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Article

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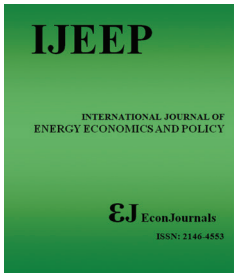

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The Impact of the Business Environment on the Effectiveness of the Implementation of the Financial Strategy of the Oil and Gas Company

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ABSTRACT

The article develops a mechanism for ensuring the growth of the efficiency of the financial strategy for the development of energy holdings based on the integration of the latter into the structure of territorial economic clusters. Based on the results of three-stage modeling, including causal analysis (Granger test), VAR vector autoregression model, and GARCH modeling, both direct and indirect influence of business environment factors at the meso-level and macro-level with a deferred effect on the financial strategy of PJSC NOVATEK was proved. The model of the mechanism of interaction between the factors of the business environment of the energy holding is structured, which allows us to establish that the key elements and conditions of the business environment that affect and determine its financial strategy can be classified depending on the groups of influence with which the holding enters into relationships, namely: consumers, competitors, suppliers, intermediaries, contact audiences. The purpose of the article is to identify the main elements of the business environment and study their impact on the company's strategy, including the formation of methods for evaluating the effectiveness of the implementation of the financial strategy, taking into account such influence.

Keywords: Oil and Gas Company, Business Environment, Financial Strategy, Industrial Relations, Macro-Environment Factors
JEL Classifications: O20, Q43; Q48

1. INTRODUCTION

Currently, the study of the business environment is becoming increasingly relevant. The business environment of organizations in the scientific literature is usually analyzed from the point of view of its expression through the external environment of organizations (Brednikov, 2014; Galkin and Borodkina, 2017; Kiyak and Pranckevičiūtė, 2016). The external environment is a certain state of the business environment, a set of factors that shape the conditions and determine the business opportunities. The external environment can be characterized by various states: simple stable, simple unstable, complex stable, complex unstable.

The external environment is characterized by a number of qualities: the interconnectedness of factors, complexity, mobility, uncertainty (Polutova, 2014; Ashfaq et al., 2019; Musarat et al., 2020). The analysis of the external environment should be based on a variety of areas of economic development. Based on these provisions, the main principle of organizing the study of the business environment is a multi – criteria approach.

The study of the holding's business environment can be based on various indicators in accordance with its scope: micro-level, meso-level and macro-level. On the basis of theoretical approaches, the following level factors are distinguished: the external environment of an organization at the micro level

can be characterized by the financial condition of consumers, the reliability of suppliers, the priorities of shareholders, etc.; the influence of meso-level factors can be determined on the basis of indicators: the development of a region, a city, the place of the holding's activities, their innovative, investment development, etc. From the point of view of the macro level, the business environment of an organization can be characterized by indicators of inflation, the standard of living in the country, GDP, the development of the banking system, etc.

2. LITERATURE REVIEW

Approaches to the allocation of environmental indicators differ in the works of researchers. A number of authors consider the specified indicators, or values of calculated values for the purposes of research. (Androsova and Generalova, 2020; Zhang et al., 2019) the components of the external environment of organizations are considered from the point of view of the process approach, which involves considering the work of companies from the point of view of a number of processes and allows optimizing the work between their participants, thereby reducing costs and increasing labor productivity. In the work of (Shashanova and Larchenko, 2020; Ocal and Aslan, 2013) the factors of the business environment of the enterprise are identified in order to identify its strengths and weaknesses, threats and opportunities. (Vetrova, 2012; Repina et al., 2019) analyzed the development of the business environment of service sector enterprises at the meso-level. The meso-level was defined as an economic system, which is a part of the territory where the system of relations and dependencies between enterprises and organizations functions and develops. (Shinkarenko 2015; Borodin and Mityushina, 2020) developed a methodology for strategic analysis of the business environment of the enterprise. The methodology included the calculation of the values of the factors of the formation of competitive forces as external factors, and on the basis of them the formation of an integral indicator. The results showed that the intensity of competition is influenced by the rivalry of existing competitors and the market power of consumers (Mikhaylov, 2019).

A number of researchers consider general groupings of external factors that affect the activities of organizations both directly (microenvironment) and indirectly (macroenvironment). (Polutova, 2014; Syzdykova et al., 2020) outlined the factors related to the micro - and macro-levels of the business environment of organizations. (Neupokoev, 2019) also considers factors of both the external microenvironment and the macroenvironment, but in the considered methodologies, macro-level factors are practically applied. (Komarevtseva's, 2019) research examines the theoretical aspect of external factors that affect the organization, divided into groups. Other researchers (Belokrylova et al., 2020; Borodin et al., 2021; Streltsova, et al., 2019) focus on the relationship of a single indicator of the business environment to the state of organizations. For most scientists, the aspect of studying the factors of the meso-level of the external environment is not isolated.

Considering the oil and gas holding, it is necessary to pay attention to the fact that the factors of the external microenvironment cannot be analyzed by an outside researcher, such analysis is implemented directly within the company and should be regulated by the management of a number of divisions, since it takes into account relations primarily with consumers and suppliers, with their payment discipline and attracting cash flows (Zhang et al., 2018; Adom, 2011). The factors of the meso-level for the holding, as opposed to an ordinary organization, differ, since the structure of the holding assumes its functioning in different territories, that is, the regional aspect of the location is transferred to the scale of the entire country and abroad. Relevant for the holding within the meso-level are the factors of influence that reflect the functioning of various sectors of the economy (Apergis and Payne, 2010; Belokrylova et al., 2020). Macro-level factors of the external environment remain relevant for all types of organizations.

PJSC "NOVATEK" is a company whose shares are actively traded on the stock exchange, that is, the external business environment of the company can be strongly related to the indicators of market activity (i.e. the position on the securities market). For this reason, the market quotation of the holding's shares and their profitability are considered dependent indicators for the purposes of the study. For the same reason, it is advisable to use the indicators of stock industry indices as an assessment of the impact of economic sectors on the holding's activities. These indicators are chosen as a meso-level study.

A number of indicators that characterize the economic state of the country are selected as macro-factors of the holding's business environment. The money supply (monetary aggregate M2) is one of the most important indicators used in the development of economic policy and the establishment of quantitative benchmarks of macroeconomic proportions.

The impact of the business environment on the activities of oil and gas holdings is studied both in the Russian and foreign literature (Table 1).

In the considered studies, the influence of the business environment on the activities of organizations and on their state in the stock market is mainly studied within the framework of the influence of macro-level factors (Zhu et al., 2009; Yang et al., 2020; Rabi and Spadaro, 2016).

Based on the selected factors of the business environment for the purposes of the study, as well as the analysis of the previously obtained results of the researchers, the following hypotheses were formulated:

- *Hypothesis 1.* The activities of the oil and gas holding of PJSC NOVATEK are affected by the activities of oil and gas companies. The oil and gas industry is characterized by such indicators as: the industry index of the Moscow Oil and Gas Exchange, the price of oil and the price of gas. The indicators were used in the works of (Podkorytov and Mochalova, 2019; Bagirov and Mateus, 2019; Dinica and Balea, 2014; Lv et al., 2020).
- *Hypothesis 2.* Indicators of the state of the economy have a direct impact on the state of the oil and gas holding. Indicators of the state of the economy are macro-factors:

Table 1: Research on the impact of the business environment on oil and gas holdings

Author	Hypothesis	Methodology	Results
Ajemyan et al. (2016)	External factors (GDP, consumer price index, inflation rate, the level of exports/ imports of products, changes in world prices, the level of investment, the level of political stability; strategic programs of the government, currency fluctuations, changes in interest rates, the level of average wages, the level of unemployment in the country) affect the market value of an oil and gas company (share price)	Correlation analysis	The market value of an oil and gas company is affected by the Central Bank's key rate
Lysenkova and Maksudova (2018)	Economic (inflation growth rate, currency exchange rate) and environmental factors affect the activities of the oil and gas company PJSC Lukoil	PESTLE analysis	The growth rate of inflation, the exchange rate of currencies and environmental factors have an impact on the activities of oil and gas companies
Podkorytov and Mochalova (2019)	The price of one barrel of Brent crude oil and one cubic feet of natural gas affect the price of one share of companies in the oil and gas sector	Regression analysis	The dependence of the share prices of oil-producing companies on oil prices exists; in the presence of other, both external and internal cost factors, this relationship is quite significant for a number of enterprises. The dependence of the share prices of gas companies on the prices of natural gas is not obvious
Bagirov and Mateus (2019)	Do oil price fluctuations affect European stock markets? Is there a volatility effect between oil prices and stock markets in Europe? Is the price of oil the dominant factor explaining the financial performance of listed and unquoted oil and gas companies in Western Europe?	Vector autoregressive model VAR; VAR-GARCH model; GMM models	The amount of oil market volatility is significantly affected by past volatility in the automotive sector, the basic materials sector, and the healthcare sector. Crude oil prices have a statistically significant positive impact on the accounting performance of quoted Western European oil and gas companies
Dinica and Balea (2014)	There are causal relationships between oil and stock markets	GARCH model	Strong correlation between the change in the price of Brent crude oil futures and the share price of an oil company
Lv et al. (2020)	Oil price shocks have a significant impact on the return on shares of oil-producing and integrated companies. The impact on oil refining and marketing, as well as the service and equipment of oil companies, is less significant.	BEKK-GARCH asymmetric model	The impact of oil shocks on the profitability of US oil companies and the impact of stock returns on oil markets depend on the subsector. Thus, bidirectional relationships vary between different subsectors of oil.

money supply, exports, imports, the key rate of the Central Bank, the dollar against the ruble, the consumer price index, the producer price index. Researchers also refer to a number of such indicators: (Ajemyan et al., 2016; Lysenkova and Makludova, 2018).

- *Hypothesis 3*. Indicators of the Russian stock market have an impact on the price of shares of PJSC NOVATEK and their profitability. General stock market indicators for the purposes of the holding's research within the Russian economy: the Moscow Exchange Index, the Moscow Exchange Index (blue chips);
- *Hypothesis 4.* Meso-level indicators presented by industry stock indices affect the share price of PJSC NOVATEK and their profitability. Bagirov and Mateus take into account the meso-level indicators, which consist in the stock indices of companies operating in various industries.

In order to study these areas of influence, the following lags were considered: 1 month, 2 months, 3 months and 6 months. That is, it is being investigated

The study includes the following steps:

1. Collection of a database consisting of the values of dependent factors and variable indicators;
2. Testing hypotheses based on casual analysis;
3. VAR modeling to confirm hypotheses;
4. GARCH-modeling, determining the strength of the influence of significant factors.

Thus, hypothesis testing was carried out on the basis of econometric methods, methods of synthesizing the obtained data into theoretical conclusions and practical recommendations, and methods of economic analysis.

3. DATA AND METHODOLOGY

The article uses monthly data from 2012 to 2019, as well as the values of the market prices of shares of PJSC NOVATEK and their profitability.

The research methodology includes:

1. Causal analysis (Granger test) is performed to determine the dynamics of interaction, as well as the direction of causal relationships between factors;
2. The VAR vector autoregression model allows us to determine the degree of mutual influence of the studied indicators;
3. GARCH modeling is used for time series analysis.

The causal analysis presented by the Granger test allows us to check the presence of causal relationships in time series. The test reveals whether a change in 1 time series leads to a change in another and whether this relationship is predictive. In the course of testing the Granger test on the basis of regressions with a dependent, checked for causality, and lags as regressors, two hypotheses are considered:

1. Factor X is not the cause of factor Y according to Granger;
2. Factor X is not the cause of the Granger factor X.

The article considers the influence of macro-level and meso-level factors separately on the indicators of the market price of a share of PJSC NOVATEK and its profitability. At the first stage of the simulation, the impact of macro-level factors on the holding's share price was checked: unidirectional effects on performance indicators were identified (Table 2).

The results obtained show the influence of the money supply on the share price of PJSC NOVATEK after 2 months, 3 months and 6 months. The values of macro factors with a lag of 1 month do not affect the value of the shares of PJSC NOVATEK in any way. The relationship between the share price and the money supply can be characterized by the fact that with a larger amount of funds in circulation in the country, there are more investment opportunities, which creates a demand for securities of organizations and thereby allows you to increase the value of financial instruments of holdings.

Excellent results were shown by the analysis of the impact of external macro-environment factors on the return on shares of PJSC NOVATEK (Table 3).

The key rate of the Central Bank of Russia entails a change in the yield of the share of PJSC NOVATEK after 2 months. That is, the opportunities of the oil and gas holding related to the activities on the stock market change depending on the regulation of the key rate that affects the ability to attract borrowed funds. Indicators of Russian export and import volumes have an impact on the profitability of the shares of PJSC NOVATEK with lags of 3 and 6 months. Changes in the volume of exports and imports entail a long-term trend towards changes in the profitability of the holding, which may be due to the impact on other factors that lead to a deferred impact on the holding's activities.

The factors of the business environment can be dependent on each other, as a result of which they have an indirect and deferred impact on the dependent variables under study. To test such relationships, the Granger test was performed for factors that affect the market price and yield of shares of PJSC NOATEK (Table 4).

Based on the results presented in the table, it can be seen that the selected factors of the business environment at the macro level really have a relationship with each other. It is important to note that most factors have a causal relationship with each other with a lag of 6 (half a year). Thus, the market price of shares and their profitability of PJSC NOVATEK are influenced by macro-level environmental factors, mainly with a delayed effect for several months due to the mutual influence of factors among themselves.

A similar study was conducted for the indicators of the meso-level of the external environment of the holding, presented due to its specificity by industry indicators. The share price of PJSC NOVATEK is influenced by three industry indices of the Moscow Exchange (Table 5).

The influence of the stock characteristics of the oil and gas industry on the share price of the oil and gas holding company is obvious, the relationship is manifested both in fast time lags (1 and 2 months) and in longer ones (3 and 6 months). There is a

Table 2: Characteristics of the impact of macro-level factors on the share price of PJSC NOVATEK for 2012-2019

Variables that affect the share price	Significance			
	Lag 1	Lag 2	Lag 3	Lag 6
Money supply	-	0.030	0.076	0.062

Table 3: Characteristics of the impact of macro-level factors on the return on shares of PJSC NOVATEK for 2012-2019

Variables that affect the return on a stock	Significance			
	Lag 1	Lag 2	Lag 3	Lag 6
Central Bank key rate	-	0.087	-	-
Import	-	-	0.017	0.012
Export	-	-	-	0.073

Table 4: Characteristics of the impact between macroeconomic factors for 2012 and 2019

The effect of one variable on another	Significance			
	Lag 1	Lag 2	Lag 3	Lag 6
Brent oil price on the Central Bank's key rate	-	0.097	-	-
Brent crude oil import price	-	-	0.001	0.000
Dollar exchange rate for imports	-	-	0.007	0.002
Imports on the money supply	-	-	0.016	-
Dollar exchange rate on the money supply	-	-	0.079	0.079
Key import rate	-	-	-	0.001
Key export rate	-	-	-	0.001
Brent crude oil price for export	-	-	-	0.001
Dollar exchange rate for export	-	-	-	0.031
Export inflation	-	-	-	0.039
Exports to the money supply	-	-	-	0.078

connection between the telecommunications industry and the share price of PJSC NOVATEK with a difference of 1 and 2 months. And also after 2 months, changes in the transport industry index lead to changes in the price of the holding's shares.

The profitability of the shares of PJSC NOVATEK is also affected by changes in the industry stock indices (Table 6).

The industry index also affects the profitability of the shares of PJSC NOVATEK not only with a lag of 1 and 2 months, but also after 3 months. Consequently, changes in the stock valuation of the industry entail changes in the position of PJSC NOVATEK on the stock market. With a lag of 2 months, the consumer sector has an impact on the profitability of the holding's shares.

It was also decided to check the impact of industry indices on each other, the studied relationships are most often observed with lags 2 and 3 (Table 7).

Meso-level factors are interrelated, which ultimately lead to a direct impact on the activities of PJSC NOVATEK in such industries as telecommunications, transport and the consumer sector.

4. RESULTS

Thus, on the basis of the Granger test, hypotheses about the impact of the business environment on PJSC NOVATEK were tested and the following results were obtained:

1. The stock indicators of PJSC NOVATEK are influenced by the indicators of the oil and gas industry, the hypothesis is confirmed in terms of the direct impact of the index of the oil and gas industry of the Moscow Exchange, and the indirect impact of the price of Brent crude oil. Thus, the first hypothesis is partially confirmed.
2. Among the indicators that characterize the state of the economy, the money supply has a direct impact on the share price, and the yield of the shares of PJSC NOVATEK - the key rate of the Central Bank of the Russian Federation, import and export. The hypothesis about the direct influence of the indicators is confirmed.
3. The hypothesis about the impact of the general indicators of the Russian stock market on the indicators of PJSC NOVATEK based on the Granger test was not confirmed. The Mosbirzhi index and the blue-chip Mosbirzhi index do not have a direct or indirect relationship with the holding's performance.
4. The direct impact of stock indices in the oil and gas, telecommunications, transport and consumer sectors on the price and yield of shares of the oil and gas holding was confirmed.

The next stage of the analysis of the business environment of the holding company "NOVATEK" was the construction of the vector autoregression model VAR. VAR allows you to model stationary time series simultaneously when moving, to estimate the deferred effects when changing the series, and is a better alternative to systems of simultaneous equations (Im et al., 2003; Nyangarika et al., 2019).

The Granger causality test made it possible to identify the relationships between the variables after a pairwise study. These variables and oil and gas prices formed the basis for further analysis of the macro-level factors of the business environment. The results of constructing a vector autoregression model are presented in Table 8.

The "Period" column in Table 9 means lags, that is, months, the values of the indicators for each time lag show the strength of the impact on the resulting indicator over time. The results of vector autoregression showed that the indicator has the greatest influence on its change, the strongest influence is observed on the first lag, the weakest on the tenth (considered the last). In the 1st month,

Table 5: Characteristics of the influence of meso-level factors on the share price of PJSC NOVATEK for 2012-2019

Variables that affect the share price	Significance			
	Lag 1	Lag 2	Lag 3	Lag 6
Oil and Gas Industry Index	0.015	0.023	0.004	0.067
Telecommunications Industry Index	0.021	0.038	-	-
Transport industry index	-	0.098	-	-

Table 6: Characteristics of the influence of meso-level factors on the yield of shares of PJSC NOVATEK for 2012-2019

Variables that affect the return on a stock	Significance			
	Lag 1	Lag 2	Lag 3	Lag 6
Industry Index	0.012	0.021	0.072	-
Consumer sector	-	0.087	-	-

Table 7: Characteristics of the influence between meso-level factors for 2012 and 2019

The effect of one variable on another	Significance			
	Lag 1	Lag 2	Lag 3	Lag 6
Consumer sector on telecommunications	0.003	-	0.037	-
Consumer sector for oil and gas	-	0.046	0.037	-
Transport finance	-	0.011	-	-
Chemicals and petrochemicals for transport	-	0.019	-	-
Transport for oil and gas	-	-	0.034	-
Telecommunications for oil and gas	-	-	-	0.021

Table 8: Assessment of the impact of macro-level factors on the return on shares of PJSC NOVATEK for 2012-2019 based on the VAR model

Period	S.E.	Natural gas price	Oil price	Share yield	Money supply	Inflation rate	Export	Import
1	0.05	0.27	3.98	95.75	0.00	0.00	0.00	0.00
2	0.06	0.26	6.82	85.93	0.53	1.72	2.37	2.37
3	0.06	1.31	6.13	80.38	0.61	3.76	2.13	5.68
4	0.06	1.41	6.24	79.29	1.04	3.78	2.13	6.11
5	0.06	1.83	6.35	78.64	1.10	3.92	2.11	6.05
6	0.06	1.87	6.33	78.50	1.10	4.00	2.16	6.04
7	0.06	1.90	6.39	78.35	1.13	4.02	2.16	6.04
8	0.06	1.92	6.40	78.32	1.14	4.03	2.16	6.04
9	0.06	1.92	6.40	78.30	1.14	4.04	2.16	6.04
10	0.06	1.92	6.40	78.29	1.14	4.04	2.16	6.04

Table 9: Autocorrelation of variables in the constructed GARCH model with a lag of 0

Autocorrelation	Partial correlation		AC	PAC	Q-статистика	Значимость
. |**** |	. |**** |	1	0.574	0.574	32.629	0.000
. |*** |	. |*. |	2	0.403	0.110	48.913	0.000
. |** |	. |. |	3	0.232	−0.057	54.349	0.000
. |*. |	. |. |	4	0.109	−0.052	55.570	0.000
. |. |	.*|. |	5	−0.002	−0.077	55.570	0.000
.*|. |	.*|. |	6	−0.162	−0.188	58.310	0.000
.*|. |	. |*. |	7	−0.133	0.074	60.184	0.000
. |. |	. |** |	8	−0.002	0.212	60.185	0.000
. |. |	.*|. |	9	−0.024	−0.087	60.245	0.000
.*|. |	.*|. |	10	−0.063	−0.126	60.673	0.000
.*|. |	.*|. |	11	−0.133	−0.132	62.625	0.000
.*|. |	.*|. |	12	−0.151	−0.084	65.179	0.000
.*|. |	. |. |	13	−0.157	−0.009	67.988	0.000
**|. |	.*|. |	14	−0.241	−0.061	74.625	0.000
**|. |	. |. |	15	−0.198	0.043	79.165	0.000
.*|. |	. |. |	16	−0.142	−0.022	81.550	0.000
. |. |	. |*. |	17	−0.004	0.093	81.552	0.000
. |. |	.*|. |	18	−0.015	−0.108	81.578	0.000
. |. |	. |. |	19	0.013	0.002	81.598	0.000
. |. |	.*|. |	20	−0.001	−0.069	81.598	0.000
. |. |	. |. |	21	0.035	0.040	81.751	0.000
. |. |	. |. |	22	0.036	0.053	81.911	0.000
. |. |	. |. |	23	0.010	0.008	81.923	0.000
. |. |	.*|. |	24	−0.013	−0.066	81.945	0.000
. |. |	. |. |	25	0.049	0.015	82.259	0.000
. |. |	.*|. |	26	0.030	−0.064	82.378	0.000
. |. |	.*|. |	27	−0.001	−0.066	82.378	0.000
.*|. |	.*|. |	28	−0.084	−0.093	83.349	0.000
.*|. |	.*|. |	29	−0.171	−0.148	87.444	0.000
**|. |	.*|. |	30	−0.234	−0.157	95.234	0.000
**|. |	. |*. |	31	−0.201	0.112	101.07	0.000
**|. |	. |. |	32	−0.207	−0.033	107.34	0.000
.*|. |	. |. |	33	−0.128	0.040	109.78	0.000
. |. |	. |*. |	34	0.024	0.125	109.87	0.000
. |*. |	. |*. |	35	0.135	0.074	112.67	0.000
. |*. |	. |. |	36	0.182	−0.046	117.87	0.000

changes in the yield of shares of PJSC NOVATEK are associated with the price of oil by 3.98% and with the price of natural gas by 0.27%. In 6 months, changes in the yield of the holding›s shares will be largely triggered by the price of oil (6.33%) and the volume of imports (6.04%), as well as inflation. The greatest increase in the impact of macro-level factors on stock returns is achieved in half a year, further changes are almost imperceptible.

The simulation of vector autoregression confirmed the hypothesis about the influence of macro - level factors of the business environment on the stock characteristics of PJSC NOVATEK, as well as the hypothesis about the influence of Brent oil and natural gas prices on the profitability of the holding's shares. Moreover, the oil price at the second lag has the greatest impact on changes in the share yield indicator.

Modeling and forecasting of variability can be provided on the basis of the GARCH model, which was also built to test the research hypotheses as part of the analysis of the business environment of the oil and gas holding.

A number of iterations led to the construction of a model with significant indicators of the macro-level factors of the business environment of PJSC NOVATEK (Table 10).

The simulation results presented in Table 10 allowed us not only to identify the variables that affect the share price, but also to determine the direction of their influence. Exports and the Moscow Exchange index directly affect the share price, while the Moscow Exchange index and oil prices directly affect the share price.

The constructed model is characterized by a too high R-squared value, which may indicate a high autocorrelation among the variables, which is confirmed by the statistics shown in Table 9.

The data in Table 9 confirmed the high autocorrelation of macro-level indicators at the zero lag. In order to check and eliminate autocorrelation, the factors were checked at a lag equal to one (Table 11).

The autocorrelation of variables with their lag values was slightly reduced, but all indicators except for the price of Brent crude oil were insignificant in the model. That is, it is impractical to focus on such a model when analyzing the factors of the business environment.

Similarly, the model was built for the same indicators, taking into account the lag values of 2 and 3 months (Tables 12 and 13, respectively).

Table 10: Results of the construction of the GARCH model with a dependent variable share price of PJSC NOVATEK for 2012-2019 (lag=0)

Variable	Coefficient	Standard error	z - statistic	Significance
Export	4.31E-09	2.01E-09	2.142550	0.0321
Mosbirzhi index	−0.598844	0.253268	−2.364467	0.0181
Mosbirzhi index (blue chips)	0.184661	0.036692	5.032687	0.0000
Brent Oil price	−2.300889	0.631752	−3.642076	0.0003
C	−509.0317	63.24104	−8.049073	0.0000
Variance equation				
C	2574.771	1349.876	1.907414	0.0565
ARCH(1)	0.728177	0.284917	2.555755	0.0106
GARCH(1)	−0.236332	0.253692	−0.931571	0.3516
R-squared	0.949476	Mean dependent var		642.9392
Adjusted R-squared	0.945457	S.D. dependent var		301.8004
S.E. of regression	70.48366	Akaike info criterion		11.07997
Sum squared resid	437179.3	Schwarz criterion		11.29366
Log likelihood	−523.8384	F-statistic		236.2503

Table 11: Results of constructing the GARCH model with a dependent variable share price of PJSC NOVATEK for 2012-2019 (lag=1)

Variable	Coefficient	Standard error	z - statistic	Significance
Export (−1м)	2.01E-09	1.31E-09	1.533247	0.1252
Mosbirzhi index (−1м)	0.390471	0.269068	1.451195	0.1467
Mosbirzhi index (blue chips) (−1м)	−0.001695	0.042225	−0.040150	0.9680
Brent Oil price (−1м)	−2.160824	0.395529	−5.463128	0.0000
C	−26.01238	57.44769	−0.452801	0.6507
Variance equation				
C	1356.099	658.3512	2.059841	0.0394
ARCH(1)	1.013593	0.397383	2.550671	0.0108
GARCH(1)	−0.264436	0.218334	−1.211157	0.2258
R-squared	0.770652	Mean dependent var		645.5713
Adjusted R-squared	0.752198	S.D. dependent var		302.2917
S.E. of regression	150.4799	Akaike info criterion		11.01582
Sum squared resid	1970044.	Schwarz criterion		11.23089
Log likelihood	−515.2517	F-statistic		41.76224

Taking into account the values with a delayed effect of 2 months, the model indicators again gained significance, and the autocorrelation was leveled. If exports increase by $ 1, the share price of PJSC NOVATEK will increase slightly. The growth of the Mosbirzhi blue-chip index with a 2-month lag will lead to an increase in the share price by 0.22%. At the same time, an increase of 1 ruble in the overall MOSBIRZHI index will have a deferred effect on the reduction of the holding's share price by 0.8%. The change in the oil price also has a reverse deferred effect on the share price of PJSC NOVATEK, that is, it reduces its value.

Table 12: Results of construction of the GARCH model with a dependent variable share price of PJSC NOVATEK for 2012-2019 (lag=2)

Variable	Coefficient	Standard error	z - statistic	Significance
Export (−2м)	6.97E-09	1.73E-09	4.037110	0.0001
Mosbirzhi index (−2м)	−0.803338	0.364866	−2.201735	0.0277
Mosbirzhi index (blue chips) (−2м)	0.216039	0.053860	4.011154	0.0001
Brent Oil price (−2м)	−3.631671	0.626886	−5.793194	0.0000
C	−513.8405	69.01804	−7.445017	0.0000
Variance equation				
C	3535.666	1254.983	2.817302	0.0048
ARCH(1)	0.700492	0.264488	2.648486	0.0081
GARCH(1)	−0.220591	0.113739	−1.939452	0.0524
R-squared	0.937599	Mean dependent var		648.2380
Adjusted R-squared	0.932520	S.D. dependent var		302.7871
S.E. of regression	78.65487	Akaike info criterion		11.43946
Sum squared resid	532046.7	Schwarz criterion		11.65591
Log likelihood	−529.6544	F-statistic		184.5974

Table 13: Results of constructing the GARCH model with a dependent variable share price of PJSC NOVATEK for 2012-2019 (lag=3)

Variable	Coefficient	Standard error	z - statistic	Significance
Export (−3м)	6.14E-09	1.99E-09	3.079153	0.0021
Mosbirzhi index (−3м)	−0.809359	0.347511	−2.329014	0.0199
Mosbirzhi index (blue chips) (−3м)	0.215627	0.051141	4.216328	0.0000
Brent Oil price (−3м)	−3.465345	0.659792	−5.252180	0.0000
C	−477.3592	82.94045	−5.755445	0.0000
Variance Equation				
C	3905.095	1131.633	3.450849	0.0006
ARCH(1)	0.635373	0.215907	2.942808	0.0033
GARCH(1)	−0.234762	0.108204	−2.169631	0.0300
R-squared	0.928203	Mean dependent var		650.8729
Adjusted R-squared	0.922290	S.D. dependent var		303.3428
S.E. of regression	84.56144	Akaike info criterion		11.52776
Sum squared resid	607804.2	Schwarz criterion		11.74561
Log likelihood	−528.0407	F-statistic		156.9839

A model with a delayed effect of 3 months is considered in order to establish clear patterns of the influence of variables on the result (Table 13).

Based on the results of three modeling stages, including causal analysis (Granger test), VAR vector autoregression model, and GARCH modeling, both direct and indirect influence of business environment factors at the meso-level and macro-level with a deferred effect on the financial strategy of PJSC NOVATEK was proved.

5. CONCLUSION

Based on the Granger tests, the pairwise effects of the business environment indicators on the stock performance of the shares of PJSC NOVATEK were identified. The results obtained allow us to identify the factors of direct and indirect impact on the holding's activities. The study showed that a larger number of factors affect the profitability of a stock. When developing a strategy, the holding can use similar schemes of the general type of interaction of indicators. Changes in the stock index of the telecommunications industry will lead to changes in the yield of shares of PJSC NOVATEK in a month, 2 months and 3 months. The stock index of the consumer sector affects the profitability of the holding's shares after 2 months. The change in the price of Brent crude oil may affect the change in the key rate after 2 months, which in another 2 months may affect the profitability of the shares of PJSC NOVATEK. The price of oil also has a deferred effect on 3 and 6 lags for imports and 6 lags for exports, which in turn will have an effect on the profitability of the holding's shares in the quarter and half of the year. The dollar exchange rate has a similar effect on imports and exports. The indicator that indirectly affects the yield of the share of PJSC NOVATEK is inflation, which characterizes the long-term deferred effect (6 months) on exports, which also has a long-term effect on the yield of the share, thus, inflation indirectly affects the dependent variable after a year.

Taking into account the described conclusions is necessary when developing a strategy for at least half a year and a year, since changes in the business environment factors now may lead to a response of the holding's indicators in a month, two or more.

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