Oil Industry in Russia: Retrospective Review, Current State and Development Prospects

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Abstract. Relevance of the issue selected for the research is directly correlated with Russia’s specialization in oil product exports. The oil industry competitiveness has become the foundation of the country’s economy and living standards. However, current macroeconomic uncertainty significantly affects this industry and despite the nationwide support, the consequences are seen in lower oil production both in physical and financial terms. This article analyzes changes in Russia’s oil industry during the world economic crisis (2008-2009), as well as during the period of economic sanctions against Russia (2014 till present). The estimated changes in output and return on sales in the period of macroeconomic uncertainty were assessed by means of the factor analysis. The development prospects of the oil industry in Russia were assessed by means of the retrospective analysis.

Keywords: macroeconomic uncertainty, oil industry, oil production, Russian economy, sanctions, factor model, exports.

1. Introduction

Russia has vast natural resources that form the base of the national economy and mainly drive the country’s specialization in raw materials. That being said, significant natural resources form a financial basis for the sustainable economic development and the real economy growth in the country.

The oil industry is distinguished by the inelasticity of demand, i.e., the demand will remain constant regardless of any price changes. Natural resource stocks and their correct usage have a direct impact on the growth rates of the national economy, determine the role and participation of Russia in the international division of labor, develop foreign economic ties and ensure social peace in the country.

The primary task is to study oil price changes. It is the world oil prices that are used as the basis to convert physical production measures into financial values. The present paper will cover the periods from 2005 to 2015 and from 2005 to 2017. [9]
Figure 1 shows current oil prices per barrel for the period from 2005 to 2017.

According to the TASS Information Agency, the oil barrel price hit its historic maximum of US$ 143.95 on July 4, 2008 but then it slumped to US$ 33.73 on December 26, 2008 fueled by the world crisis unfolded in the USA. The effect proved to be rather strong due to the following reasons:

• Speculative game with unreasonably high world oil prices, followed by the oil price plunge because of the crisis, has aggravated the stock market slump even further.
• Vulnerability to negative events, even of a local nature due to globalization and interdependence of national financial markets has led to lower local companies’ values because of the fall of stock on foreign markets. That directly affected quotations on the Russian stock market [2].

However, the oil market recovered fairly soon. In 2011, the oil price per barrel exceeded US$ 100, driven by the emerging political crisis in Libya and the following shrinkage in oil supply on that market.

The year 2014 saw the price decrease due to the excessive supply driven by high oil production in the USA and the resumption of oil shipments from Libya. Oil prices continued to fall even further, following the International Energy Agency’s monthly report with a forecast of lower oil demand. The price decrease was also caused by the inability of the Organization of Petroleum Exporting Countries (OPEC) to come to terms on oil production cut. As a result, oil prices dropped by 51% within one year. Additionally, the price was affected by the stock market crisis in China, Iran’s plans to boost its oil export after the relief of sanctions as well as the data on the USA’s continued commissioning of new oil production facilities [2].

In November 2016, at the meeting in Vienna (Austria), the OPEC members, Russia and several other oil-producing countries agreed to cut oil production. A decision was made to reduce oil production by 1.8 million barrels, as contrasted to the level of October 2016. To this end, Russia cut its average daily production by 2.7% (300 thousand barrels). The agreement was prolonged to the end of 2018, which facilitated lower supply and growth in oil prices [8]. Therefore, this illustrates how heavily the oil industry depends on the global market. Consequently, searching for the ways to ensure robustness and development of this industry is a pressing matter. The goal of this research is to prepare suggestions on how to ensure sustainable development of the Russian oil industry under macroeconomic uncertainty. The following objectives were set to achieve that goal:

1. Identify the impact of macroeconomic factors on the oil industry;
2. Build a development forecast for the Russian oil industry, as affected by such factors; and
3. Draft suggestions on how to ensure sustainable development of the Russian oil industry.

2. Literature review

It is worth to note that despite the growth in the output of oil products seen in the recent years on the back of the nationwide support policy, there is a downward trend in oil production, which is key for the oil industry development in Russia. Such authors as E. Zinkevich and T. Mamakhatov say that oil production in Western Siberia has been showing a 2-3% reduction for the past 10 years. This trend cannot be offset by putting into operation new oil fields until 2030, which means that the annual increase hardly covers oil production in the country. The author suggests that the oil recovery factor should be increased. It currently amounts to 25% in Russia and 40-50% in the USA. To this end, it is necessary to apply enhanced oil recovery (EOR) methods. However, this may be rather hard to implement in practice due to related taxation costs, such as export duty and mineral extraction tax [3].

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Reasons for the emergence of this trend vary but the research community generally agrees that the key reason was the sanction pressure from the leading countries. Experts from the Energy Center of the Skolkovo Business School believe that the high vulnerability of the Russian oil and gas sector to sanctions will emerge by 2025. No access to new equipment and underdeveloped own technologies for oil production on the back of a proportionately higher share of hard-to-recover reserves will start doing an irreparable harm to the industry [7]. That being said, all oil businesses are making efforts to offset the sanction pressure on the industry. Oil companies are trying hard to design new equipment and overcome its deficit for offshore projects, hydraulic fracturing and shale oil production. Nevertheless, as of today, the import substitution program in the oil production industry has not shown any positive results [7]. Consequently, the oil production area in Russia is changing. Growing weight of eastern regions of Russia and offshore oil production underpins the current trend of geographic shift of oil production from the west to the east. In this respect, the following territories are being prospected to increase oil production: sedimentary basins of the Russian part of the continental shelf of the Arctic Ocean, frontier onshore provinces as well as large maiden fields in Yamalo-Nenets Autonomous Region. Nonetheless, the size of recoverable oil reserves is being significantly reduced. Moreover, oil quality is deteriorating as a result of a high share of hard-to-recover reserves [5].

It is important to realize that sanctions have a cumulative effect, with negative trends becoming clearer as early as in 2020. This may result in a 5% lower oil production (in contrast with the current production level) in Russia by 2025 and a 10% decline by 2030, which is rather sensitive for the Russian economy. In respect of development strategies of the oil industry, Forbes’ experts, for instance, are convinced that consequences of the sanctions for the oil industry in Russia will be rather severe. Thus, it is necessary to step up investments in the development of new oil production technologies as early as possible. Otherwise, the situation may turn into a new crisis [8].

3. Methods

This paper reviews effects of the economic uncertainty in Russia’s oil industry on workforce and return on sales. The research methodology is based on the factor analysis techniques. Thus, the paper analyzes changes in the average annual output per worker and workforce size during the period from 2005 to 2015 as well as return on sales in 2005-2017 covering the world economic crisis and sanctions imposed on Russia. Therefore, it becomes possible to assess how macroeconomic uncertainty has affected the oil market in Russia.

This is a two-phase research. The first phase is to build a factor model to identify trends in the oil industry workforce changes and their average annual output. The second phase is to build a factor model to identify changes in return on sales in Russia’s oil industry.

Research routine for the first phase:
1. Convert oil prices to constant prices; and
2. Conduct the factor analysis of the output by applying the following factor model: \( PO = WS \times AO \), where \( PO \) is product output, \( WS \) is workforce size and \( AO \) is average annual output per worker.

Research routine for the second phase:
1. Compute profit in constant prices, similar to step 1 of the first phase;
2. Conduct the factor analysis of return on sales by applying the following factor model: \( R = P / R \), where \( R \) is return on sales, \( P \) is profit and \( R \) is revenue; and
3. Analyze results, identify trends and justify the data obtained with facts from information sources and produce the oil industry development forecast.

4. Results and Discussion

The factor analysis results are shown in Figure 2. The figure illustrates that the output is mostly affected by the average annual output per worker. The maximum value was recorded in 2008, one year before its dramatic drop, and amounted to +48,289.81 million US dollars, with +66,777.54 million US dollars due to changes in the annual average output and -18,487.7 million US dollars caused by reduction in headcount. The minimum value of (-95,520.7 million US dollars) was in 2009, the year of the Russian stock market crisis. The second worst was 2015 (-86,509.9), including the minimum annual average output per worker of -90,827.1 million US dollars driven by slumping oil prices in that year and consequent direct impact on oil production in monetary terms. Additionally, in 2015, adverse consequences of the sanctions imposed on Russia became most obvious.
According to the RosBusinessConsulting news agency, in September 2014, the US sanctions limited access to the American capital market for the largest Russian companies, namely, Gazprom, Rosneft, Novatek, Transneft and Gazprom Neft. At that time, the Russian oil and gas sector accounted for almost half of the country’s budget and about 70% of its export, which led to a substantial loss of sales. This indicator reduced almost twofold in 2015 against 2014 [8].

Then let us analyze return on sales of Russian oil during the period from 2005 to 2017: how the world financial crisis and sanctions against Russia affected revenues and profit, and how that affected return on sales.

It should be noted that export of crude oil and oil products accounts for about 47% and constitutes substantial income for Russia. The country possesses about 5.5% of all oil reserves in the world. As at 2015, Russia was the second biggest oil exporter. Fuel export revenue is one of the key sources of the Russian budget income and also a clear indicator of the future state of the national economy [1].

Profit should be computed in constant prices (Figure 3).
As follows from the analysis in Figure 4, revenue and export have a similar pattern of growth and decline in terms of value. As mentioned above, the year 2009 saw a dramatic decline both in oil production and export because of the global crisis. It is noteworthy that production in monetary terms had been growing prior to that year and after it.

Return on sales was calculated based on the factor model as shown in Figure 5.

Return on sales demonstrates that export accounts for about 50% and has a downward trend. The lowest value is observed in 2014, when sanctions against Russia were imposed, which led to export reduction. It should be noted that a small annual growth is observed after that.

As expected, after 2015, because of economic sanctions against Russia linked to events in Ukraine, export of energy resources from Russia started to decline. However, Russia shifted its export strategy to Asian markets. In May 2014, for instance, Gazprom signed a contract with China National Petroleum Corporation (CNPC) during Vladimir Putin’s visit to China. Oil reserves continue to diminish and it is assumed that the highest oil production will be recorded during the period from 2015 to 2020 and then crude oil and oil products volumes, regardless of sanctions or oil share in the total energy export of Russia, will no longer grow. At the same time, gas, coal and electronics supplies will start to increase. Another forecast is that oil exports will drop by one third by 2040 [1].

5. Conclusions

Therefore, it can be concluded that a decline in oil production is inevitable, which leads to less workforce required in this industry. Moreover, return on sales is getting lower due to sanctions against Russia, which hinders Russia’s export of oil even further. It is expected that by 2040 export of crude oil will drop by one third. As a result, decreasing oil production and oil export are observable even now. As it is impossible to boost the growth of natural resources, the recommendation would be to shift strategically to other industries and start to invest in new technologies. It is noteworthy that out of all energy industries only the coal and gas sectors have a potential to step up their national presence on foreign markets as a response to the changing external environment [1], rendering financial reinvestment in the development of these energy sectors justifiable. The
future research will review effects of other resource-based factors on the oil industry and formulate potential scenarios for the industry transformation under the current macroeconomic uncertainty.

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