

Financial Risk Management of Companies Operating in the Oil Sector in the Context of Globalization Based on the COVID-19 Economic Impact

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Abstract

The globalization of the world economy finds expression in the process of the global space being altered where it transforms into a single zone open to the free and unrestricted movement of goods, services, information and capital. A global space makes it easy for ideas to spread and for their carriers to move around thus promoting the development of relevant institutions and putting in place systems of interaction between them. The spread of the COVID-19 pandemic has disrupted the unification of economic life rules and the transformation of the system of interstate regulation of global economic cooperation. There has been a disruption in technological, logistics and business chains resultant from the world's leading national economies closing and many economic entities which operated in the "real economy" shutting down. These "pandemic-caused" factors have put substantial restrictions on the income of companies and their staff while also fueling unemployment. The authors review financial risks common to the oil industry such as currency, credit, interest rate, price risk and liquidity risk all produce a direct impact on the overall financial standing of companies, that is, they affect solvency. Proceeding from this, the authors identify significant factors that affect the level of solvency. The authors offer a set of stabilization measures aimed at managing these factors in order to have a positive impact on the performance indicator that is solvency. This calls for an effective financial risk management system to be put in place, one which will ensure sustainable development and competitiveness for the organization under review in an uncertain environment.

Keywords: Financial Risk, Management, Environment, Oil Industry, Globalization.

I. INTRODUCTION

Globalization has brought along a single cultural, informational, legal and economic space on a global scale. The spread of the COVID-19 pandemic has disrupted the unification of economic life rules and the transformation of the system of interstate regulation of global economic cooperation. There has been a disruption in technological, logistics and business chains resultant from the world's leading

national economies closing and many economic entities which operated in the "real economy" shutting down [9]. These "pandemic-caused" factors have put substantial restrictions on the income of companies and their staff while also fueling unemployment. Changing environmental conditions has changed the structure of risks that affect the financial results of companies.

In the scientific literature, many authors consider risk as uncertainty in a situation where making a choice is unavoidable in the process of which the probability of achieving the expected result, failure, or deviation from a goal may be assessed quantitatively and qualitatively [14; 15; 16; 4; 8]. Consequently, risk poses an unpredictable threat to the economic security and business continuity of an organization [6; 7; 11; 5; 13; 2].

Among the root causes for risks are economic and political changes in a country, changes in interest rates; scarcity of resources; unstable market situation; inflationary and deflationary processes in the economy; changes in existing legislation; declining consumer interest in manufactured products or services; the use of obsolete technology and manufacturing techniques; lack of skilled staff [3].

The leading risk characteristics are known to encompass:

- a) Inconsistency;
- b) Alternativeness;
- c) Uncertainty.

The inconsistency aspect comes down to the fact that if all risks are properly taken into account, there may be an acceleration of social and technical progress, while on the other hand, this progress may decelerate with risks not properly taken into account.

Alternativeness implies a choice from among several possible solutions. Where there is no choice, there is no risk.

Uncertainty can be defined as the lack of knowledge of exact information or such information being unambiguous.

II. METHODS OF RESEARCH

This study used a retrospective method that uses data for a certain period of time. The study also used methods of analysis and synthesis, statistical data analysis as well as regression analysis.

III. RESULTS AND DISCUSSION

The financial activities of the corporation under review in all of its various forms are accompanied by numerous risks whose degree of influence upon financial performance is quite high. The risks associated with the financial activities of the corporation under review are set aside as a special group of risks called financial risks.

Financial risks, on the one hand, represent the risk of potentially possible or probable loss of resources or lost earnings as compared to the standard operation level required for efficient use of resources in a specific area of activity. On the other hand, additional profits may be derived from the risk.

I. Blank (2014) [3], I. Balabanov (2015) [1], T. Sevruck and others [12] have all made major contributions to the assessment of financial risk and individual components thereof.

Professor I. Blank interprets risk as "the probability of adverse effects in the form of loss of income or capital in a situation of uncertainty surrounding financial and economic activity".

Professor I. Balabanov [1] understands risk to be "a possible risk of losses stemming from the specific nature of certain natural phenomena and types of human activity". However, the author believes that from an economic standpoint, the risk is the probability of an event whose occurrence brings about the following financial results: negative, zero or positive results, which economically speaking represent a loss, lack of profit and profit, respectively.

T. Sevruck believes that risk is a situational characteristic of the activity of any legal entity, including the unknown result and the likelihood of adverse effects in the case of failure [12].

Therefore, the analysis of definitions carried out in this paper suggests that financial risk can be defined as the probability of adverse financial consequences occurring in the form of reduced (lost) of financial resources, capital or profitability of an organization when making one of a number of alternative solutions in the course of financial and economic activities in an environment of uncertainty.

Risks vary in significance depending on the area in which an organization operates. The banking sector sees the greatest losses stem from credit and market risks. Contractors' bankruptcy risks and operational risks happen to be the most substantial risks for clearing organizations. That being said, companies which operate in the real economy are exposed to specific risks due to their sector profile and specific production process characteristics.

Studies by the authors show the relationship between the types of financial risks and the aspects of activities of non-financial companies. Financial risk classifications mention credit, inflationary, currency, and interest-rate risks most frequently.

As can be seen, financial risks have an impact on all areas of activity of companies which operate in the nonfinancial sector and accompany them when such companies are engaging with banks, financial, investment and insurance companies, and stock exchanges.

Table 1. The ratio of financial risk types and the activities of non-financial corporations

Types of financial risks	Types of corporate activities		
	Operational	Investment-related	Financial related
Interest-rate risk	+	+	+
Currency risk	+	+	+
Price risk	+	-	+
Inflation risk	+	+	+
Liquidity risk	+	-	-
Credit risk	+	-	-
Insurance risk	+	-	+
Risk of lost profits	+	+	+
Risks of direct financial losses (market, selective and bankruptcy risks)	+	+	+

Source: Author

In the contemporary context, mathematical and statistical studies are seen turning into an indispensable tool for acquiring more in-depth and complete knowledge about the mechanism of the phenomena under examination. Objectively existing dependencies and relationships between economic phenomena are mostly described only in verbal form. Quantifying the proximity of cause-and-effect relationships and identifying the form of effects is much more important. Correlation and regression analysis is broadly applied to examine the intensity, type and form of causal effects. When used with financial and economic processes, it can become a tool revealing complex sets of causes and effects.

Identifying quantitative relationships in the form of regression and comparing actual (observed) values against the values obtained by substituting the values of explicative variables in the regression equations offer the possibility of enhancing understanding of the nature of the phenomenon under study. This, in turn, makes it possible to act on the factors identified and to interfere in the economic process in order to achieve the desired results.

Financial risk management is one of the essential components of the overall corporate management system. Identifying key indicators that affect a company's financial risks, identifying trends, analyzing their behavior over time and space, predicting financial risk parameters, and adopting strategic measures aimed at improving the level of corporate stability – all this can be grouped as part of effective management of corporate financial risks through financial management.

Financial risks common to the oil and gas industry such as currency, credit, interest rate, price risk and liquidity risk all

produce a direct impact on the overall financial standing of companies, that is, they affect solvency. Proceeding from this, we will identify significant factors that affect the level of solvency and we will also develop and offer a set of stabilization measures aimed at managing these factors in order to have a positive impact on the performance indicator that is solvency. From that perspective, the hypothesis is put forward that effective financial risk management has an impact on the degree of corporate solvency.

The aim of the study is to build an econometric model describing the dependence of the degree of corporate solvency upon changes in internal and external factors. Aside from that, there is another aim of applying this model (as it may be modified) to manage financial risks that arise within the company.

The hypothesis behind the study is based on the assumption that there are factors which significantly affect the degree of corporate solvency such as changes in the exchange rate of the US dollar, hydrocarbon prices, profitability of sales, financial stability index, coverage ratios, turnover ratio of accounts receivable and accounts payable, etc.

The use of quarterly data for 2013 - 2019 from four companies in the oil and gas sector - PAO Lukoil, PAO Tatneft, PAO Gazprom, and PAO NovaTEK and the factors affecting them - are intended to bring the projected value of the degree of solvency to the most probable one.

The represented companies were used as the basis upon which to build an econometric model. (Fig. 1,2).

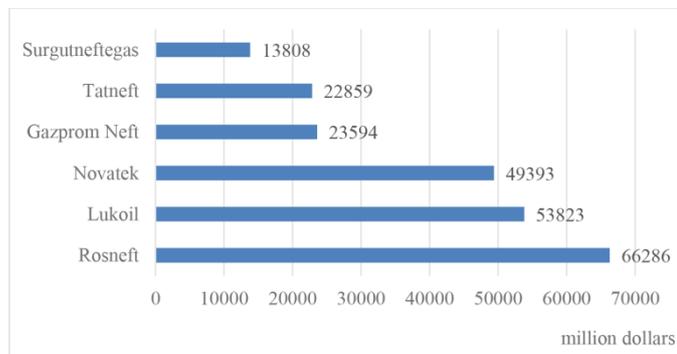


Fig.1. Capitalization of oil companies at the end of 2019.

Source: <https://www.rbc.ru/rbc500/> [10; 16]

Companies with the largest and lowest capitalization were excluded to make sure that the study was accurate.

The Y dependent and X independent variables were made up of a sample of factors for 2013 - 2019, which, in turn, were divided into groups of external and internal financial indicators.

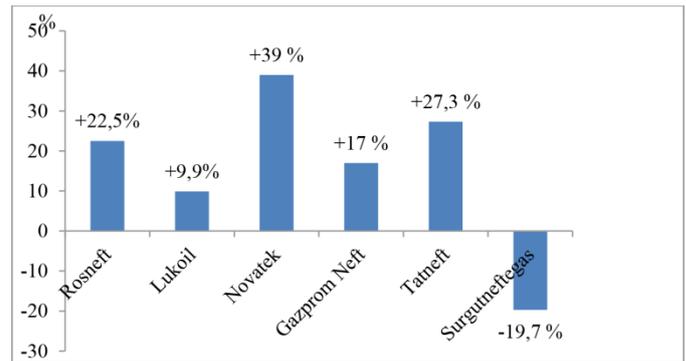


Fig.2. The relative change in the capitalization of oil companies at the end of 2019.

Source: <https://www.rbc.ru/rbc500/> [10; 16]

In a correlation and regression analysis, the Y output indicator represents the degree of corporate solvency in relation to current liabilities, calculated as the ratio of the average annual balance of liabilities and the average monthly gross sales revenues.

The indicators used to put together the sample to build an econometric model are given in Table 2.

Table 2. The indicators used to build an econometric model

Designation	Block of factors	Name
Y		Degree of solvency, month.
X1	External	US Dollar exchange rate, in rub.
X2		Brent oil price, in \$.
X3		Profitability of sales
X4		Working capital to current assets ratio
X5		Financial stability index
X6	Financial indicators (internal)	Coverage ratio
X7		Net working capital
X8		Net assets
X9		Accounts receivable turnover ratio
X10		Accounts payable turnover ratio
X11		Ratio of mobility of assets
X12		Equity ratio

Source: Author

The Student's t-test was used to determine the significance level of each ratio presented in the model. The F-test was used to assess the quality of the regression model as a whole and by parameters. Durbin-Watson statistics were used to check for residual autocorrelation.

Based on all the investigations conducted, we will build a regression model with a free ratio excluding redundant variables.

The form of the linear multi-factor regression model is:

$$Y = 19,28 - 0,0236 \ln(\text{Price}) + 3,425 R_{pr} + 0,1K_{pokr} - 0,252 \ln(K_{act}) - 0,445K_{deb} + 0,225K_{kred} - 13,769K_{avt} \quad (1)$$

where Price – Brent oil price, \$; R_{pr} – profitability of sales; K_{pokr} – coverage ratio; K_{act} – net assets; K_{deb} – account receivable turnover ratio; K_{kred} – accounts payable turnover ratio; K_{avt} – equity ratio.

Bearing the above in mind it can be concluded that the listed indicators are of significance for the model and closely related to the solvency degree indicator. The model has proven significant under the F-test, the Student's t-test while also passing Durbin-Watson statistics which is indicative of there being no residual autocorrelation.

The tests carried out show that the model is of high quality which is also backed up by the determination coefficient of 0.872. The model results point to evaluations of the model being effective, consistent and unbiased.

IV. SUMMARY

It is safe to say that the hypothesis about financial risks having an impact on the degree of solvency is correct and econometrically verified. In consequence, effective management of financial risks by a company produces a favorable impact on such indicators as the oil price, return on sales, coverage ratio, turnover ratio of accounts receivable and equity ratio which in turn affects the overall degree of corporate solvency. Studies have demonstrated that with the current trend persisting, the changes in performance are producing a negative effect on the financial standing of the company, but a not critical one. In order to improve the degree of solvency, the company should drive up profitability by increasing revenues or cutting down costs which is difficult to achieve in the current context as oil companies depend on oil prices along with the exchange rate.

There are also macroeconomic risks which must be factored in, one that company cannot influence. The new global threat COVID – 19 began to spread in late 2019. The measures being taken around the world to curb the spread of COVID-19 result in the need to impose restrictions upon business activity which has an effect upon demand for energy resources and the other products offered by the company under consideration along with the need to implement preventive measures to stop the spread of the infection [9]. These events were accompanied by a considerable drop in stock markets, a decline in commodity prices, in particular, the steep fall of oil prices exacerbated by the Russian ruble significantly weakening against the US

dollar and Euro, and crediting rates soaring for a great deal of companies in emerging markets. Thereby the activity of oil and gas companies are exposed to various risks which may adversely impact production and financial performance. Companies are seen seeking to lessen the risks that are within their control while factoring in the potential adverse effects of the risks which they are not able to manage.

V. CONCLUSION

The oil industry is the backbone of the Russian economy encompassing the whole cycle of production, refinery, transportation, storage and sale of oil and its derivatives.

An analysis of the financial reporting of the leading companies in oil production and refining revealed a number of financial risks typical for such companies:

1. Market risks encompassing price risks, currency risks and interest rate risks.
2. Credit exposure under contracts for the supply of oil, petroleum products, gas, gas products and petrochemicals.
3. Liquidity and solvency risk. All of these risks affect the financial performance of the companies in question which has a direct impact on liquidity and solvency levels. Highly volatile prices for hydrocarbons and products produced from these along with volatile currency rates, tariff escalation and suppliers marking up their prices as well as other external factors may all give rise to imbalance in the performance of plans, budgets and investment programs resulting in lack of liquidity and financing sources. Thus, for oil-producing companies, financial risk management should be considered as a process whose purpose is to identify and implement effective actions to make financial risk acceptable and financial loss minimal. This criterion is an indicator of the effectiveness of the company's financial risk management.

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