

Forecasting the Export Energy Policy of Russia in Terms of Volatility of World Prices on Resources

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Abstract

Forecasting the export energy policy is an important tool for creating Russia's development strategy for the long term. The dependence of the budget on energy prices makes us look for new and more effective methods of assessing and predicting the impact of internal and external risks to the domestic economy. In terms of volatility of international oil prices on the quality of the prediction depends on the stability and balance of revenues and expenditures of the federal budget.

Keywords: oil market, forecasting, energy policy, export policy, volatility of resource prices

1. Introduction

The budgets of the largest exporting countries energy resources are largely dependent on macroeconomic indicators such as exchange-traded commodity prices, global economic growth, as well as the needs of the global economy in this commodity.

For this reason, in the economic literature, much attention is paid to the analysis of trends and prospects in the global oil and gas markets, as well as the calculation of risks and potential losses from price deviations from the targets. In this approach, economists differ significantly. Several scientists analyze the oil market in the first place from the position of the concept of asymmetric information [1,2]. Other authors are developing various scenarios of the situation on the commodity markets through a variety of econometric models and techniques of risk management [3,4,5,6]. Some authors recognize the central role Exporting Countries, OPEC, particularly Saudi Arabia, and urged making forecasts based on the analysis of socio-economic development of the country [7]. We can also highlight the research that argues that trends and movements in global commodity prices is the basis of the interaction of traditional and spot markets [8].

We can also mention the concept of forecasting commodity prices in real time on the basis of detailed analysis of volatility over the last 20 years [9]. For Russia, the issue of quality and comprehensive forecasting of energy prices for Russia is also very actual, and some works of Russian scientists are devoted to this problem [10,11,12].

2. Theory

Prediction of long-term socio-economic development of the Russian Federation for the period up to 2030 - is one of the most important documents of the Russian economy. This paper describes the main directions of development of the economy, as well as the expected results. Based on the long-term prognosis is developing a strategy targeted programs, and other planning documents.

In the long-term prognosis there are considered three scenarios:

- Conservative;
- Innovation;
- Target (formable).

Conservative scenario (Option 1) is characterized by moderate long-term growth of the economy on the basis of active modernization of fuel, energy and raw materials sectors, while maintaining the relative backlog in civil high- and medium-tech sectors.

In the conservative scenario modernization of the economy will focus mainly on foreign technology and knowledge.

Innovation scenario (option 2) is characterized by increased investment focus of economic growth. The script is

based on the creation of a modern transport infrastructure and competitive sector of high-tech industries and knowledge economy, along with the modernization of raw complex.

Target (forced) scenario (option 3) is designed based on the innovation scenario, while it is characterized by forced growth, increased private savings and the creation of a powerful export sector products with high added value.

Scenario A - low oil prices (less than \$ 80. Per barrel).

Scenario C - high oil prices (more than \$ 80. Per barrel).

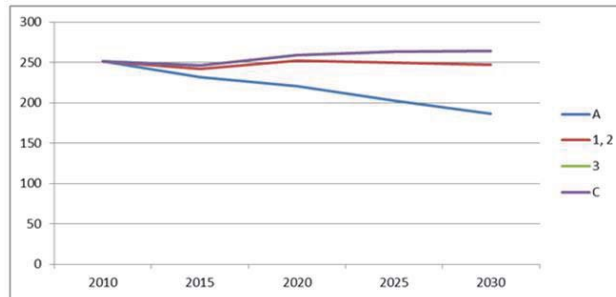


Fig 1. Export of oil, million tons

Figure 1 shows the scenarios of oil exports. Scenarios 3 and C coincide.

Let's consider a scenario in terms of low oil prices. Exports will decline quite rapidly. In 2010, exports amounted to 251 million tons, in 2015 exports fell by 19 million and reach 232 million tons. By 2030, exports will be below 200 million tons - 186 million tons, which is almost a third lower than the 2010 level.

Data for the conservative and innovative scenarios are identical. Exports will fluctuate. In 2015, there will be a decrease in the volume of exports, but exports in 2020 will be increased by 10 million tons, and then again followed by a decline.

Compared with the export of oil, natural gas exports will grow under all conditions. According to the conservative scenario in 2030 the export of natural gas will be 238 BCM, up 50 BCM more than was exported in 2010. According to forced scenario exports compared to 2010 will increase by 79 BCM. The highest rates of growth in export volumes of natural gas will be at innovative development of the economy (Figure 2).

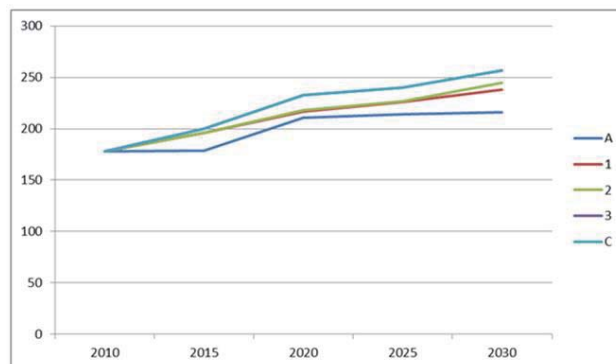


Fig 2. Export of natural gas (pipeline), BCM

3. Results

Based on analysis of long-term forecast, we can make the following conclusions:

- Export of petroleum products will decline;
- Exports of natural gas will increase in all scenarios considered;
- Export and production of oil will rise or fall depending on the scenario development;
- Production of gas (natural) will increase in all scenarios.

We can forecast the volume of mineral products in foreign trade in the medium term with the help of regression analysis. For the analysis we use the data of the Federal State Statistics Service from 2000 to 2012.

Used for the regression analysis data are shown in Table 1.

Table 1. The main parameters of oil and gas industry (2000-2012)

	y Volume of mineral products in exports as% of total	x1 Average export prices for crude oil (US. Dollars per ton)	x2 average export prices for natural gas, for 1000 m3	x3 Средние экспортные цены на нефтепродукты (долл. США за тонну)	x4 Average export prices of petroleum products (US. Dollars per ton)	x5 Extraction of natural gas, bln. M3	x6 Exports of crude oil, mln. tons	x7 Exports of natural gas, bln. M3	x8 Exports of petroleum products, mln. Tons
2000	53,8	175	85,9	174	324	555	145	194	62,7
2001	54,7	151	101	148	348	551	162	181	63,5
2002	55,2	154	85,7	149	380	563	188	186	75,4
2003	57,3	174	106	181	421	581	223	189	77,7
2004	57,8	226	109	234	459	591	258	200	82,4
2005	64,8	330	151	348	470	598	253	207	97,1
2006	65,9	412	216	429	481	612	248	203	104
2007	64,9	470	234	465	491	604	258	192	112
2008	69,8	663	354	676	488	613	243	195	118
2009	67,4	407	249	387	494	527	247	168	124
2010	68,5	546	273	529	506	593	247	174	133
2011	71,1	744	343	727	512	612	244	187	132
2012	71,4	754	348	750	519	592	240	179	138

After we calculated the correlations between the independent and dependent variables, we will leave 3 important indicators- x2 - the average actual export prices for natural gas; x7 – exports of natural gas; x8 - exports of petroleum products. The coefficient of determination $R^2 = 98,1\%$, which means that it is the high quality model.

On the basis of the regression analysis form the equation type $y = ax + b$.

$$y = 23,248 + 0,019 \cdot x_2 + 0,093 \cdot x_7 + 0,183 \cdot x_8$$

This equation is necessary to predict the volume of mineral products in foreign trade.

Substituting in this equation the values of x, and we get the forecast for the next five years (Table 2).

Table 2. Forecasting of volumes of mineral products in exports by 2018.

	y Volume of mineral products in exports as% of total	x2 average export prices for natural gas, for 1000 m3	x7 Exports of natural gas, bln. M3	x8 Exports of petroleum products, mln. Tons
2000	53,8	85,9	194	62,7
2001	54,7	101	181	63,5
2002	55,2	85,7	186	75,4
2003	57,3	106	189	77,7
2004	57,8	109	200	82,4
2005	64,8	151	207	97,1
2006	65,9	216	203	104
2007	64,9	234	192	112
2008	69,8	354	195	118
2009	67,4	249	168	124
2010	68,5	273	174	133
2011	71,1	343	187	132
2012	71,4	348	179	138
2013	74,6	378	181	149
2014	76,3	403	180	156
2015	77,9	428	179	163
2016	79,5	453	178	170
2017	81,1	478	177	177
2018	82,8	504	176	183

4. Conclusions

Thus, we can conclude that, regardless of changes in energy prices and the absence of significant external shocks volume of mineral products in Russia's foreign trade will increase by an average of 1.5% per year, reaching in 2018 82% of the total volume of goods that Russia exports.

The analysis does not allow to evaluate the factor of geopolitical instability, released to the fore in 2014, as a result of which the price of oil dropped to the lowest level during the last 5 years. However, the scenario of high oil prices estimated price of a barrel from \$ 80, and the scenario of low prices- less than 80 dollars. That is the least likely course of events, as most experts predict the price of oil is in the range from 80 to 100 dollars per barrel.

However, it appears that in the medium-term impact of foreign threats will have no significant impact on the performance of the commodity complex in Russia, especially in connection with the conclusion of the contract with the Chinese People's Republic and the start of the world's largest construction project of a gas pipeline.

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