

ECONOMIC GROWTH OF THE OIL SECTOR ENTERPRISE OF THE NATIONAL ECONOMY IN RUSSIAN FEDERATION.

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There are many factors which affect the economic growth of oil sector enterprise of Russian Federation. Geopolitical factors, demand on oil, climate factors, OPEC decisions have an immense impact on the price of Brent oil. The price of Brent oil has a leading role in the economic development of Russian Federation. Price of Brent oil is considered as the main indicator and influencer of the growth of the oil sector enterprise in Russian Federation. The current economic situation in Russian Federation is mentioned; the overview of Russian oil sector is given; main factors which affect the price of oil are observed applying to the econometrics models and methods of research; endogeneous and exogeneous variables are determined; historical data and coefficients are collected and brought into analysis initial and reduced econometrics models are constructed. Explained the necessity of crude oil especially for Russian Federation and its impact on the world existence. The forecasting analysis is made.

Key words: economic growth; oil price; Brent oil; oil sector; economics.

At the present moment, the situation of the Russian economy can not be called stable and reliable. This is due to currency fluctuations, worsening financial risks, deterioration of relations with other countries and other factors. The future of the country's economy worries not only entrepreneurs, but also ordinary citizens, because economic jumps will affect various spheres of life and business in Russia.

The greatest influence on Russian economy has made the annexation of Crimea in the 2014. The relations with western countries got more tension and in general got worse. Then it resulted in the emergence of sanctions with which we are still struggling and the Russia's exit from the G8. However, I consider that “bad situation” got better to the end of 2019. Since January 1, 2019, several laws that relate to tariffs and taxes have come into force. Thus, VAT has increased from 18 to 20 %, utility tariffs have increased by 1.7%, excise taxes on tobacco products have increased by 10 %.

By 2019, significantly improved the position of Russia in the ranking of ease of doing business compiled by the world Bank (up to 31 seats from 120 seats in 2009). In April 2019, Vladimir Putin set as a goal Russia's 20th place in the ranking by 2024. In a more general way, Russian economy

ranks 6th among the world and 2nd among the European countries in terms of GDP by PPP, which for 2018 is estimated at 4.2 trillion dollars. Russia's nominal GDP for 2017 amounted to \$ 1578 billion. According to this indicator, Russia ranks 11th in the world. According to GDP PPP per capita Russia in 2017 is 48th place.

The topic is so relevant nowadays because of the necessity of crude oil. Crude oil is crude oil and fossil fuel which consists of deposits of hydrocarbons and other organic materials and can be processed to produce useful products such as gasoline, diesel, petrochemicals (such as plastics), fertilizers and even medicines. Oil is the main and most important component of the world economy and has a great impact on our daily lives, and therefore it is closely watched by economists, businessmen and traders. Therefore, the movement of oil prices is very important. When oil becomes more expensive, it increases costs for consumers directly (oil at gas stations) and indirectly (products made from oil or used by companies for production). Cheaper oil indicates lower costs for consumers. However, many scientists have been analyzing this sphere and the topic is quite familiar. The aim of the research is to determine what and in which level of significance various factors affect the Brent oil price.

All necessary data was collected through different sources and scientific articles. The aim of research was achieved applying to the econometrics discipline. Endogeneous and exogeneous variables are determined and applied into an econometrics model in order to analyze the presence of each of variables. The price of oil is determined as the endogeneous variable and the exogeneous variables are: volume of extraction of oil in Russia, world oil consumption by year, world oil reserves, total installed capacity of renewable electricity. The initial data looks as follows (Tab.1):

	Price of oil, rubles	Volume of extraction, mln. tonnes in Russia	World oil consumption by year, mln. tonnes	World oil reserves, bln. tonnes	Total installed capacity of renewable electricity, gigawatt	USD/RUB
	POt	Vt	Ct	Rt	It	URt
2011	96,29	510	4460,00	221,20	1,36	30,00
2012	124,45	518,00	4502,00	223,40	1,47	31,00
2013	112,93	523,20	4542,00	238,20	1,58	30,00
2014	107,57	526,00	4588,00	239,80	1,71	35,00
2015	48,42	533,20	4637,00	238,70	1,85	66,00
2016	32,13	548,60	4689,00	240,00	2,02	78,00
2017	55,98	546,50	4745,00	231,20	2,10	59,00
2018	68,77	555,70	4805,00	224,60	2,18	68,00

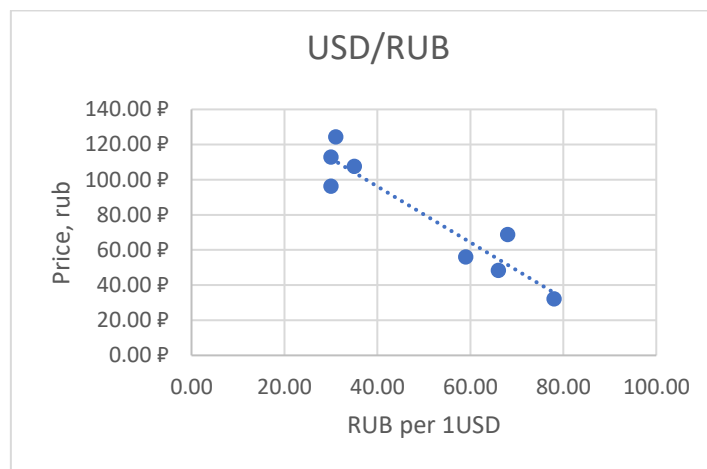
Tab.1 Initial data

Construction of the initial model:

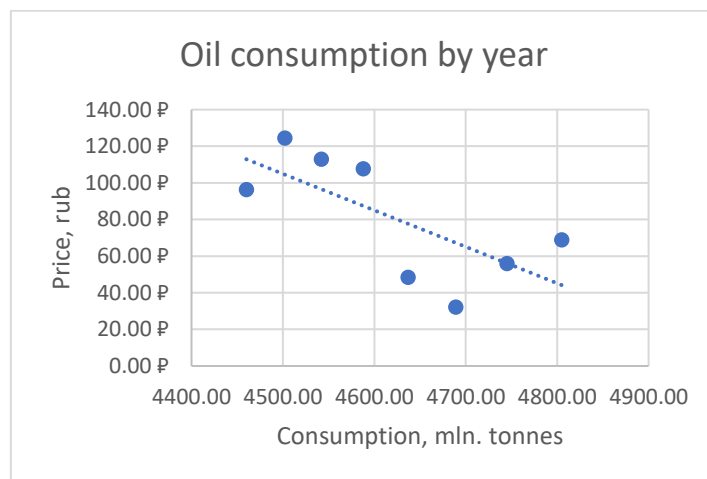
$$\left\{ \begin{array}{l} PO_t = a_0 + a_1 \cdot Vt + a_2 \cdot C_t + a_3 \cdot R_t + a_4 \cdot It + a_5 \cdot USD_{R_t} + \varepsilon_t \\ E(\varepsilon_t) = 0; \\ \sigma(\varepsilon_t) = const \end{array} \right.$$

Further steps of investigation consist of scatter plot analysis, correlation analysis, linear regression analysis, R-squared test, GQ-test (test for homoscedasticity), DW-test (test for residuals) and forecasting.

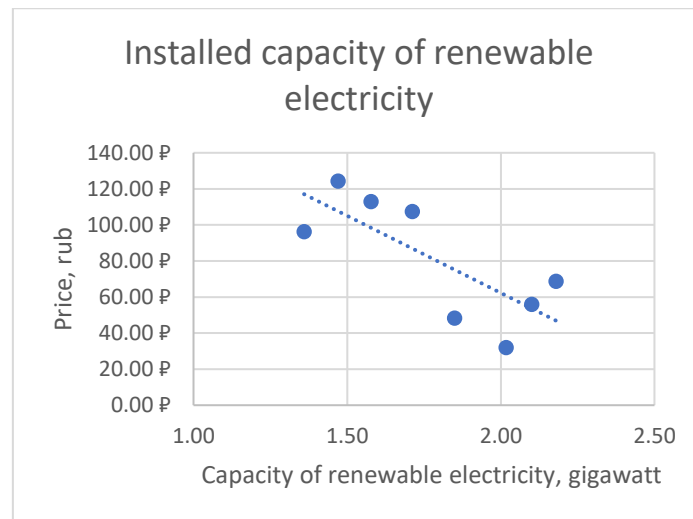
Scatter plots are constructed:



Scatter plot.1



Scatter plot.2



Scatter plot.3

Construction of the initial model with changed variables:

$$\left\{ \begin{array}{l} PO_t = a_0 + a_1 \cdot Ct + a_2 \cdot I_t + a_3 \cdot UR_t \\ E(\varepsilon_t) = 0; \\ \sigma(\varepsilon_t) = const \end{array} \right.$$

T-test with new variables shows the following situation: only one of all three variables passes T-test. However, two failed variables were not eliminated from the model. According to another research works, the world oil consumption and installed capacity of renewable electricity are really significant for the formation of Brent oil price.

The estimated model:

$$\left\{ \begin{array}{l} PO_t = 952,05 - 0,19 \cdot Ct + 43,70 \cdot I_t - 1,66 \cdot UR_t \\ R^2_{adj} = 0,98 \\ F = 19,16; \\ df1 = 3; df2 = 2; \\ DW = 2,61; GQ = 37,97 \end{array} \right.$$

The main target of the investigation is the forecasting of future values. Forecasting is made after the model meets all criteria from previous steps. R^2_{adj} equals to 0,98 which means that the variance of Brent price is explained by world oil consumption, installed capacity of renewable electricity and the USD/RUB exchange rate. Such a high level of R^2 means that there can be a multicollinearity. F-test is used to eliminate the randomness of R^2 and detect quality of the model specifications. We need information on the right-tail Fisher distribution. In this case F_{crit} equals to 19,16 while F equals to 66,80. F_{crit} is less than F value, that means that the quality of model is high and R^2 is not random. So,

if the the world oil consumption rises by 1 million tonnes, the price for Brent oil will decrease by 0,19 rubles. Model is successfully investigated, the forecasting is made (Tab.2):

	Forecast	
Positive	Neutral	Negative
124,00	31,40	12,41

Tab.2 Forecasting analysis

In a positive situation price for Brent oil will rise to 124,00 rubles which is actually good for Russian oil enterprise sector and Russian economy in general because oil sector is one of the main drivers for Russian domestic economy. Neutral forecast equals to 31,40. And the worst situation will be in negative forecasting, the price of Brent oil will fall to 12,41.

References

1. Бородач Ю.В. К вопросу о ценообразовании на мировом рынке нефти в современных условиях// Изд-во: Автономное образовательное учреждение высшего профессионального образования «Ленинградский государственный университет имени А.С. Пушкина». - 2015.
2. Крюков В., Маршак В.Д. Оценка параметров развития российского нефтегазового сектора// Вопросы экономики. - 2010.
3. Трегуб И.В. Математические модели динамики экономических систем. – М.: Финансовая академия при Правительстве Российской Федерации. 2009. 120 с.
4. Трегуб И.В. Прогнозирование инновационного развития рынка телекоммуникаций. // Обозрение прикладной и промышленной математики. 2013. Т. 20. № 2. С. 186-187.
5. Трегуб И.В. Моделирование инфляционных процессов в российской экономике. // Фундаментальные исследования. 2009. № 1. С. 86-87.
6. Tregub I.V. Econometrics. Model of Real System. - М.: PSTM. - 2016. 164 p.
7. Трегуб И.В. Эконометрика на английском языке. – М.: 2017.
8. Эдер Л., Филимонова И. Экономика нефтегазового сектора России// Вопросы экономики.- Изд-во: НП «Редакция журнала «Вопросы экономики»». - 2012.