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## Factors behind the Russian Ruble Depreciation

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### Abstract

The primary cause of recent Russian economic downturn is the decline in global oil prices, which led to the currency crisis in Russia. However, other factors, which might have considerable effects on ruble exchange rate, are overlooked – for example changes in gold and gas prices, Russian interest rates, development of stock market and last but not least development of the USD exchange rate itself. A close relationship among these variables may be suspected. The purpose of this article is to discover this relationship and determine the impact of these variables on changes in the ruble exchange rate with the aid of cointegration analysis. It has been found out that besides the decline of the oil price, also decline of gold price, rise of stock market, increase in interest rates and appreciation of USD played a significant role in depreciation of ruble.

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### 1. Introduction - theoretical background

In this paper, attention will be paid to relevant economic theory, which can explain possible effects of selected factors on nominal ruble exchange rates. At first let's focus on most likely major factor behind ruble depreciation – the medial role of oil price dynamics. The Russian economy relies heavily on oil exports, which makes it very sensitive to any fluctuation of global oil price. In 2013, crude oil exports represented 33 percent of total export revenues. Consequently, the abrupt drop in the price of oil had many consequences. As the revenues of export-oriented companies begin to fall, their profits started to decrease and investors began to look for more profitable foreign investment opportunities. These results including an increase in demand for foreign currencies, increased ruble supply and overall capital outflow. Lack of interest in the ruble and its excess in markets caused inflation and

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through inflation differential was reflected in the exchange rate. –Lower profits of export-oriented companies lead to lower corporate tax revenues, which caused troubles for government and its budget – expenditure cuts would come to fore. In the end, aggregate demand started to drop and the recession become imminent. All of these events lead to ruble depreciation, but the initial catalyst was the decrease in oil price. This relationship between oil price and exchange rate has been examined in several papers, e.g. Basher & Haug & Sadorsky (2012), Lizardo & Mollick (2010), Reboredo & Rivera-Castro (2013). We are not going to pursue all these channels of economic and financial contagion, for our needs it is sufficient enough to know that the decline in oil price will lead to ruble depreciation in the end.

The second factor we consider is the price of natural gas. The idea behind its influence on ruble exchange rate is similar to the idea of oil prices - in 2014, crude oil, oil products and gas (including LNG) represented 68 percent of total export revenues.

In the case of the price of gold, if the price is increasing, gold becomes more attractive for investors, therefore they should get rid of the ruble (not only the ruble, it should be valid for all currencies) in order to purchase gold and cause currency depreciation.

Regarding the interest rate, an increase in the interest rate should attract foreign capital, because Russian portfolio investments will promise higher returns. This will be manifested by an increase in foreign currency supply and an increase in ruble demand, because to buy these portfolio investments, rubles are required. Both these factors should lead to appreciation of the ruble.

Another potential factor behind the change in value of the ruble is stock market development, which reflects the market mood. The relationship between the exchange rate and stock market development has been examined in Śmiech & Papież (2013). Rise in the stock market should attract foreign capital and cause appreciation of ruble. But there can exist another effect working from the other side - rise in the stock market makes stocks more attractive, therefore domestic investors are buying stocks in exchange for money and this money is flooding the money and foreign exchange market and making the ruble fall. We will see later which one of these hypotheses is true.

The last factor taken into consideration is USD exchange rate. From the basic theory of international finance comes the following statement – when one currency is appreciating, the other should express depreciating tendencies. If we apply this contemplation to our situation, when the USD is appreciating, the ruble should depreciate and vice versa.

## 2. Data

Analysis will focus on the period from 1<sup>st</sup> January 2013 to 25<sup>th</sup> February 2015. From this period, 556 daily observations of ruble exchange rate (values are available only for weekdays) have been collected. To perform analysis properly, it was necessary to have exactly this number of observations for all variables presenting potential

Table 1. Variables used in analysis

abbreviation of variable	variable characteristic
RUB	spot exchange rate of ruble expressed in form of RUB/USD
oil	price of oil BRENT expressed in USD per barrel
gas	price of natural gas expressed in USD per MMBTI (million british thermal units which is equal to approximately 28,26 m <sup>3</sup> )
gold	price of gold expressed in USD per troy ounce
interest	Moscow Interbank Overnight Interest Rate
MIC	MICEX Index (cap-weighted composite index calculated based on prices of the 50 most liquid Russian stocks of the largest and dynamically developing Russian issuers presented on the Moscow Exchange)
EUR/USD	spot exchange rate of US dollar expressed in form of EUR/USD

factors behind ruble development. In some cases it was necessary to deal with missing values in order to ensure

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