Moscow Exchange FX Fixings Methodology

1. The present Methodology establishes the Open Joint Stock Company "Moscow Exchange MICEX-RTS" procedure for calculation of the FX fixings (hereinafter referred to as the Fixings) i.e. currency rates of a country expressed in a currency of another country that are determined daily as at 12:30 MSK for the purposes of calculating parameters required for the trading on the Exchange to be conducted and transactions in the Exchange's sections are performed.

2. The present Methodology and all amendments and supplements thereto shall be approved by Open Joint Stock Company "Moscow Exchange MICEX-RTS" (hereinafter referred to as the Exchange). The present Methodology and all amendments and supplements thereto shall come into force on the day fixed by the Exchange.

3. The text of the Methodology with amendments and supplements thereto shall be published on the Exchange's website no later than one business day before the day it comes into force, unless otherwise provided for in the resolution of the Exchange.

4. The list of the Fixings computed by the Exchange, and their calculation parameters are given in the Appendix 1 hereto.

5. To calculate the Fixings and for the purposes of calculating parameters required for the trading on the Exchange to be conducted and transactions in the Exchange's sections are performed, the Exchange computes currency rates of a country expressed in a currency of another country (the Rates) based on the following data on FX trading in the following instruments stated in the Appendix 1 hereto:

   5.1. orders directed to all trading participants (hereinafter referred to as the indirect orders);

   5.2. trades executed based on the indirect orders.

6. The Rates shall be computed using aggregate data on 20 best indirect bids and 20 best indirect asks.

7. The Rates shall be updated every second throughout the FX trading session of the Exchange. The Rates values shall be published no later than 5 seconds after calculation thereof on the Exchange's website.

8. The first value of the Rate published during the session shall be computed after one second has passed since the beginning of the session. Such first value of the Rate represents the opening value of the relevant trading day.

9. The last value of the Rate published during the session represents the closing value of the relevant trading day.

10. The Rates values as at the n-th moment are determined as per the following algorithm:

    10.1. The average price of indirect bids (P_{BID}) that meet conditions set forth in clause 6 hereof and that were entered by the trading members as at the moment n at which the Rate is calculated is determined as follows:

    $$P_{BID} = \frac{\sum_{i=1}^{N} P_i \cdot Q_i \cdot W_i}{\sum_{i=1}^{N} Q_i \cdot W_i}$$

    P_i – price of the i-th indirect bid;

Qi – size of the i-th indirect bid;

N – number of indirect bids used to calculate the Rate as at the moment n that meet conditions set forth in clause 6 hereof;

Wi – weighting coefficient, determined in accordance with the following formula:

$$W_i = \frac{1}{k^i}$$

K – the parameter defined in accordance with the Appendix 1 hereto unless other value is fixed by the Exchange.

i – conditional number of the order set determined in accordance with the following formula by rounding down the result to the nearest integer:

$$i = \frac{\left| P_{BID} - P_{BID}^{BEST} \right|}{m},$$

P_{BID}^{BEST} - best bid value,

m – price tick used to calculate the weighting coefficient. The tick price value shall be determined as per the appendix 1 hereto.

10.2.   The average value of prices indicated in the indirect asks (Pask) that meet conditions set forth in clause 6 hereof and that were entered by the trading members as at the moment n at which the Exchange rate is calculated is determined as follows:

$$P_{ASK} = \frac{\sum_{i=1}^{N} P_i \cdot Q_i \cdot W_i}{\sum_{i=1}^{N} Q_i \cdot W_i}$$

Pi – price of the i-th indirect ask;

Qi – size of the i-th indirect ask;

N – number of indirect asks used to calculate the Rate as at the moment n that meet conditions set forth in clause 6 hereof;

Wi – weighting coefficient, determined in accordance with the following formula:

$$W_i = \frac{1}{k^i}$$

k – parameter defined as per clause 10.1 hereof.

i – conditional number of the order set determined in accordance with the following formula by rounding down the result to the nearest integer:

$$i = \frac{\left| P_{ASK} - P_{ASK}^{BEST} \right|}{m},$$

P_{ASK}^{BEST} - best ask value.

m – price tick used to calculate the weighting coefficient defined as per clause 10.1 hereof.

10.3.   The average of P$_{BID}$ and Pask is calculated as follows:

$$P_{MID} = \frac{P_{BID} + P_{ASK}}{2}.$$

10.4.   If no bids and/or asks are available at the time n at which the Exchange rate is calculated, the P$_{MID}$ shall be deemed equal to the P$_{MID}$ value at the moment n-1.

10.5.   The average value of trades prices (P$_{DEAL}$), executed for the period t, where $n-1 < t \leq n$ $n-1 < t \leq n$ (n – time at which the current Rate value was calculated, n-1 - time at which the previous Rate value was calculated) is calculated as follows:

$$P_{DEAL} = \frac{\sum_{j=1}^{M} P_j \cdot Q_j}{\sum_{j=1}^{M} Q_j}$$

P_j – price of the j-th trade;

Q_j – size of the j-th trade;

M – number of trades executed for the period $n-1 < t \leq n$.

10.6.　　The average between prices of trades (P_{FIX}) executed for the period t, where $n-1 < t \leq n$ (n – time at which the current Rate value was calculated, n-1 - time at which the previous Rate value was calculated) and orders prices as at the moment n is calculated as follows:

$$P_{FIX} = (1-q) \cdot P_{MID} + q \cdot P_{DEAL},$$

Where:

Q – parameter, $0 \leq q \leq 1$;

$$q = \frac{Q_t}{Q_t + \overline{\overline{Q}}},$$

Q_t – trading volume for the second t;

$\overline{\overline{Q}}$ = the parameter defined in accordance with the Appendix 1 hereto unless other value is fixed by the Exchange, unless otherwise provided for in the resolution of the Exchange.

10.7.　　If no trades taken into account while calculating the Rate were executed over the period t, where $n-1 < t \leq n$, (n – time at which the current Rate value was calculated, n-1 - time at which the previous Rate value was calculated) P_{DEAL} shall not be calculated and P_{FIX} shall be deemed equal to P_{MID}.

10.8.　　The Fixings shall be determined based on the average values of trades and orders prices (P_{FIX}) calculated every second from 12:25:01 pm through 12:30:00 pm MSK in accordance unless otherwise provided for the Exchange with the following formula:

$$P_n = \sum_{t=1}^{300} P_{FIX,t} / 300$$

10.9.　　The Rates values shall be deemed equal to P_{FIX} at the respective time.

11. The Fixings shall be published on the Exchange's website daily, not later than 5 minutes after being calculated.

12. If trading in foreign currencies was suspended in the period, established by clause 9.8 hereof or was not held, the Exchange is entitled to set the Fixings equal to one of the following values unless otherwise provided for in the resolution of the Exchange:

    a. the foreign currency exchange rate set by the Bank of Russia as of the date determined by the Exchange;

    b. the current exchange rate for a country's currency expressed in another country's currency that was generated in the interbank currency market by the time when the Exchange made the decision;

    c. the foreign currency exchange rate generated during trading in one of Russian exchanges or foreign FX exchanges as chosen by the Exchange by the moment of the Exchange's resolution.

13. All terms and definitions used herein shall be construed according to their meanings defined in the Exchange's Rules determination order of conducting foreign currency purchase and sale transactions at the Exchange unless otherwise specified herein.

List of fixings computed by Moscow Exchange

Fixing	Exchange Rate	Instrument	Value of parameter k	Price tick m	Value of parameter $\overline{Q}$
Moscow Exchange FX Ruble Fixing	USD/RUB exchange rate	USDRUB_TOM	2	0.001	1,000,000
Moscow Exchange FX EUR/RUB Fixing	EUR/RUB exchange rate	EURRUB_TOM	2	0.001	200,000
Moscow Exchange FX Euro Fixing	EUR/USD exchange rate	EURUSD_TOM	2	0.001	1,000,000
Moscow Exchange FX CNY/RUB Fixing	CNY/RUB exchange rate	CNYRUB_TOM	2	0.001	5,000,000