Annex 1

to the Moscow Exchange Derivatives Trading Rules

**METHODOLOGY FOR CALCULATION OF DERIVATIVES CONTRACTS’ SETTLEMENT PRICES**

Section 1. Overview

1. This Methodology for Calculation of Derivatives Contracts’ Settlement Prices (hereinafter, the Methodology) shall establish the procedure for calculation of settlement prices of derivatives contracts.
2. Settlement prices of derivatives contracts shall be determined in accordance with the present Methodology unless provided for otherwise in the specifications of the derivatives contract.
3. Settlement prices of derivatives contracts shall be calculated based on the results of the intraday and evening settlement periods upon completion of the corresponding settlement period. This also applies to the first trading day of the derivative contract.
4. Settlement prices of derivatives contracts are rounded off by the rules of mathematical rounding with the accuracy specified for the price tick in the specifications of the relevant derivatives contract.
5. If MDRule(БА,Num) is set to N for futures according CCP NCC Methodology for MOEX derivatives risk parameters, best bid, best offer and last trade prices of a futures contract/share/foreign currency/precious metal as determined according to external data sources are used to determine the Settlement Price in the following cases:
6. The settlement price of an option contract is set to equal its theoretical price calculated by the Exchange at the end of the settlement period in accordance with the Methodology for calculation of the option theoretical price and delta.
7. Terms used in the Methodology shall be have the meanings ascribed to them by the laws of the Russian Federation, MOEX Derivatives Trading Rules, CCP NCC Clearing Rules and other internal documents of CCP NCC and Moscow Exchange.

Section 2. How the futures contract settlement price is determined

1. The following basic parameters are used in this Methodology:

|  |  |  |
| --- | --- | --- |
| **#** | **Parameter** | **Designation** |
| 1 | # of the current clearing session (interim or evening)  | *i* |
| 2 | Interim or evening clearing session type. Takes values: Icl, Ecl | *clearing* |
| 3 | Futures contract/share/foreign currency/precious metal | Instr |
| 4 | Futures contract’s sequence number. Sequence numbers are assigned to contracts on the same underlying asset per their last trading days | Num |
| 5 | Best bid, best offer and last trade prices of a futures contract/share/foreign currency/precious metal transmitted by the relevant MOEX market at the moment on day  | ), |
| 6 | Attribute of automatic download of market data. It takes values “Y” or “N” |  |
| 7 | Time for downloading market data for the clearing session |  |
| 8 | Frequency of downloads of market data |  |
| 9 | Number of downloads of market data  |  |
| 10 | Filtered market data for settlement in the clearing session  |  |
| 11 | Parameter defining priority of market data  |  |
| 12 | Expected dividends on an underlying share  |  |
| 13 | Futures contract settlement price determined in the clearing session *i*  | P(i,Num,БА) |
| 14 | “Dirty” settlement price determined in the clearing session *i* |  |
| 15 | Preliminary settlement price derived from market data |  |
| 16 | Preliminary settlement price of an instrument derived from market data subject to expected dividends |  |
| 17 | Theoretical price calculated based on market data  |  |
| 18 | Priority of market data on an instrument. It takes values 1 or 2 |  |
| 19 | Time to settlement of a future contract with sequence number Num, in a fraction of the year  |  |
| 20 | Coefficient for conversion from RUB into the futures contracts settlement price unit |  |
| 21 | The range of rates (in per cent per annum) from the interest curve (interest rate curve) |  |
| 22 | The interest rate calculated by interpolation for maturity and underlying asset БА |  |
| 23 | Attribute of setting positive price banding limits for futures contracts, set by the Clearing House for each underlying asset. | NegativePrices(БА) |
| 24 | Attribute of forced principle futures attribute assigning to futures, set by the Clearing House. | AllFirstPriority(БА) |

Values of parameters 6 - 9, 11 - 12, 21, and 23-24 are determined by the Exchange by using risk parameters’ values set under the CCP NCC Methodology for MOEX derivatives risk parameters.

1. Settlement prices are calculated as per the procedure given in paragraphs 3-10 of this section.
2. To determine the settlement price, futures contracts are divided into principal and non-principal ones as follows:
	1. Principal futures contracts have priority 1 market data,
	2. Non-principal futures contracts have priority 2 market data,
	3. The priority of market data is defined as per paragraph 4 below.
3. The following algorithm is applied to collect market data for futures contracts and underlying assets and set their priority:
	1. If attribute is set to Y, then, starting from, every second andtimes, values of, and are collected on the MOEX market for.
	2. If attribute is set to N, then, at moment , values of , and for are determined under CCP NCC Methodology for MOEX derivatives risk parameters.
	3. If attribute AllFirstPriority(БА) is set to Yes, and/or NegativePrices(БА) is set to Yes for futures on underlying assets, values of ***Bid(i,Instr),Ask(i,Instr),*** and ***Last(i,Instr)*** are adjusted under CCP NCC Methodology for MOEX derivatives risk parameters.
	4. Values of are calculated for every futures contract as the median of every of the three arrays, , exclusive of empty elements. If all elements of the array are empty, the array median is set to an empty value.
	5. If all three parameters takes non-empty values and the following inequality is true

,

or

where abs(x) – the modulus of x,

then priority 1 is assigned.

* 1. Otherwise, priority 2 is assigned.
1. “Dirty” settlement prices are calculated for every Num for futures contracts except interest rate contracts (the “Interest Rate Futures”), which prices were determined in the clearing session run following the previous settlement period:
	1. If attribute NegativePrices(БА) is set to No for futures on underlying assets:

* 1. If attribute NegativePrices(БА) is set to Yes for futures on underlying assets:

where

 – The rate for maturity, as determined in the clearing session run following the previous settlement period.

1. The values of the Interest Rate Futures settlement prices determined in the clearing session following the previous settlement period are adjusted as follows for all Num:
	1. Indirect quote:
	2. Direct quote:
2. “Dirty” settlement prices of principal futures and futures on underlying assets, with attribute AllFirstPriority(БА) set to Yes, and/or NegativePrices(БА) set to Yes, are calculated in accordance with paragraphs 7.1-7.5 of this section.
	1. are calculated as the median of .
	2. “Dirty” preliminary values of settlement prices are calculated for every futures except Interest Rate Futures:

*,*

where

 – the rate for maturity, as determined in the clearing session following the previous settlement period,

* 1. Market data on Interest Rate Futures are adjusted as follows:
		1. Indirect quotes:
		2. Direct quotes:
	2. Theoretical price is set to for all Num
	3. “Dirty” settlement price :
		1. for all Num is set to , except for futures on underlying assets without spot market data collecting
		2. for futures on underlying assets without spot market data collecting *P\_dirty(i,БА,Num)* is calculated as follows:

 ,

,

 for Num>1.

1. “Dirty” settlement prices of non-principal futures are calculated as per an algorithm set out in the CCP NCC Methodology for MOEX derivatives risk parameters:
2. Settlement prices of principal and non-principal futures are determined:
	1. Futures except Interest Rate Futures:

If attribute NegativePrices(БА) is set to No for futures on underlying assets:

If attribute NegativePrices(БА) is set to Yes for futures on underlying assets:

where – the futures with sequence number *Num=j.*

* 1. Interest Rate Futures with prices expressed in indirect quotes:
	2. Interest Rate Futures with prices expressed in direct quotes: