**APPROVED BY**

Executive Board of

Moscow Exchange

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Chairman

Moscow Exchange

# Moscow Exchange FX Fixings Methodology

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1. The present Methodology establishes the procedure for Public Joint Stock Company “Moscow Exchange MICEX- RTS” (hereinafter referred to as the “Exchange”) to calculate 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. This Methodology with any amendments and supplements thereto is written in consideration of recommendations of the Moscow Exchange FX Market Committee (the “Committee”). In accordance with the Regulations on the FX Market Committee, as part of its functions, the Committee shall:

1.1. form an expert opinion, proposals and recommendations to the Exchange's authorised body on issues of development of FX Fixings calculated by the Exchange;

1.2. develop proposals on improvement of the Methodology;

1.3. develop recommendations regarding disclosure of information on Fixings;

1.4. considers claims and suggestions from users of Fixings and, in case of reasonable and substantial claims, takes measures jointly with the Exchange to develop and implement appropriate changes.

1. The Fixings shall be created and calculated, and this Methodology shall be revised and updated based on the entire guidelines and requirements described in the Index Management Policy of the Exchange.
2. The present Methodology, with all amendments and supplements thereto, shall be approved by 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 three business days 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:
	1. orders directed to all trading participants (hereinafter referred to as the “indirect orders”);
	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 since the beginning of the session shall be its opening value for that trading day.
9. The last value of the Rate published since the beginning of the session shall be its closing value for that trading day
10. The Rates values at the instance n are determined as per the following algorithm:
	1. The average price of indirect bids (Pbid) that meet conditions set forth in clause [8](#bookmark1) hereof and that were entered by the trading members at the instance n at which the Rate is calculated is determined as follows:



where

Pi – the price of the ith indirect bid;

Qi – the size of the ith indirect bid;

N – the number of indirect bids used to calculate the Rate at the instance n that meet conditions set forth in clause 8 hereof;

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



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

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

,

where

 - best bid value,

m – the minimum price fluctuation set by the Exchange for the instrument included in the fixing.

* 1. The average value of prices indicated in the indirect asks (Pask) that meet conditions set forth in clause 8 hereof and that were entered by the trading members at the instance n at which the Exchange rate is calculated is determined as follows:

 

where

Pi – the price of the ith indirect ask;

Qi – the size of the ith indirect ask;

N – the number of indirect asks used to calculate the Rate at the instance n that meet conditions set forth in clause 8 hereof;

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



k – the parameter determined in accordance with Appendix 1 hereto, unless otherwise decided by the Exchange.

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

,

 - best ask value.

m – the minimum price fluctuation set by the Exchange for the instrument included in the fixing..

* 1. The average of PBID and Pask is calculated as follows:

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* 1. If no bids and/or asks are available at the time n at which the Exchange rate is calculated, the PMID shall be deemed equal to the PMID value at the instance n-1.
	2. The average value of trades prices (PDEAL), executed for the period t, where  (n – the time at which the current Rate value was calculated, n-1 – the time at which the previous Rate value was calculated) is calculated as follows:



where

Pj – the price of the jth trade;

Qj – the size of the jth trade;

M – the number of trades executed for the period .

* 1. PFIX is calculated as the average of the PDEAL and PMID prices using the formula:

$$P\_{FIX}=(1-q)⋅P\_{MID}+q⋅P\_{DEAL}$$

where:

q – parameter, ;

$q=\frac{Q\_{t}}{Q\_{t}+\bar{Q}}$,

Qt – trading volume for the second t;

 = 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.

Accuracy (decimal places) for PFIX rate values is set equal to the accuracy of fixings, for the calculation of which PFIX rate values are used. The accuracy of fixings is given in Appendix 1 to the Methodology.

* 1. If no trades occurred over period t, where , (n – the time at which the current Rate value is calculated, n-1 - the time at which the previous Rate value is calculated), PDEAL is not calculated, but set to PMID.
	2. If PMID was not determined at time n, PFIX is not calculated.
	3. The Fixings Pm shall be determined based on PFIX calculated every second in the period set out in Appendix 1, unless otherwise provided for the Exchange:

$$P\_{т}=\sum\_{t=1}^{N}P\_{FIX,t}/N$$

where:

N is an integer number of seconds during the PFIX calculation period.

* 1. The Rates values shall be deemed equal to PFIX at the respective time.
1. In case of suspension or close of trading on the Exchange in the respective instrument used for calculation of the Fixing during the period set by Appendix 1 to this Methodology, the value of the respective Fixing shall be set equal to the value of the exchange rate set by the Central Bank of the Russian Federation on that trading day and effective on the next calendar day, or to the value of the cross rate calculated using the rates set by the Central Bank of the Russian Federation on the next calendar day.
2. In case of technical failure (including during calculation of the Fixings or in the course of trading in the relevant instrument used for calculation of the Fixing during the period specified in Appendix 1 to this Methodology), which resulted in distortion of the data used for calculation of the Fixings, recalculation of the previously calculated values of the Fixings is allowed. Such recalculation shall be carried out as soon as possible from the moment the technical failure is detected.
3. Fixing values calculated for the previous trading day is disclosed on the Exchange website every trading day no later than 12:00 Moscow time.

Fixing values can be additionally distributed in another way (including by other means and with other periodicity) in accordance with the terms established by the Exchange.

1. 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.

# Appendix 1 to the Moscow Exchange

# FX Fixings Methodology

**List of Moscow Exchange fixings**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Fixing name** | **Code** | **FX rate** | **Instrument** | **k** | **Decimal accuracy** |  | **Calculation period, Moscow time** |
| MOEX USD/RUB FX FIXING | **USDFIXME** | USD/RUB FX rate | USDRUB\_TOM | 2 | 4 | 50,000 | 12:15:01 – 12:30:00 |
| MOEX EUR/RUB FX FIXING | **EURFIXME** | EUR/RUB FX rate | EURRUB\_TOM | 2 | 4 | 50,000 | 12:15:01 – 12:30:00 |
| MOEX EUR/USD FX FIXING | **EURUSDFIXME** | EUR/USD FX rate | EURUSD\_TOM | 2 | 5 | 50,000 | 12:15:01 – 12:30:00 |
| MOEX CNY/RUB FX FIXING | **CNYFIXME** | CNY/RUB FX rate | CNYRUB\_TOM | 2 | 4 | 5,000,000 | 12:15:01 – 12:30:00 |
| MOEX USD/CNY FX FIXING | **USDCNYFIXME** | USD/CNY FX rate | USDCNY\_TOM | 2 | 4 | 50,000 | 12:15:01 – 12:30:00 |
| MOEX HKD/RUB FX FIXING | **HKDFIXME** | HKD/RUB FX rate | HKDRUB\_TOM | 2 | 4 | 1,000 | 12:15:01 – 12:30:00 |
| MOEX TRY/RUB FX FIXING | **TRYFIXME** | TRY/RUB FX rate | TRYRUB\_TOM | 2 | 4 | 1,000 | 12:15:01 – 12:30:00 |
| MOEX BYN/RUB FX FIXING | **BYNFIXME** | BYN/RUB FX rate | BYNRUB\_TOM | 2 | 4 | 1,000 | 12:15:01 – 12:30:00 |
| MOEX USD/KZT FX FIXING | **USDKZTFIXME** | USD/KZT FX rate | USDKZT\_TOM | 2 | 4 | 1,000 | 12:15:01 – 12:30:00 |

The word "MOEX" 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 29 August 2014 (trademark certificate No. 521450).