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|  | **APPROVED**By the Moscow Exchange Executive Board19 December 2024, Minutes No. 102CEO of Moscow Exchange\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ V. Zhidkov |

**Calculation Methodology
CCP Repo Rates**

MOSCOW EXCHANGE 2024

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**1. General Provisions**

* 1. This Methodology sets out the calculation procedures in relation to the CCP Repo Rates (hereinafter referred to as the “Indicators”) performed by Public Joint-Stock Company Moscow Exchange (the “Exchange”) on the basis of information on CCP-cleared repo orders and transactions (“CCP-cleared Repo”).
	2. This Methodology as amended from time to time is subject to approval by the Exchange. The Exchange establishes the date when the Methodology as amended comes into force.
	3. The names of the Indicators are as follows:
		1. Indicators for the CCP-cleared Repo in general collateral certificates from the GCC Bonds (“GCC Bonds”):

Full name in Russian: «Ставка денежного рынка Московской Биржи RUSFAR», «Ставка денежного рынка Московской Биржи RUSFAR REAL TIME»;

Full name in English: “Russian Secured Funding Average Rate” or “Russian Secured Funding Average Rate Real Time”;

Short names: “RUSFAR”, “RUSFAR REAL TIME”.

* + 1. The indicators are assigned codes as shown in Appendix 1. These codes are compiled depending on the calculation times of the indicators, the currency of the repos with the CCP and the settlement period of the first and second legs of the repo transactions with the CCP.
	1. The word mark "RUSFAR" is a trademark of Moscow Exchange registered by the Federal Service for Intellectual Property in the State Register of Trademarks and Service Marks of the Russian Federation on 11 April 2019 (Trademark Certificate No. 0707709).
	2. This Methodology, as amended from time to time, is subject to the recommendations of the Repo and Securities Lending Committee of the Exchange.
	3. The creation and calculation of the indicators as well as the introduction of amendments to this Methodology are based on a set of administrative principles and rules described in the Moscow Exchange Index Management Policy.
	4. The text of the approved Methodology is published by the Exchange no later than three business days before its effective date, unless otherwise determined by a decision of the authorised body of the Exchange.
	5. Terms and definitions used in the Methodology shall be used in accordance with their meanings given in internal documents of the Exchange, as well as the laws of the Russian Federation, the Bank of Russia regulations and other legal acts of the Russian Federation.
1. **RUSFAR Indicator Calculation Algorithm**
	1. RUSFAR indicators are calculated on the basis of orders and transactions in GCC Bonds submitted/executed in the trading mode "CCP Repo with settlement in rubles or Chinese yuan, depending on the currency of the indicator calculation, and orders submitted in the trading mode "Deposits with the CCP - order book orders" (hereinafter both modes the “Order Book Orders”) with settlement in rubles or Chinese yuan, depending on the currency of the indicator calculation.- order book orders”
	2. Repo rates per second (the "Rates") for each RUSFAR indicator are calculated according to the following algorithm in the period from 10:00:00 Moscow time up to and including the moment of calculation of the corresponding RUSFAR indicator specified in Appendix 1 to the Methodology (the "Calculation Time"), unless another time is determined by the decision of the Exchange. The Rates are calculated on the basis of the information on the Order Book Orders in GCC Bonds and Order Book Orders for deposit agreements (the "Orders"):
		1. Every second, ranges of Orders are determined that are price-matched separately for placing and raising cash (the "Price Levels"). All Orders with the same price are assigned to the same Price Level.
		2. For each RUSFAR indicator, the values of the minimum and maximum volume of Price Level Orders are set out in Appendix 2 to the Methodology. If the minimum volume of the Price Level is not met, the value is not taken into account in the calculation of the Rate for this indicator. If the volume of an Order exceeds the value of the maximum volume of Price Level Orders, the value equal to the value of the maximum volume of the Price Level shall be taken into account.

A weighting factor k is assigned to each Price Level which relates to transactions for both placing and raising cash. The weighting factor is assigned in descending order from largest to smallest, respectively 1, 1/2, 1/4, ... 1/2^m.

* + 1. The average value of the price of the Asks (Rask) placed by the trading members at each calculation moment and meeting the requirements of clause 2.2.2 of the Methodology is calculated:



where:

ri – value of the ith Price Level, expressed as a percentage;

Vi – total volume of the Orders constituting the ith Price Level;

ki– the price coefficient.

* + 1. The average value of the price of Bids (Rask) placed by the trading members at each calculation moment and meeting the requirements of clause 2.2.2 of the Methodology is calculated:



where:

rj – value of the jth Price Level, expressed as a percentage;

Vj – total volume of the Orders constituting the jth Price Level;

kj– the price coefficient.

* + 1. The average value of the prices of the Bids and Asks (Rmid) is calculated:



If, at the time of calculation of the Rate, there are no available Binds and/or Asks, the Rate for this time period is not calculated.

* + 1. The average Rate across the Orders (Rorders) is calculated on the basis of all Rates calculated in accordance with clause 2.2.5 of the Methodology:



where:

J – the number of Rates in the calculation.

* 1. The average Rate across transactions made based on Order Book Orders from 10:00 to the time of calculation (Rtrades) is calculated according to the following formula:



where:

rt - value of the Rate in the transaction, expressed as a percentage;

vt - volume of the transaction, expressed in the indicator calculation currency.

* 1. The minimum required volume of transactions is set for each RUSFAR. The minimum required volume of transactions is RUB 30 billion for RUSFAR with RUB as the settlement currency. For RUSFAR indicators with Chinese yuan as the settlement currency, the minimum transaction volume parameter is set to CNY 1 billion.
	2. In the case the volume of transactions executed based on Order Book Orders from 10:00 to the time of calculation, exceeds the value of the minimum required volume of transactions for the relevant indicator set out in clause 2.4 of the Methodology, the value of the indicator is determined by the following formula:



where:

R – the value of the Indicator;

$R\_{trades}$– the average Rate across transactions which is determined according to clause 3.2 above.

* 1. In the case the volume of transactions executed based on Order Book Orders from 10:00 to the time of calculation exceeds the value of the minimum required volume of transactions for the relevant indicator set out in clause 2.4 of the Methodology, the value of the indicator is determined by the following formula:

$$R = \frac{Vol}{MinVol} \*R\_{trades}+\left(1-\frac{Vol}{MinVol} \right)\*R\_{orders}$$

where:

R – the value of the Indicator;

$R\_{orders}$– the average Rate across transactions which is determined according to clause 2.2 above;

$R\_{trades}$– the average Rate across transactions which is determined according to clause 2.3 above;

Vol - volume of transactions executed based on Order Book Orders from 10:00 to the time of calculation, with maturities corresponding with the settlement method indicated with respect to the Indicator in Appendix 1;

MinVol – value of the minimum required volume of transactions set out in clause 2.4 above.

* 1. The RUSFAR indicator is expressed as a percentage per annum. The index values are accurate to two decimal places.
1. **Algorithm for Calculating RUSFAR REAL TIME**
	1. RUSFAR REAL TIME are calculated at 10:15, 10:30, 11:00, 11:15, 11:30, 11:45, 12:00, 12:15, 12:30 unless the Exchange has established a different time, based on Orders and transactions executed based on Order Book Orders during 15 minutes preceding the time of calculation.
	2. Calculation of RUSFAR REAL TIME at 10:15, 10:30, 11:00, 11:15, 11:30, 11:45, 12:00, 12:15 is carried out according to the following algorithm.
		1. The average rate (Rorders rt) of orders for the period of fifteen minutes preceding the moment of calculation is calculated in accordance with clauses 2.2.1.-2.2.6 of the Methodology.
		2. The average Rate across transactions made based on Order Book Orders during 15 minutes preceding the time of calculation (Rtrades rt) is calculated according to the following formula:



where:

Rtrades rt is the value of the Rate in transactions made during the period leading up to the time of calculation, expressed as a percentage;

vt - volume of the transaction, expressed in the indicator calculation currency.

* + 1. The values of the indicators are determined by the following formula:



where:

Rrt – the value of the Indicator;

Rtrades rt is the value of the Rate in transactions made during the period leading up to the time of calculation, expressed as a percentage;

Rorders rt is the value of the average Rate across orders (Rorders rt) for the preceding fifteen-minute period.

* + 1. If there are no available transactions executed based on Order Book Orders during 15 minutes preceding the time of calculation (Rtrades rt), the indicators are calculated according to the following formula:

$$R\_{rt}=R\_{ordersrt}$$

Rrt – the value of the Indicator;

Rorders rt is the value of the average Rate across orders (Rorders rt) for the preceding fifteen-minute period.

* + 1. In the absence of the orders necessary to determine the value of the average Rate (Rorders rt) for the previous fifteen-minute period, the indicator values are determined according to the following formula:

$$R\_{rt}=R\_{tradessrt}$$

Rrt – the value of the Indicator;

Rtradesrt – the value of the Rate in transactions made during the period leading up to the time of calculation, expressed as a percentage.

* + 1. In the absence of orders and trades that allow the values of the average Rate for orders (Rorders rt) and average Rate (Rtradesrt) for the previous fifteen minutes to be determined, the values of the indicators are not calculated.
	1. Calculation of RUSFAR REAL TIME indicators at 12:30, unless the Exchange is established at a different time, is carried out in the same way as calculation of RUSFAR indicators according to the procedure defined by section 2 of the Methodology.
	2. The values of RUSFAR REAL TIME indicators are expressed as a percentage per annum. The index values are accurate to two decimal places.

1. **Schedule of Indicator Calculation**
	1. Indicator values shall not be calculated if the first or second part of a repo transaction of the respective term falls on a trading non-business day, trading days falling on Saturday and/or Sunday, as well as on the last trading day of the calendar year.
	2. Indicator calculation times are given in Appendix 1 to this Methodology. The indicator calculation times may be changed by decision of the Exchange.
	3. The Exchange may change the start time and/or end time of Indicators calculation. Information on the decisions taken by the Exchange pursuant to this paragraph shall be made available to the trading members of the Exchange no later than one business day before the date of entry into force of the respective changes, unless the Exchange has set a different deadline for the publication of the information.
2. **Control of Indicator Calculation**
	1. In case of suspension of trading in trading modes, which are taken into account for the calculation of the indicators, during the periods set for the calculation of such indicators in accordance with this Methodology, or in case of closure of trading in the relevant trading modes on a given trading day, the value of the RUSFAR indicator (GCC Bonds overnight) is set equal to the key rate set by the Bank of Russia for that day, unless the Exchange decides otherwise. The values of other indicators are not determined on this trading day.
	2. In the event of a technical failure during the calculation of indicators or a technical failure during trading of CCP repos and/or on the deposit market concerning Order Book Orders resulting in distortion of data used for the calculation of indicators, recalculation of previously calculated indicator values shall be permitted. This recalculation is carried out as soon as possible after the technical failure has been detected. In the event of a recalculation, a notice is published on the official website of the Exchange.
	3. In case the deviation of the value calculated on the basis of quotes (Rorders) from the value calculated on the basis of transactions (Rtrades) exceeds 5%, the Exchange has the right to cancel the results of RUSFAR indicator calculations. When cancelling calculation results, the Exchange shall disclose on the official website information on circumstances taken into account when making this decision, not later than 19:00 MSK of the day of calculation.

1. **Publication**
	1. Disclosure of indicator values is made daily on the Exchange official website.
	2. In case of an event specified in clause 5.2 of this Methodology, Exchange may delay the publication of the RUSFAR indicator values until 19:00 MSK.
	3. Archived data for the entire calculation period, as well as information about the total volume of transactions based on which the calculation was made, is disclosed on the Exchange official website.
	4. The information that must be published on the official website of the Exchange in accordance with this Methodology may also be disseminated through other means, including information agencies that disseminate MOEX market data.

**Appendix 1**

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| Indicator code | Name | Board | Instrument type | Settlement method | Settlement currency | Settlement time |
| RUSFAR | RUSFAR | GCRP | GCC Bonds | Overnight | RUB | 12:30 |
| RUSFAR1W | RUSFAR 1 week | GCOW | GCC Bonds | One week | RUB | 12:30 |
| RUSFAR2W | RUSFAR 2 weeks | GCSW | GCC Bonds | 2 weeks | RUB | 12:30 |
| RUSFAR1M | RUSFAR 1 month | GCOM | GCC Bonds | 1 month | RUB | 12:30 |
| RUSFAR3M | RUSFAR 3 month | GCTM | GCC Bonds | 3 months | RUB | 12:30 |
| RUSFARCNY | RUSFAR CNY | GYRP | GCC Bonds | Overnight | CNY | 12:30 |
| RUSFARCN1W | RUSFAR CNY 1 week | GYOW | GCC Bonds | One week | CNY | 12:30 |
| RUSFARRT | RUSFAR REAL TIME | GCRP | GCC Bonds | Overnight | RUB | 10:15-12:30\* |
| RUSFAR1WRT | RUSFAR REAL TIME 1 week | GCOW | GCC Bonds | One week | RUB | 10:15-12:30\* |
| RUSFAR2WRT | RUSFAR REAL TIME 2 weeks | GCSW | GCC Bonds | 2 weeks | RUB | 10:15-12:30\* |
| RUSFAR1MRT | RUSFAR REAL TIME 1 month | GCOM | GCC Bonds | 1 month | RUB | 10:15-12:30\* |
| RUSFAR3MRT | RUSFAR REAL TIME 3 months | GCTM | GCC Bonds | 3 months | RUB | 10:15-12:30\* |
| RUSFARCNRT | RUSFAR REAL TIME CNY | GYRP | GCC Bonds | Overnight | CNY | 10:15-12:30\* |
| RUSFARC1WR | RUSFAR REAL TIME CNY 1 week | GYOW | GCC Bonds | One week | CNY | 10:15-12:30\* |

\* 10:15, 10:30, 11:00, 11:15, 11:30, 11:45, 12:00, 12:15, 12:30

**Appendix 2**

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| Indicator code | Minimum order size per Price Level | Maximum volume of transactions per Price Level. |
| RUSFAR RUSFARRT | RUB 20,000,000 | RUB 3,000,000,000 |
| RUSFAR1W RUSFAR1WRT | RUB 10,000,000 | RUB 2,000,000,000 |
| RUSFAR2W RUSFAR2WRT | RUB 10,000,000 | RUB 2,000,000,000 |
| RUSFAR1M RUSFAR1MRT | RUB 10,000,000 | RUB 2,000,000,000 |
| RUSFAR3M RUSFAR3MRT | RUB 10,000,000 | RUB 2,000,000,000 |
| RUSFARCNYRUSFARCNRT | CNY 1,000,000 | CNY 200,000,000 |
| RUSFARCN1WRUSFARC1WR | CNY 1,000,000 | CNY 200,000,000 |