GF}=1-w_{market_i},$$

$$w_{RF}=w_{Market_i},$$

where:

w_{Market_i} – the share of the reserve fund in the total clearing funds on the specified stock exchange market is set based on a decision of the Management Board in the range from 0.08 to 0.5;

34. The amount of formed guarantee funds in a separate stock exchange market is recognized as sufficient, provided that the guarantee funds adequacy ratio in the specified stock exchange market is not lower than the required value of the guarantee funds adequacy ratio in the specified stock exchange market.

32. The need for clearing participants to make additional contributions to the guarantee fund of the specified stock exchange market arises if the required value of the guarantee fund adequacy ratio exceeds the calculated value of the guarantee fund adequacy ratio in the specified stock exchange market.

33. The amount of formed reserve funds in a separate stock exchange market is recognized as sufficient, provided that the reserve funds adequacy ratio in the specified stock exchange market is not lower than the required value of the reserve funds adequacy ratio in the specified stock exchange market.

34. The need to replenish the reserve fund of the specified exchange market at the expense of the Exchange's own funds arises in the event that the required value of the reserve funds adequacy ratio exceeds the calculated value of the reserve funds adequacy ratio on the specified stock exchange market.

35. The amount of additional contributions of clearing participants to the guarantee fund, as well as the amount of additional contribution by the Exchange of its own funds to the reserve fund, are determined in accordance with Chapter 5 of this Methodology.

Chapter 5. CALCULATION OF THE AMOUNTS OF ADDITIONAL CONTRIBUTIONS TO CLEARING FUNDS

36. The amounts of additional contributions of clearing participants required to be paid by clearing participants to the guarantee fund of a certain stock exchange market are determined in the following sequence:

1) for each clearing participant k in the category "with partial collateral" for the reporting period, the average daily amount of potential uncovered losses in case of implementation of ΔP_{max} scenarios, determined in accordance with sub-item 4) of item 25 of this Methodology, is calculated according to the formula:

$$ULoss_{avg,k}=\frac{(ULoss_{T1,k}+ULoss_{T2,k}+\ldots+ULoss_{Tf,k})}{T_F},$$

where T_F – the number of settlement days in the reporting period;

2) for each clearing participant k in the "with partial collateral" category, the amount of the maximum additional contribution to the guarantee fund is determined according to the formula:

$$AddMGV_k = \begin{cases} 0, \text{ если } ULoss_{avg,k} \le GV_k \\ ULoss_{avg,k} - GV_k, \text{ если } ULoss_{avg,k} > GV_k \end{cases},$$

where

GV_k – current size of the k-th clearing participant in the "with partial collateral" category;

3) the total amount of maximum additional contributions to the guarantee fund for all clearing participants is determined by the formula:

$$AddMGV = AddMGV_{k1} + AddMGV_{k2} + \ldots + AddMGV_{kn}$$

4) for each clearing participant k in the "with partial collateral" category, the amount of the required additional contribution to the guarantee fund is determined according to the formula:

$$AddGV_k = \begin{cases} \frac{AddMGV_k}{AddMGV} \times (w_{GF} \times ULossN_{max} - GF), \text{ если } (w_{GF} \times ULossN_{max} - GF) \le AddMGV \\ AddMGV_k, \text{ если } (w_{GF} \times ULossN_{max} - GF) > AddMGV \end{cases}.$$

37. The amounts of additional contributions of clearing participants required to be paid into the guarantee fund of a certain stock exchange market may be adjusted based on a decision of the Exchange's Management Board, taking into account the credit risk of clearing participants.

38. The amount of the Exchange's additional contribution to the reserve fund on a certain stock exchange market market $_j$ is determined by the following formula:

$$AddGR_k = \begin{cases} (w_{RF} \times ULossN_{max} - RF)_{market_j} \\ min\left(\sum_{market_j} (w_{RF} \times ULossN_{max} - RF)_{market_j}; NettoProfit\right) \end{cases}$$

Where

min – a mathematical function that determines the smallest of the values specified in brackets;

NettoProfit – net profit of the Exchange for the reporting period .

39. In order to determine the adequacy of clearing funds, taking into account additional contributions to guarantee and (or) reserve funds, the loss coverage ratio of clearing funds is recalculated, taking into account the calculated values of amounts to be replenished.

40. If the situation persists, in which, despite the planned contributions to clearing funds of additional funds, the loss ratio of clearing funds in a particular stock exchange market will be less than 1 (one), the Exchange's Management Board submits a proposal for consideration by the Board of Directors on taking measures aimed at achieving the required indicator, including but not limited to the measures specified in item 7 of this Methodology.

Chapter 6. FINAL PROVISIONS

40. Responsibility for the timely introduction of changes and additions to this Methodology rests with the clearing division of the Exchange.

41. This Methodology is subject to updating as necessary, but at least once every three years.

Chairperson of the Management Board A. Aldambergen