

Correlation Matrix Specification

In the current paper we want to address correlation matrix built using data 2020-2022 years. Another goal is to understand the reasons which led to given numbers emerging. This will help to recognize patterns on the market and identify hedging and investment opportunities.

	<i>RUB</i>	<i>BTC</i>	<i>OIL</i>	<i>MOEX</i>	<i>S&P 500</i>	<i>Gold</i>
RUB	1					
BTC	0,0109031	1				
OIL	-0,472819	0,1697495	1			
MOEX	-0,491395	-0,062266	0,3437139	1		
S&P 500	-0,345114	-0,008591	0,3027499	0,2485567	1	
Gold	-0,034872	-0,032725	-0,01416	0,173106	0,0054225	1

Forex research presents data that shows USD/RUB trading sideways with BTC in a symmetrical triangle starting with March 2019. That gives a corresponding correlation one can observe in given data.

RUB Oil has a decent negative correlation, and a reason for that is in given data we were presented RUB/USD ~ 70+-Delta, it's amount of rubles one has to pay for purchasing 1 dollar, then if oil prices rise (which Russian economy highly rely on) USD depreciated against RUB. Thus that negative correlation.

Same with MOEX Index and RUB, then index goes up, since the russian market mostly includes shares of domestic companies, RUB/USD goes down.

With the increase of S&P 500 Index, the amount of rub for 1 dollar decreases. Thus negative correlation.

Since dollar and gold have high inverse correlation, and there are several hedging strategies against plumping of dollars in which investors commonly tend to buy gold. Here is the dollar in terms of rubl.

If oil prices are high investors are looking for alternative ways to save and increase capital, a significant amount of attention is paid to crypto. As a matter of fact, leaders of cryptocurrency mining are African countries, which are regions with oil sources.

BTC are not linked to the real economy represented by Moex/S&P500 indices, which is the whole idea of blockchain. Thus correlation is so insignificant.

Oil has such correlation with the Moex index due to active trading of domestic companies' shares which rely on russian export of oil, similar correlation with S&P 500

because fair share of companies included in the index operate with oil and gas, moreover the US economy also rely on gas due to developed highway systems.

Oil, gold are not correlated due to different usage in different industries.

Moex correlates with S&P 500 b.c of similar stocks traded and both affected by the international market, and with gold due to active trading of precious metals on exchange.

SPY does not correlate with gold due to specific companies included in the index.

In closing, from all data observed we figured out the reasons for such relationships between assets. One may conclude that the highest correlation is between MOEX index and Oil and negative one is between USD/RUB and Oil. Which provides several enlightenments regarding price movements of commodities, currencies, and indices to help investors better understand the market and its possible directions.