

FaR 2021**International Forum “Freedom and responsibility in pivotal times”****THE IMPACT OF THE OIL MARKET ON THE SOCIO-ECONOMIC DEVELOPMENT OF RUSSIA**

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Abstract

Currently, the oil and gas complex is a determining factor in any state's economic development. Oil and gas are employed in nearly every area of the economy, distributing economic advantages and serving as the foundation for commercial products. In this context, strong control of the oil and gas complex, particularly state regulation, is required. For competitive environment study, the market concentration indices CR-3, CR-4, Herfindahl-Hirschman index, Hall-Teidman index, and Lind index were produced. After studying the competitive landscape of the Russian oil sector from 2015 to 2019, it was discovered that the Russian oil market was somewhat concentrated in 2015-2016, and highly concentrated in 2017-2019; the Russian oil market was a monopolistic competition market for the whole time under study. The influence of integration procedures on indices of the country's socioeconomic progress was also examined in the research. GDP, economic growth, consolidated budget revenues, international trade balance, and oil and gas condensate production were all identified as factors impacting the country's socio-economic development. Integration procedures on the oil market have a fairly significant impact on GDP and consolidated budget revenues, according to the research, while they have a modest impact on the volume of oil production with gas condensate. At the same time, oil market integration has no major influence on economic growth or the international trade balance.

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Keywords: Oil and gas complex, state regulation, competitive environment analysis, correlation and regression analysis, pricing



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1. Introduction

It is worth noting that today's Russian oil sector is dominated by vertically integrated oil corporations (VIOCs). They are in charge of 90% of oil production and refining, as well as providing petroleum products to end users. VIOC is a conglomerate of big energy businesses with subsidiaries and direct control of oil refineries. Simultaneously, the subsidiary are functionally self-contained firms, complete with their own management center, resource base, and so on. The oil and gas sector is not only the largest, but it also plays a major part in the state's socioeconomic growth, employing almost two million people. Furthermore, the oil and gas industry remains the country's primary source of foreign money and tax income. At the same time, it contributes for around 12% of overall industrial production. This is owing to the fact that the oil industry is the Russian Federation's largest taxpayer. As a result of the importance and reliance of key social and economic indicators on the performance of the oil and gas complex, effective regulation, particularly state control, is required.

The following procedures will be carried out throughout the oil and gas complex's state adjustment process:

- management of operations in the areas of subsurface soil protection and use, waste mining and usage, mineral resources, and groundwater (Klychova et al., 2019a; Liu & Ramirez, 2017);
- the management of packages shares owned by the state (Jiang & Liu, 2021; Khalfaoui et al., 2019);
- control of the environment and geology over the safe conduct of activities, as well as the sensible use of oil and gas (Esen et al., 2020; Schimmel et al., 2019);
- tax, credit and pricing policies (Alao & Payaslioglu, 2021; Castillo et al., 2020; Ederington et al., 2021; Leontieva et al., 2018);
- licensing of activities;
- antimonopoly regulation (Talipova et al., 2019).

The state regulation of the oil and gas complex has the following goals:

- to establish world-class firms in the key areas of the oil and gas industry;
- to monitor the execution of critical choices made by oil and gas firms, such as investment decisions for the creation of production facilities (Klychova et al., 2019b);
- to ensure the country's energy security (Axon & Darton, 2021; Karatayev & Hall, 2020; Klychova et al., 2019a; Rajavuori & Huhta, 2020);
- improving the associated evaluated standard legal regulation;
- creation of effective transport and logistics system (Rahman et al., 2019; Tang & Veelenturf, 2019).

The federal regulation aims to enhance social and economic indicators, investment attractiveness, and the quality and level of life of the Russian Federation's people. The scope of government control is determined by socio-economic growth and geopolitical circumstances. We were able to identify the following steps of implementation after studying the theoretical underpinnings of oil market analysis: to study goods and services; to research supply and demand, to research the behavior of current and future customers; to research the market environment; to research pricing dynamics for the aim of maximizing

product marketing in the market place (Alamgir & Amin, 2021; Lin & Bai, 2021; Liu et al., 2020; Raheem et al., 2020).

It is regarded as a purpose of branch market analysis to assign a collection of enterprises that have common interests in one area of the economy and form an economic branch. The production, distribution, and consumption of a certain type of commodities or service constitutes the economic industry. All indicators and the market as a whole are evaluated in an integrated manner using analysis tools. Statistical data processing, multivariate methods, simulation methods, regression methods, correlation methods, statistical theory, hybrid methods, deterministic methods, and other methodologies are utilized in market research. The conditions and aims of the analysis impact the selection of one or more methods. Furthermore, the objectivity of indicators is impacted by the combination of several methods.

The raw materials market conjuncture is defined as a certain economic position on the market at a specific moment. The following actions are carried out during the raw materials market research: Conjuncture data is collected and analyzed, and the market is evaluated holistically and differentially. The market's scale is defined; market trends are identified, examined, and predicted; seasonality and the cyclical pattern of market development are reviewed and studied.

2. Problem Statement

Currently, the oil and gas complex is critical to any state's economic success. Oil and gas are employed in almost every area of the national economy, distributing economic advantages and serving as the foundation for market-demanded products. Russia's oil and gas complex has a substantial influence on the country's economic development. In this regard, there is a need for the organization and implementation of effective and competent state management in this industry; regular analysis of the oil market's competitive environment; and conducting correlation and regression analyses of the impact of assimilation in the oil and gas complex on socioeconomic indicators.

3. Research Questions

The subject of the study is the oil market and integration processes affecting the socio-economic development of Russia.

4. Purpose of the Study

The purpose of the study is to analyze the oil market and identify the impact of integration processes on the socio-economic indicators of Russia's development.

5. Research Methods

The following methods were used in the study: statistical data processing, comparison method, grouping method, correlation and regression analysis.

6. Findings

We have chosen five companies to characterize the oil market in the Russian Federation: public joint-stock company (PJSC) Gazprom Neft; PJSC «Lukoil»; PJSC «Rosneft Oil Company»; PJSC «Tatneft»; and PJSC «Surgutneftegaz».

Gazprom Neft PJSC is a vertically integrated oil firm. Gazprom Neft's structure includes more than 70 oil producing, refining, and marketing firms in Russia, as well as neighboring and far-flung nations. The firm processes over 80% of the oil produced, exhibiting one of the finest production-to-processing ratios in the Russian sector. Gazprom Neft is one of Russia's three major oil refining firms, and it ranks fourth in terms of production.

PJSC «Lukoil» is one of the world's largest vertically integrated oil & gas companies.

The Company's operations can be divided into four main operating segments: exploration & production; refining, marketing and distribution; chemicals; and power generation. PJSC «Rosneft Oil Company» is the Russian oil industry's leader and the world's biggest public oil and gas enterprise.

The main activities of PJSC «Rosneft Oil Company» are the search and exploration of hydrocarbon deposits, the production of oil, gas, and gas condensate, the implementation of projects for the development of offshore fields. Rosneft is a global energy firm with significant assets in Russia and a diverse portfolio in prospective international oil and gas markets. PJSC «Tatneft» a Russian oil company with dynamic development of oil and gas production, refining, oil and gas chemistry, tire complex, gas station network, electric power industry, development and manufacture of equipment for oil and gas industry and a block of service structures.

Public Joint Stock Company «Surgutneftegas» is one of Russia's biggest privately held vertically integrated oil enterprises, integrating research and development, exploration, drilling, production, oil and gas processing, and marketing.

Surgutneftegas PJSC is involved in hydrocarbon prospecting, exploration, and production in three Russian oil and gas provinces: West Siberian, East Siberian, and Timano-Pechora. Surgutneftegaz processes crude oil and related petroleum gas, hydrocarbons for different petrochemical products, and a variety of petroleum products (Klychova et al., 2021).

To analyze the competitive environment it is necessary to calculate such indicators as market volume, market concentration index CR-3, CR-4, Herfindahl-Hirschman Index (HHI), Hall-Teidman Index (HT), Lind Index (Figure 1).

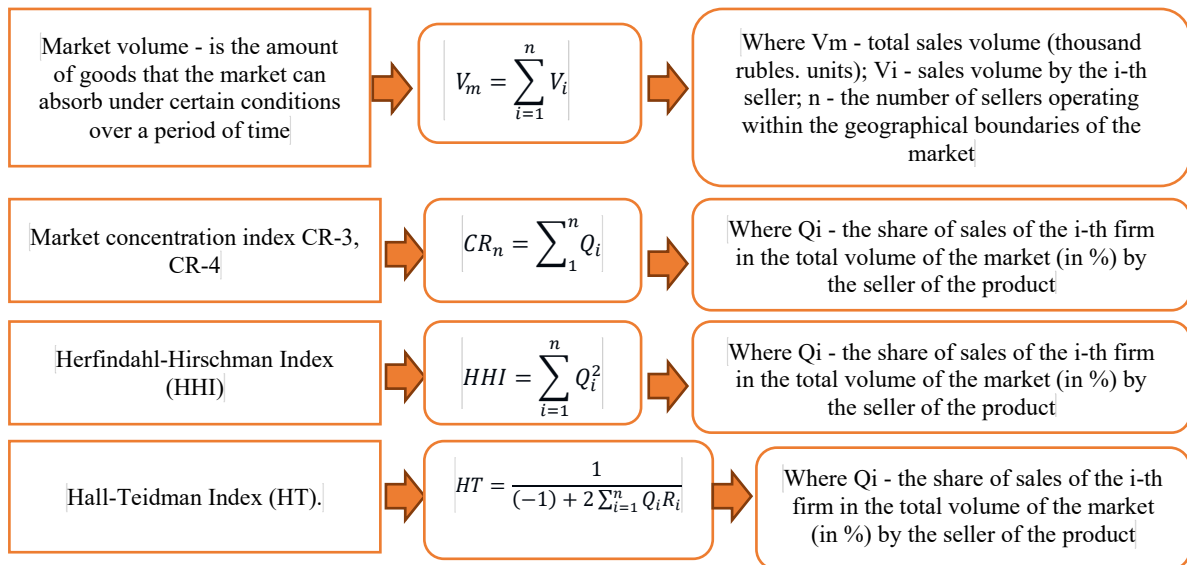


Figure 1. Indices used in the analysis of the competitive environment Note: Reprinted from Klychova G., Zakirova A., Shadieva M., Raheem U., Zakirov A. Analysis of the oil market and the impact of integration processes on socio-economic development indicators of Russia. E3S Web of Conferences 284, 07012, (2021). <https://doi.org/10.1051/e3sconf/202128407012>

Using these indices, let us analyze the competitive environment in the Russian oil market in the period 2015-2019.

First of all, let us find out what were the indicators of oil production with gas condensate in the 5 largest oil companies of the Russian Federation during this period (Figure 2).

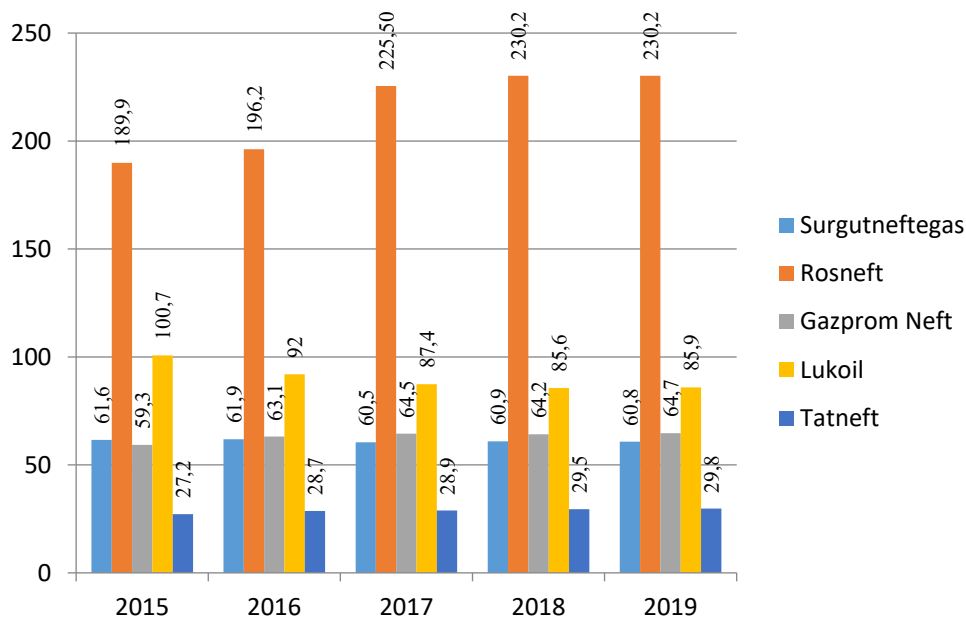


Figure 2. Oil production with gas condensate, million tons Note: Reprinted from Klychova G., Zakirova A., Shadieva M., Raheem U., Zakirov A. Analysis of the oil market and the impact of integration processes on socio-economic development indicators of Russia. E3S Web of Conferences 284, 07012, (2021). <https://doi.org/10.1051/e3sconf/202128407012>

The figure shows that such companies as Rosneft, Gazprom Neft, Tatneft have a tendency to increase oil production with gas condensate. Thus, Rosneft's production increased by 21,2%, Tatneft's production increased by 9,6%, and Gazprom Neft's production increased by 9,1%.

At the next stage of the study we determined the share of the analyzed oil and gas companies in the structure of the oil market (Figure 3).

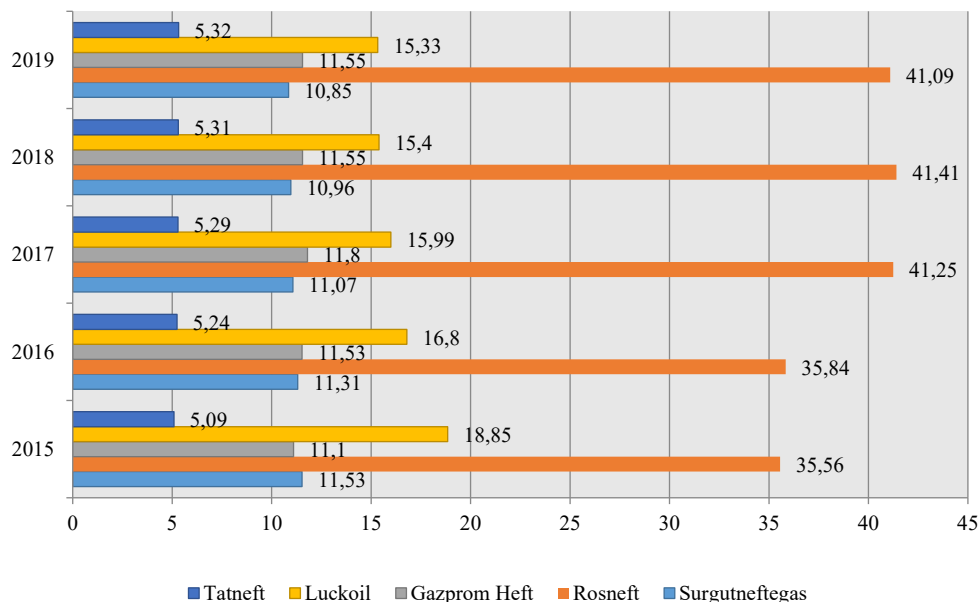


Figure 3. Share of oil and gas companies in the oil market structure, % Note: Reprinted from Klychova G., Zakirova A., Shadieva M., Raheem U., Zakirov A. Analysis of the oil market and the impact of integration processes on socio-economic development indicators of Russia. E3S Web of Conferences 284, 07012, (2021). <https://doi.org/10.1051/e3sconf/202128407012>

The figure shows that such companies as Rosneft, Gazprom Neft, Tatneft increased their share in the oil market structure. The share of Rosneft increased by 15,6%, and the shares of Gazprom Neft and Tatneft by 4,1% and 4,5%, respectively.

Having determined the share that each oil and gas company has in the structure of the oil market, we can establish the rank that will be used in calculating the Hall-Taidman index (rank 1 - Rosneft, rank 2 - Lukoil, rank 3 - Gazprom Neft, rank 4 - Surgutneftegas, rank 5 - Tatneft).

Further calculation of Herfindahl-Hirschman (HHI) and Hall-Teidman (HT) indices as well as market concentration indices CR-3, CR-4 (Fig. 4) showed that the oil market became highly concentrated in 2017-2019 from moderately concentrated in 2015-2016. In addition, the analysis made it possible to conclude that in the period under study the oil market is characterized by monopolistic competition.

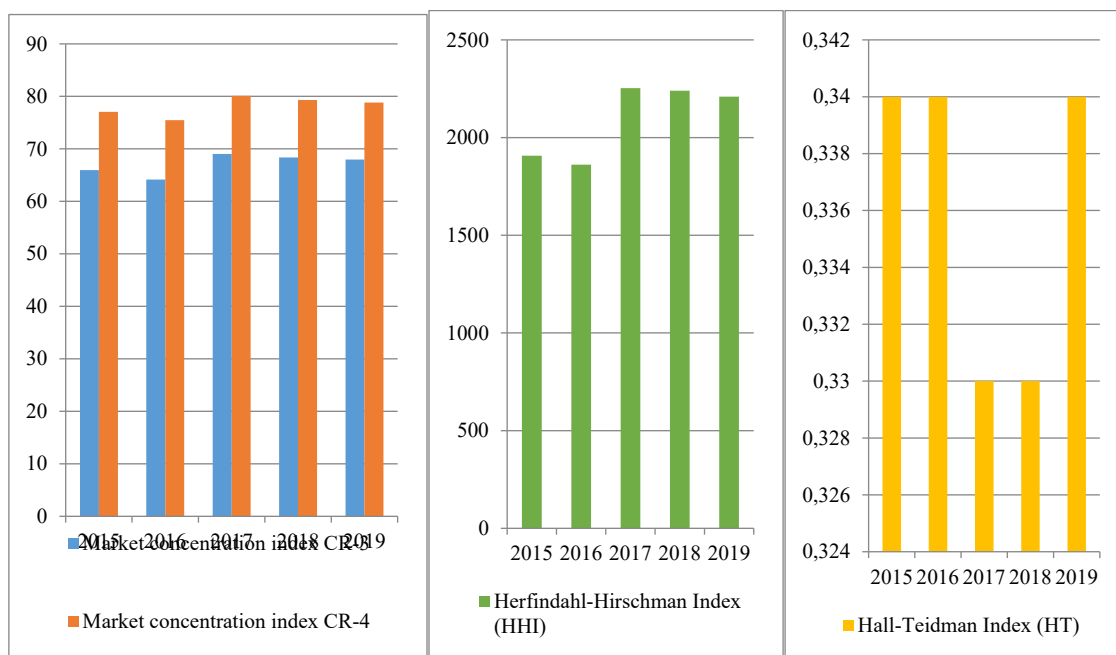


Figure 4. Dynamics of indicators used in the analysis of the competitive environment

Special attention during the study was paid to the definition of companies that occupy a dominant position in the market.

In accordance with Article 5 of the Federal Law «On Protection of Competition» dated July 26, 2006 № 135-FZ, a dominant position is the position of a business entity (group of persons) or several business entities (groups of persons) at a certain commodity market, which allows such business entity (group of persons) or business entities (groups of persons) to have a decisive influence on general conditions of goods circulation at the corresponding commodities market, and (or) to eliminate other business entities from this commodities market, and (or) to impede access of others to this market. The position of a business entity (except for a financial organization) is recognized as dominant:

1) whose market share of a specific commodity exceeds fifty percent, unless it is established during the consideration of a case on antimonopoly legislation or during state control over economic concentration that, despite the excess of the above value, the position of a business entity on the commodity market is not dominant;

2) whose share of a specific commodity market is less than fifty percent, if the antimonopoly authority establishes the business entity's dominant position on the commodity market based on unchanged or insignificant changes in the business entity's share of the commodity market, the relative amount of shares belonging to competitors on this commodity market, the possibility of new competitors entering this commodity market, or other criteria characterizing the commodity

In order to determine the companies occupying a dominant position in the oil market, we calculated the Lind index (L). The calculations made it possible to conclude that such companies as Surgutneftegaz, Lukoil, Rosneft and Gazprom Neft had a significant influence on the oil market.

During the analysis of the impact of integration processes on the socio-economic development of the country, we identified a number of indicators (indicators of integration processes and indicators of socio-economic development).

The number of mergers and acquisitions, the total volume of all mergers and acquisitions, the total industry volume of mergers and acquisitions, and the overall industry volume of all domestic transactions will all operate as indications of integration processes. The gross domestic product (GDP), consolidated budget revenues, economic growth, international trade balance, and oil and gas condensate production are all indices of the country's socioeconomic progress (Klychova et al., 2021).

During the analysis, we chose the characteristics that are most important for a certain indicator of socioeconomic growth. To that end, we measured the amount of multicollinearity and tested the indicators of integration processes to determine their importance. Furthermore, the degree of effect of integration process indicators on socioeconomic development indicators was identified. The coefficient of determination was computed and a regression equation was constructed for this purpose.

7. Conclusion

Thus, in the course of the study the oil market was analyzed, the factors that affect the socioeconomic development of the country were identified

The calculation of the Herfindahl-Hirschman (HHI) and Hall-Teidman (HT) indices and CR-3, CR-4 market concentration indices showed that the oil market from moderately concentrated in 2015-2016 became highly concentrated in 2017-2019. In addition, the analysis made it possible to conclude that in the period under study the oil market is characterized by monopolistic competition. By conducting a correlation and regression analysis, we determined that gross domestic product and consolidated budget revenues were moderately strongly influenced by integration processes in the oil market, while the volume of oil production with gas condensate was moderately influenced. At the same time, integration processes in the oil market did not have a significant impact on economic growth and the balance of foreign trade (Klychova et al., 2021).

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