

Table A.1 Characteristics of securities

Security symbol	Type	Description	Liquidity - turnover per day, mln. US dollars	Volatility H-L, % *	Volatility ATR, % **
RI	Futures	RTS index for 50 major Russian stocks	2186	2.9	3
Si	Futures	US dollar to ruble exchange rate	1673	1.3	1.3
BR	Futures	Brent crude oil	292	2.5	2.5
ED	Futures	Euro to US dollar exchange rate	199	0.8	0.8
SR	Futures	Sberbank, the main bank of Russia	152	3.3	3.3
GD	Futures	Gold	61	1.4	1.5
SBER	Stock	Sberbank, the main bank of Russia	342	3	3.1
GAZP	Stock	Natural gas production and processing	209	2.4	2.6
LKOH	Stock	Oil production and refining	74	2.4	2.5
GMKN	Stock	Nickel and rare earth mining	68	2.8	3
ROSN	Stock	Oil production and refining	53	2.7	2.8
VTBR	Stock	VTB bank	52	3	3.1
MGNT	Stock	Supermarkets chain	17	3.3	3.3

Comments:

Futures RI, BR, ED and GD are denominated in US dollars. Futures Si and SR and all stocks are denominated in rubles, so turnover on them is transferred into US dollars. Since dollar to ruble exchange rate changed for the period from 2009 to 2018 changed significantly (from 32 to 67 rubles for 1 US dollar), the transfer from rubles to US dollars was carried out daily. For example, on some day, the turnover in rubles was T, and the exchange rate was 55. Then, for this day, the turnover in US dollars is calculated as T/55.

* H-L volatility is calculated as

$$1/N \times \sum (H_i - L_i) / P_i$$

$$P_i = (H_i + L_i) / 2$$

where H_i , L_i , P_i - the high, low and average price for day number i ($i=1 \dots N$),

N - total number of days.

** ATR volatility is calculated as

$$1/N \times \sum ATR_i / P_i$$

$$P_i = (H_i + L_i) / 2$$

$$ATR_i = \max(H_i - L_i, \text{abs}(C_{i-1} - H_i), \text{abs}(C_{i-1} - L_i))$$

where H_i , L_i , C_{i-1} , P_i - the high, low, close and average price for day number i ($i=1 \dots N$),

ATR_i - average true range for day number i ,

N - total number of days.