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# Stakeholder Model of Corporate Governance: Methodology for Rapid Assessment of the Impact of Macroeconomic Challenges

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## ABSTRACT

The global humanitarian and economic challenges facing Russian corporate structures today require not only a rethinking of the role of public institutions in the future fate of the national economy, but also unprecedented innovative development of mechanisms for making management decisions in conditions of limited time and information. Well-known and methodologically developed approaches need transformation and development in relation to new realities. Based on the competent opinion of Russian corporate management on the current situation in the business environment, voiced at the XII All-Russian Forum "Business Management: Adaptation to Challenges and Development," requirements for the transformation of the corporate governance model have been determined. The **purpose** of the study was to develop the methodology proposed earlier by the authors for assessing the stakeholder value of the corporate network of the ESG activities of the corporation in terms of the influence of macro-level factors on it, in particular, economic sanctions. The following methods were used as a methodological basis: network approach, methods of logical analysis, correlation and regression analysis, comparison, graphic visualization. The methodology presented in the article was tested on the example of PJSC Norilsk Nickel and the region of its presence – the Krasnoyarsk Territory, based on data from two periods – pre-crisis (2012–2018) and including the COVID-19 pandemic and strengthening of foreign trade sanctions (2012–2021). The results showed the sensitivity of the stakeholder value model to changes in macro conditions, which confirms the validity of the methodology for solving problems of operational management of corporate processes. The prospects for the research lie in the area of expanding the composition of stakeholder groups, developing methods for establishing operational connections between them and their assessment.

**Keywords:** corporate governance; stakeholder value; corporate network; crisis; network connections; strength of connection; meso-environment; macro-environment

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## INTRODUCTION

The growing role of corporations in the socio-economic development of society and the influence of global conditions on the formation of their competitiveness have become a powerful impetus for the development of corporate governance strategies aimed at creating a positive image among a wide range of interested parties — corporate stakeholders. The concept of taking into account common interests is widely implemented in the practice of public administration within the framework of a public approach, declaring a strategic partnership of state authorities, local government, business and civil society in the process of making strategic decisions [1].

The main tools of the stakeholder management model are methods for assessing the stakeholder value of a corporation. However, an analysis of scientific publications revealed a lack of works devoted to the applied aspects of the implementation of this model in the practice of corporate management, especially studies related to methods for assessing the contributions and benefits of stakeholders [2].

Previously, the authors of the article proposed and tested a method for a quick assessment of the stakeholder value of a corporation's social activities in conditions of unpredictable changes in external conditions by using a network approach for processes occurring in the internal and external immediate environment (mesic environment) of the corporation [3].

The task of further development of the methodological basis for the implementation of the stakeholder model in the practice of corporate and public management encouraged us to turn to the study of the role of factors in the distant external corporate environment (macroenvironment).

Moreover, its radical transformation, caused by the COVID-19 pandemic and macroeconomic sanctions, has led to the formation of a completely new market landscape and a change in corporate values from the point of view of stakeholders. A sensitive indicator of crisis changes was the market capitalization of Russian corporations, showing a rate of decline of 14% from 2021 to 2022 and of 29% from 2022 to 2023.<sup>1</sup> Rapidly changing realities have made urgent the problem of finding relevant approaches to both the transformation of the stakeholder management model and the development of tools for its implementation in corporate governance processes. New conditions have become a testing ground for the development of existing management techniques, as well as an impetus for the creation of others, born in a crisis mode of immediate testing [4].

## TRANSFORMATION OF THE RUSSIAN STAKEHOLDER MODEL OF CORPORATE GOVERNANCE UNDER THE INFLUENCE OF MACROECONOMIC CHALLENGES

In order to find the basic points of transformation of the stakeholder value model, we will determine the macroeconomic restrictions that today have the greatest impact on the activities of Russian corporations.

Experts note that of all the sanctions imposed by foreign countries against the Russian Federation,<sup>2</sup> the most noticeable impact is those that limit access to capital and technology, export and import trade operations. Thus, as a result of the latter,

<sup>1</sup> Market capitalization. Moscow Stock Exchange (official website). URL: <https://www.moex.com> (accessed on 24.05.2023).

<sup>2</sup> Information about the imposed sanctions against the Russian Federation. Chamber of Commerce and Industry of the Russian Federation (official website) URL: <https://uslugi.tpprf.ru/ru/services/> (accessed on 21.03.2023).

business ties are destroyed, corporations suffer large financial and reputational losses [5].

Let us look in more detail at the changes that have occurred in the corporate governance system and in the boards of directors. According to a study conducted by a Russian consulting company focused on improving the quality of governance in the corporate sector of Russia (CSR) with the support of the Moscow Exchange and the National Association of Corporate Secretaries (NACS),<sup>3</sup> in 2021 the share of foreigners on the boards of directors of domestic public companies was approximately 1/3, in companies with state participation — about 10%, in private companies — about 40%; according to the Association of Independent Directors (AID), most of them were citizens of the USA (more than 30 people), Great Britain (20) and Germany (15). Before the introduction of sanctions, the organizations with the largest number of foreigners on the board were TCS Group (10 directors), Polymetal (7), Globaltrans and Rosneft (8). In 2022 (after the introduction of sanctions), in 75% of companies the number of foreign directors decreased, and in half of them to zero. The share of foreign citizens on councils has more than halved: in 2021 — to 30%, in 2022 — to 14%. At the end of 2022, foreigners were present on less than 50% of company boards of directors. As a result of this process, 30% of organizations updated their board compositions by 50% (and some by 80%).

In 2022, the regulator (Bank of Russia) made a number of relaxations regarding boards of directors — in particular, companies subject to sanctions could temporarily not elect them. The Bank of Russia recommended that public joint-stock companies whose shares are admitted to organized trading take

all possible measures aimed at ensuring the inclusion of independent directors on the board, namely, searching for candidates who meet the independence criteria.

As such, the regulator advises considering representatives of both Russian professional associations of directors and business communities of friendly foreign jurisdictions who have the competencies and experience.<sup>4</sup> necessary for a public society.

In 2022, a number of changes were made to the legislation regarding the formation and work of the board of directors: Federal Law No. 292-FL<sup>5</sup> was adopted, allowing sanctioned companies not to form this body, dividing powers between the board and the general meeting of shareholders, amendments to the Federal Law “On Joint-Stock Companies<sup>6</sup>” (up to 3 people on the board of directors, quorum — at least half), as well as the Federal Law allowing joint-stock companies in 2023 to elect a board of directors for a three-year term.

The role of the board of directors is increasing as a strategic management body, providing a breadth of vision and a multifaceted approach to solving problems. In this regard, the issue of forming a balanced board of directors remains relevant, primarily from the point of view of its professionalism and independence. The ability of its members

<sup>4</sup> Information letter of the Central Bank of the Russian Federation on the formation of boards of directors (supervisory boards) of public joint-stock companies dated 17.01.2023 № ИИ-02–28/5. URL: <https://www.cbr.ru/Crosscut/LawActs/File/6125> (accessed on 19.03.2023).

<sup>5</sup> Federal Law No. 292-FL of July 14, 2022 “On amending certain legislative acts of the Russian Federation, invalidating paragraph six of part one of Article 7 of the Law of the Russian Federation “On State Secrets”, suspending the validity of certain provisions of legislative acts of the Russian Federation and establishing the specifics of regulating corporate relations in 2022 and 2023.” URL: <http://www.kremlin.ru/acts/bank/48125>

<sup>6</sup> Federal Law dated December 26, 1995 No. 208-FL “On Joint-Stock Companies” (as amended on December 19, 2022 No. 519-FZ). URL: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_8743/?ysclid=lor98dbd1h132996423](https://www.consultant.ru/document/cons_doc_LAW_8743/?ysclid=lor98dbd1h132996423)

<sup>3</sup> Review of corporate governance practices. URL: <https://nokc.org.ru/wp-content/uploads/2023/02/rezultaty-issledovaniya.pdf> (accessed on 20.05.2023).

to make objective judgments, free from the influence of executive bodies, individual groups of shareholders, contributes to improving the quality and depth of elaboration of issues within the competence of the board of directors and relating to the divergent interests of society, individual groups of shareholders and other interested parties.

According to the above-mentioned study by CSR, Moscow Exchange and NACS,<sup>7</sup> 34% of board members have been working for less than a year; independent directors among those elected for the first time in 2022 accounted for 46%, with 9% fewer chairmen of boards of directors among them; The number of foreign directors decreased by 4%, but the number of women heading the board of directors increased by 2%. In this context, the role of the strategic planning committee within the board of directors is increasing, especially those of its members who are ready, carefully thinking through and relying on their professionalism and qualifications, to propose solutions that will be useful both for the effective operation of the organization and for its development.

During the COVID-19 pandemic, corporations, along with the state, have shown that they have significant potential to mitigate social shocks; in the current conditions, they are heading towards maintaining the concept of ESG<sup>8</sup> development. Companies that have entered the Eastern markets note that there is a demand for commitment to

ESG principles. Many organizations continue to pursue sustainable development strategies due to the personal beliefs of owners and management.<sup>9</sup> At the same time, there are concerns that companies that actively interacted with foreign partners who left the Russian market may curtail the ESG agenda, which is the latter's requirement as part of social ethics. The ESG agenda is also weakened by the difficulties associated with the participation of corporations in international ESG ratings. Such restrictions negatively affect the investment image of companies, so the sustainable development strategy requires rethinking in terms of a shift towards the social aspect, communication with society to create an understanding among Russian consumers of the importance of the ESG concept for future generations, the development of domestic ESG reporting tools and ESG ratings [6]. The principles of social responsibility and sustainable development goals are adhered to by those organizations for which solving urgent global social and environmental problems is not a showcase, but an ethical need for business behavior [7, 8], which increases trust in them from stakeholders, especially in the financial sector [9].

During periods of crisis, non-financial corporations also pay considerable attention to the problems of increasing the efficiency of corporate governance and especially to risk management issues [10].

Participants of the XII All-Russian Forum on Corporate Governance noted that domestic companies demonstrate a desire to maintain large investment projects and an intention to make large investments in the following periods.<sup>10</sup>

<sup>7</sup> Review of corporate governance practices. URL: <https://nokc.org.ru/wp-content/uploads/2023/02/rezultaty-issledovaniya.pdf> (accessed on 20.05.2023).

<sup>8</sup> The RUIE and the APD (Association of professional directors) held the XII All-Russian Forum on Corporate Governance. Russian Union of Industrialists and Entrepreneurs (official website). URL: <https://rspp.ru/events/news/rspp-i-and-provelitseremoniyu-nagrazhdeniya-pobediteley-xii-natsionalnoy-premii-direktor-goda-64006520b0b51/> (accessed on 20.03.2023).

<sup>9</sup> The XII All-Russian Forum on Corporate Governance was held in Moscow. Interfax. URL: <https://www.interfax.ru/events/news/892307> (accessed on 23.03.2023).

<sup>10</sup> *ibid.*

At the same time, the investment finance landscape has transformed. The exchange changes the tools and rules of the game, fulfilling its main function of redistributing capital in the economy; corporations are reorienting towards domestic investors in the structure of stock transactions in conditions of declining capitalization. At the same time, it is noted that it is necessary to preserve both the rules of a civilized exchange game, which presupposes information openness of listed companies (despite their legal opportunity not to publish information due to sanctions risks), and the responsibility of boards of directors and management of organizations for trading strategies and maintaining respect for domestic and foreign investors. The “share vaccine” against stock market fluctuations caused by crises is the shares of companies adhering to ESG principles as the safest instrument for investing capital and diversifying an investor’s portfolio, as well as an incentive to maintain commitment to the ESG development strategy [11].

During a period of numerous overlapping crises, the social contract between business, society and the state undergoes changes [12].

Foreign trade restrictions have become a powerful factor in compressing demand for domestic companies focused on foreign markets. The main option for leveling out the situation seems to be the restructuring of import logistics chains and the search for new channels for export.

The sanctions had a particularly noticeable impact on processes related to the digitalization of corporate activities due to the suspension of activities in Russia of leading IT industry entities (Microsoft, Oracle, Autodesk, Nokia, Intel, etc.), a sharp increase in the cost of imported software and hardware, and also the increase in risks when conducting virtual financial payments (cessation of the PayPal system), the complexity of implementing

e-learning corporate education programs and the limitations of SMM marketing due to the closure of a number of leading social networks [13].

Sanctions have a significant impact on the efficiency of large resource corporations; in particular, a decrease in the profitability of the latter in the oil and gas industries has been identified, as well as a decrease in their investment activity [14].

When macroeconomic conditions change, it is natural to think about the formation of a corporate governance model that includes mechanisms of state support for companies that remain committed to environmental and social responsibility [6].

Thus, the economic downturn due to the COVID-19 pandemic prompted governments of all countries to initiate an unprecedented number of temporary lending and tax deferment programs for businesses [15]. The entry of corporations into the coverage area of government support and guarantee mechanisms is intensifying. A study conducted in Italy showed that in the absence of any government intervention during the pandemic, about 26% of Italian firms would have faced insolvency risks (with a standard rate of 11%) [16]. During the coronavirus pandemic, mechanisms have emerged in the form of a model of state dirigisme — the active influence of the state on social and corporate processes, its massive intervention in the life of business and the impact on the collective behavior of the population [17]. Global financial and economic crises of the 2000s formed a flexible instrumental base for state stabilization participation in maintaining corporate systems — from a large-scale injection of funds to restore reserve capital to the purchase of shares of departing shareholders with their subsequent sale to new private investors (in order to avoid the nationalization of corporate assets) [18].

By activating government support instruments, government bodies acquire the status of stakeholders in corporate relations and become interested in obtaining reliable information about the actual contribution of corporations to environmental, innovative and social projects.

### **METHODOLOGICAL PROVISIONS FOR ASSESSING THE STAKEHOLDER VALUE OF A CORPORATION'S ACTIVITIES BASED ON THE NETWORK APPROACH**

Based on an analysis of the existing experience in methodological developments and taking into account the requirements defined above, in order to solve the problem of developing methodological approaches to the operational assessment of the stakeholder value of corporations, it is proposed to be guided by the following methodological provisions [3].

Based on the competent opinion about the situation in the Russian business environment, transmitted by corporate management, we can conclude that most problems are solved by them independently. At the same time, the management task of developing methods for quickly collecting and processing information for decision-making under conditions of uncertainty and time pressure has become more urgent. The “calm 2000s” taught management to be slow — any significant decisions were made over the years: a SWOT analysis was carried out, focus groups were held, requests for marketing research were made, etc. “Nowadays, a decision must be made right now; in a week it will be useless” [19].

In the conditions of the information paradigm of the development of modern society, it is proposed to consider the corporation and its stakeholders as a network structure, the main actors of which are all parties pursuing corporate interests [20].

The composition of actors (stakeholders), their benefits and usefulness for the corporate

network are examined in the context of the ESG concept of socially significant corporate policies aimed at supporting stakeholder groups and institutional entities.

In contrast to existing methods for assessing stakeholder value, which rely on tools that require a significant time resource and a number of assumptions when comparing heterogeneous indicators, the author's development is designed to ensure a prompt comparison of the contributions and benefits of corporation stakeholders thanks to the features of the network approach focused on assessing the characteristics of connections [21, 22].

Network connections are established between a set of factors influencing the activity of the network, which are represented by the *microenvironment* — internal elements and subsystems of the network, the *external near mesoenvironment* — regional and sectoral conditions and processes, and the *external distant macroenvironment*, containing national and global factors [23]. At the same time, the conditions of the macroenvironment have a positive or negative impact on stakeholder value, worsening or improving the conditions for its formation; there is no reverse impact on the macroenvironment.

Hypotheses about the presence of direct and reverse connections between the internal and external environments are put forward on the basis of recognized dependencies of economic theory, providing a condition for efficiency; hypotheses about the presence of network connections are assessed for consistency using correlation analysis. For connections whose influence on the stakeholder value of the network is determined to be significant, a regression coefficient is calculated, whose statistical essence allows it to be interpreted as an indicator of the intensity of participation of actors in the corporate network along a certain

vector of economic relations in the creation of stakeholder value.

The model for assessing the participation of each group of actors in creating stakeholder value has the following formula:

$$SV = B - C, \quad (1)$$

where  $SV$  — Stakeholders Value;  $B$  — weight of benefit connection);  $C$  — weight of contribution connection).

$$Y_b = BX + a, \quad (2)$$

where  $Y_b$  — dynamics of the internal environment indicator);  $X$  — dynamics of the external environment indicator);  $B$  — weight of benefit connection);  $a$  — Y-intersection.

$$Y_c = CX + a, \quad (3)$$

where  $Y_c$  — dynamics of the external environment indicator;  $X$  — dynamics of the internal environment indicator;  $C$  — weight of the contribution connection);  $a$  — Y-intersection

All used indicators of the state of the internal and external environment are data from the official financial statements of the corporation for the microenvironment and official statistics for the constituent entity of the Russian Federation for the mesoenvironment. Indicators of macroenvironmental conditions are official open information from institutions at the level of the national economy, for example, ministries and departments.

## RESULTS AND INTERPRETATION

PJSC Norilsk Nickel was chosen as the object of study by the authors of the article since it is one of the most powerful “players” in the corporate market. Like other Russian companies, Norilsk Nickel had a hard time

after February 2022, however, despite the new challenges of last year, the company remained resilient and even increased the volume of investment in key projects.<sup>11</sup> Resource and energy efficiency, circular economy, social and labor sphere, quality of corporate governance, environmental and social programs in the regions of presence remain the company’s key priorities.<sup>12</sup> The proposed methodology for assessing the stakeholder value of a corporation’s social activities using the example of PJSC Norilsk Nickel and the region of its presence (Krasnoyarsk Territory) for the internal micro- and meso-environment was tested by the authors earlier — their publication [3] describes in detail how the contributions of the corporation and the benefits of stakeholders influenced the cost of an enterprise network during the COVID-19 crisis.

To develop the methodology, we will analyze the reaction of the internal environment and the nearby external mesoenvironment to changes in macroeconomic conditions. To do this, we will build a model for the periods of 2012–2018 with insignificant influence of macroeconomic restrictions and of 2012–2021, when this influence became extensive.

This application of the methodology is intended to demonstrate its ability to identify the most significant restrictions imposed by the macro environment, for example, in the process of justifying and determining directions for providing government support to business.

In the course of an iterative logical selection of possible connections between

<sup>11</sup> “Sustainable vector”: Norilsk Nickel’s investment program has grown by more than 50%. URL: <https://krasnoyarsk.dk.ru/news/237184446>

<sup>12</sup> Norilsk Nickel presented its results in the field of sustainable development for 2022. URL: <https://nornikel.ru/news-and-media/press-releases-and-news/nornikel-predstavil-rezultaty-v-oblasti-ustoychivogo-razvitiya-za-2022-god-/> (accessed on 10.07.2023).

Table 1

**Models of the foreign trade restrictions influence on the stakeholder value  
of the PJSC Norilsk Nickel network during implementing the ESG policy**

ESG direction	Stakeholder group	External environment indicator	Internal environment indicator
Ecology	Ecology, environmental management (H1)*	Imports volume CN FEA "Computing machines and blocks" RF, US dollars, thousand, X	Research costs, thousand rubles
Social	Employees (population) (H2)	Imports volume CN FEA "Mining Machinery" in RF, US dollars, X	Annual labor productivity at the enterprise, rub./person, Y
Governance	Corporation (H3)	Imports volume CN FEA "Mining machines" in the Russian Federation, US dollars, X	Net profit of the enterprise, thousand rubles, Y
	Corporation (H4)	Exports volume CN FEA "Nickel ores and concentrates" and "Copper ores and concentrates" from the Russian Federation, US dollars, X	Net profit of the enterprise, thousand rubles, Y
	Investors / Stakeholders (H5)	Exports volume CN FEA "Nickel ores and concentrates" and "Copper ores and concentrates" from the Russian Federation, US dollars, X	Market capitalization of the corporation based on trading results in CJSC MICEX Stock Exchange at the end of the year, thousand rubles, Y

Source: compiled by the authors.

Note: \* (H1–H5) – Hypothesis.

micro- and macro-environment indicators, models of the possible impact of foreign trade restrictions on the stakeholder value of the network in the process of implementing the ESG policy of the Norilsk Nickel PJSC corporation were identified. *Table 1* presents hypotheses about the connection among macroeconomic restrictions, internal and meso-processes of the corporation:

H1 — to test the possibility of the influence of macroeconomic restrictions on the import of products into the Russian Federation according to the commodity nomenclature of foreign economic activity (CN FEA) "Computing machines and units",

a hypothesis has been put forward about the impact of these restrictions on the innovation activities of the corporation. It is proposed to test the hypothesis through an analysis of the relationship between the indicators "Volumes of imports into the Russian Federation of products according to the commodity nomenclature of foreign economic activity (CN FEA) "Computer machines and units" and "Volumes of corporation expenses on scientific research and development (R&D)." The process belongs to the ESG direction Ecology (from English — environmental management); main stakeholder groups are ecology and business environment;

Table 2

**Results of assessing of the macro-environment conditions impact due to foreign trade restrictions  
on the stakeholder value of the PJSC Norilsk Nickel ESG network for the period 2012–2018**

ESG direction	Stakeholder group	Impact on network stakeholder value			
		Communication model	Communication quality – Pearson's coefficient, r	Model quality – coefficient of determination, R <sup>2</sup>	Bond strength – coefficient of regression
Ecology	Ecology, environmental management (H1)	IVCMB, X – CRD, X	–0,61	0,37	–0,12
Social	Employees (population) (H2)	IVMM, X – ALP, Y	–0,82	0,68	–6E-05
Governance	Corporation (H3)	IVMM, X – NP, Y	–0,73	0,54	–0,46
	Corporation (H4)	EVNOC, X – NP, Y	0,73	0,53	2,44
	Investors / Stakeholders (H5)	EVNOC, X – MCC, Y	0,79	0,62	22,55

Source: compiled by the authors based on Rosstat data. URL: <https://www.rosstat.gov.ru/>; Rosstat service for providing accounting reporting data upon user requests. URL: <https://www.rosstat.gov.ru/>; MOEX data. URL: <https://www.moex.com/>; Customs Online portal. URL: <https://www.customsonline.ru>

H2 — to test the possible impact of macroeconomic restrictions on the import of goods into the Russian Federation under the commodity nomenclature of foreign economic activity “Mining Machinery”, a hypothesis has been put forward about the impact of these restrictions on the labor productivity of workers at the Norilsk Nickel resource mining enterprise. It is proposed to test the hypothesis through an analysis of the relationship between the indicators “Volumes of imports into the Russian Federation of products under CN FEA “Mining Machinery” and “Annual Labor Productivity” of PJSC Norilsk Nickel, which is defined as the ratio between production volumes and the average number of employees of the enterprise. The process belongs to the ESG direction Social (from English — social management), the main stakeholder groups are employees

(population), and labor productivity is considered as a source of welfare of the stakeholder group;

H3 — processes occurring in the internal environment of the corporation, which create benefits for stakeholder groups, i.e. actively participate in the formation of stakeholder value. In addition, the interests of many holders of corporate values (managers, employees, etc.) lie in the area of internal corporate processes.

To test the possible impact of macroeconomic restrictions on the volume of imports into the Russian Federation of goods under CN FEA “Mining Machinery” on the general indicator of the corporation's performance, which characterizes the effectiveness of corporate management, a hypothesis has been put forward about the impact of these restrictions on the net profit

Table 3

**Results of assessing of the macro-environment conditions impact due to foreign trade restrictions  
on the stakeholder value of the PJSC Norilsk Nickel ESG network for the period 2012–2021**

ESG direction	Stakeholder group	Impact on network stakeholder value			
		Communication model	Communication quality – Pearson's coefficient, $r$	Model quality – coefficient of determination, $R^2$	Bond strength – coefficient of regression
Ecology	Ecology, environmental management (H1)	IVCMB, X – CRD, X	0,14	0,02	0,02
Social	Employees (population) (H2)	IVMM, X – ALP, Y	–0,70	0,48	–1E-05
Governance	Corporation (H3)	IVMM, X – NP, Y	–0,57	0,33	–1,20
	Corporation (H4)	EVNOC, X – NP, Y	0,39	0,15	0,64
	Investors / Stakeholders (H5)	EVNOC, X – MCC, Y	0,66	0,44	7,58

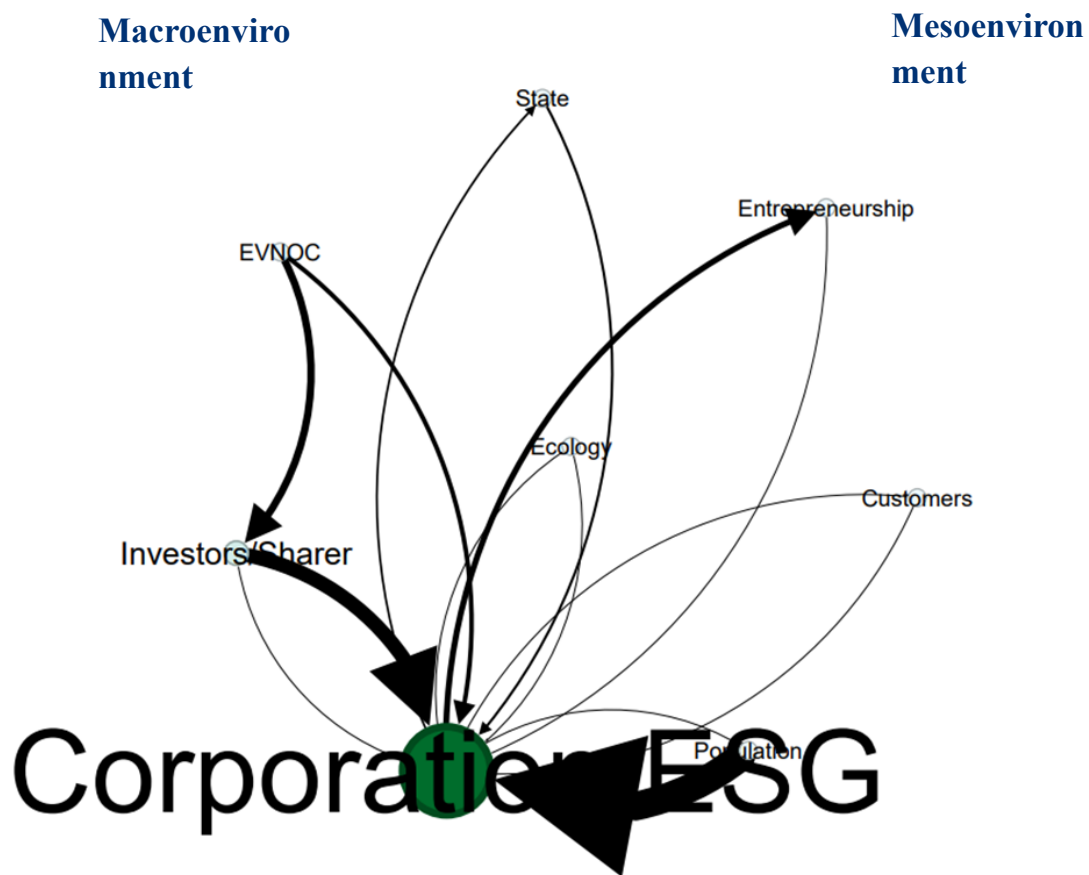
Source: compiled by the authors based on Rosstat data. URL: <https://www.rosstat.gov.ru>; Rosstat service for providing accounting reporting data upon user requests. URL: <https://www.rosstat.gov.ru>; MOEX data. URL: <https://www.moex.com>; Customs Online portal. URL: <https://www.customsonline.ru>

of the enterprise. The process belongs to the ESG direction of Government (from English “corporate governance”), the main stakeholder groups are the owners and management of the corporation;

H4 – to test the possible impact of macroeconomic restrictions on the export of goods from the Russian Federation under CN FEA “Nickel ores and concentrates” and “Copper ores and concentrates” – the main products of Norilsk Nickel on the general indicator of the corporation’s activities, a hypothesis was put forward about the impact of these restrictions on the net profit of the enterprise. It is proposed to test the hypothesis through an analysis of the relationship between the indicators of the volume of exports from the Russian

Federation of goods under CN FEA “Nickel ores and concentrates” and “Copper ores and concentrates” and the indicator “Net profit of the enterprise”. The process belongs to the ESG direction of Government, the main stakeholder groups are the owners and management of the corporation;

H5 – to test the possible impact of macroeconomic restrictions on the export of goods from the Russian Federation under CN FEA “Nickel Ores and Concentrates” and “Copper Ores and Concentrates” – the main products of the enterprise on the investment image of the corporation, a hypothesis was put forward about the impact of these restrictions on the market capitalization of the corporation PJSC Norilsk Nickel. It is proposed to test the hypothesis through an analysis



**Fig. 1. Network graph of the impact of foreign trade sanctions on the stakeholder value of the ESG policy of PJSC Norilsk Nickel for the period 2012–2018**

Source: developed by the authors.

Note: Corporation ESG – corporation implementing ESG policy; Ecology – natural environment; Entrepreneurship – business environment; Population – population/employees; State – state; Investors/Sharers – investors/ stockholders; Customers – suppliers/ buyers; EVNOC – volume of exports of the CN FEA “Nickel ores and concentrates” and “Copper ores and concentrates” from the Russian Federation.

of the relationship between the indicators of “volumes of exports from the Russian Federation of goods under CN FEA “Nickel ores and concentrates” and “Copper ores and concentrates” and “Market capitalization of PJSC Norilsk Nickel”. The process belongs to the ESG direction of Government, the main stakeholder groups are investors and shareholders of the corporation.

Next, the validity of the hypotheses put forward is checked in relation to a specific corporation. The results of establishing significant connections between the actors of the macro-, meso- and microenvironment of

PJSC Norilsk Nickel and assessing the strength of their influence on the stakeholder value of the ESG policy in the pre-sanction and sanctions periods are presented in *Table 2, 3*.

In the course of testing the hypotheses of the connections between the macroenvironment and the stakeholder value of the corporate network, the following conclusions were made.

For the tested corporate network, hypothesis H1 is not accepted, since there is no logic of connection between the selected indicators due to the established inversely proportional relationship between them. That

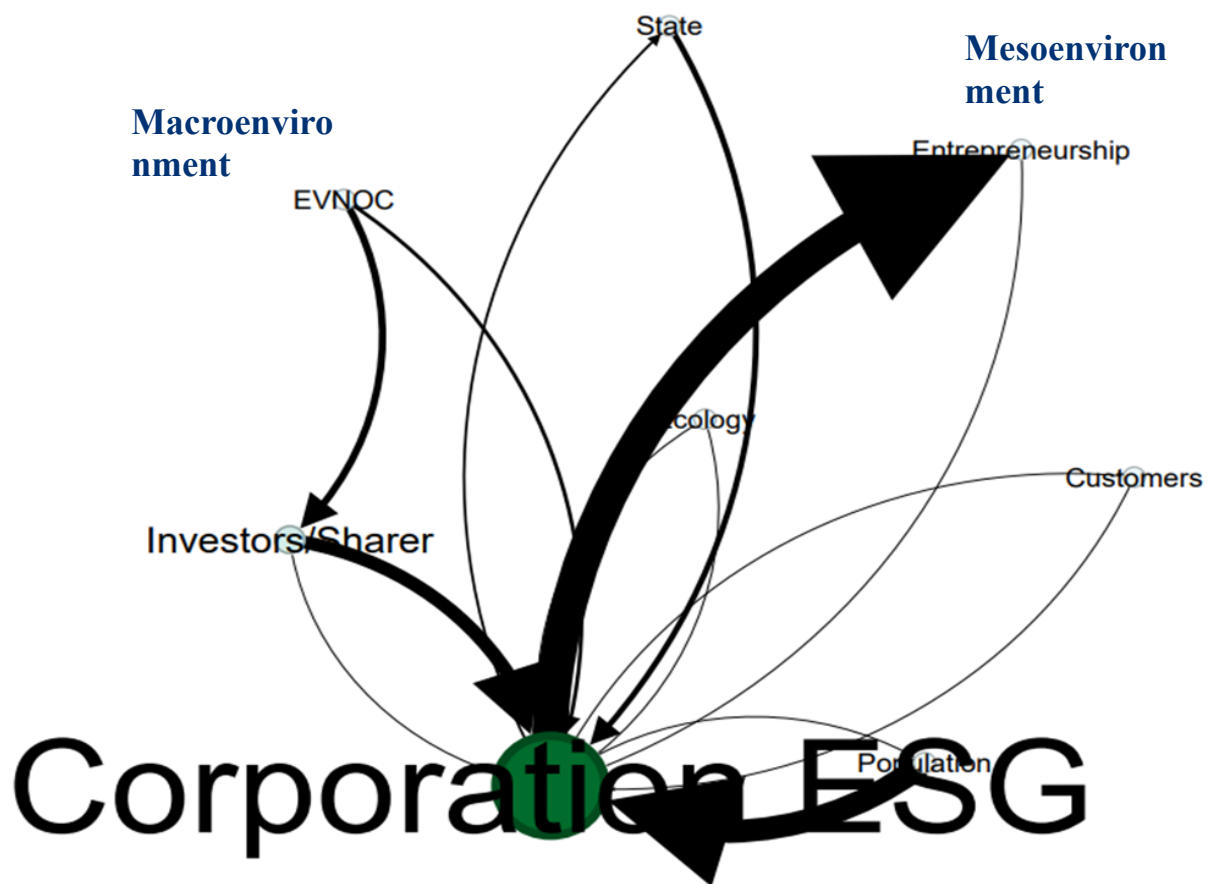


Fig. 2. Network graph of the impact of foreign trade sanctions on the stakeholder value of the ESG policy of PJSC Norilsk Nickel for the period 2012–2021

Source: developed by the authors.

Note: Corporation ESG – corporation implementing ESG policy; Ecology – natural environment; Entrepreneurship – business environment; Population – population/employees; State – state; Investors/Sharers – investors/ stockholders; Customers – suppliers/ buyers; EVNOC – volume of exports of the CN FEA “Nickel ores and concentrates” and “Copper ores and concentrates” from the Russian Federation.

is, changes in import volumes by product group do not affect the entrepreneurial and environmental activity of Norilsk Nickel PJSC. The behavior of the hypothesis in the case of other enterprises may differ.

For the tested corporate network, hypothesis H2 is not accepted, since the inversely proportional nature of the relationship between the volume of imports into the country of products according to the CN FEA group “Coal and rock mining

machines” and labor productivity at a resource mining enterprise seems illogical. Consequently, there is no expected connection between the indicators, and restrictions on the import of mining machinery do not affect the productivity of employees of this organization.

For the tested corporate network, hypothesis H3 is not accepted, since there is no direct economic relationship between the volume of imports into the country of products according to the Commodity Nomenclature of

Foreign Economic Activity group “Machinery for the extraction of coal and rocks” and the net profit of the enterprise, which is confirmed by the values of the correlation coefficients:  $-0.73$  and  $-0.57$ . The greater the volume of imports of special vehicles into the country, the lower the financial result of the corporation’s activities — there is no logic of connection.

Hypothesis H4 is accepted. According to it, exports from the Russian Federation of goods under the CN FEA “Nickel ores and concentrates” and “Copper ores and concentrates” (the main products of PJSC Norilsk Nickel) before the strengthening of foreign trade restrictions in the period 2012–2018. had a significant impact on the amount of net profit (correlation coefficient  $0.73$ ). After strengthening foreign trade restrictions, the strength of the relationship between export operations in the country and the profitability of Norilsk Nickel PJSC noticeably decreased (correlation coefficient  $0.39$ ) and the model ceased to be indicative ( $R^2 = 0.1509$ ). The company lost a significant share of profits from export operations. This is confirmed by verification of the results: corporate profit before tax in 2022 decreased by 40% compared to 2021, and inventories increased by 54%.<sup>15</sup> As a result of foreign trade sanctions, the contribution of the export group to the stakeholder value of the corporate network has lost significance.

Hypothesis H5 is accepted. According to it, export activities had a strong impact on the investment image of the corporation in the pre-crisis period, assessed through the stock market capitalization indicator of the corporation (correlation coefficient  $0.79$ ). A decrease in its influence on the stakeholder value of the corporation due to

the introduction of foreign trade restrictions (correlation coefficient  $0.66$ ) leads to image losses in the capital market.

The methodological approaches presented above are focused on automating the process of collecting and processing information. All data can be obtained from open official sources publicly available on the Internet through web scraping (parsing). For the end user — owners, management, state, other stakeholders of the corporation, the result or user tool of the methodology is a dashboard (*Fig. 1.2*), made using the Gephi 10.1 software tool, which shows the change in the corporation’s contribution to the formation of stakeholder values and the return of stakeholder groups to the corporation, which has come to the “money box” of stakeholder values.

The managerial value of network models lies in the ability to quickly monitor their changes in terms of contributions and benefits in the context of the network potential (usefulness and attractiveness for each stakeholder [24]), represented by direct and “response” reactions (both the network and the stakeholders themselves), measured intensity of direct and reverse dual connections. Regression models, strictly speaking, represent the value of the dependent indicator  $Y$  at the value of the explanatory indicator  $X = 1$ , which gives stakeholders a quick idea of the corporation’s real attention to ESG policy areas and about groups of stakeholders with the greatest networking potential in this area. Here, the weight of each connection (graph arc), representing the strength/intensity of the dual interaction of each pair of actors, is graphically displayed by the thickness of the lines, which is rational when the numerical results are represented by 8–9 orders of magnitude.

Let us analyze the results of the impact of crisis changes in macroenvironmental

<sup>15</sup> For Investors and shareholders. Financial statements. Norilsk Nickel (official website). URL: <https://www.nornickel.ru/>

conditions on the stakeholder value of the network (formed at the micro- and meso-levels).

From the “pre-crisis” network diagram it follows that of all the hypotheses, the macro-indicator of the volume of exports from the Russian Federation of the main types of products of the corporation – EVNOC – has a significant positive impact on the stakeholder value of the corporation. These macroenvironmental conditions influence the value created in the internal environment by the Corporation group and in the mesoenvironment by investors and shareholders (Investors/Shareers).

From the “crisis” graph it is clear that as a result of foreign trade restrictions, the positive impact of EVNOC macro conditions on the stakeholder value of the network is reduced and is a signal for increased managerial attention to this area of network value creation.

### CONCLUSION

As a result of the development of a methodology for quickly assessing the stakeholder value of a corporation’s social activities under time pressure and uncertainty in the external environment, current requirements for the corporate governance model have been identified; Methodological provisions are proposed for assessing the influence of macroenvironmental factors on the stakeholder value of a corporation using a network approach and correlation-regression analysis.

In the process of testing the methodology using the example of PJSC Norilsk Nickel, it was established that in the pre-crisis period, a significant positive impact on the stakeholder value of the corporate network was exerted by the macro-indicator of the volume of exports from the Russian Federation of its main types

of products for the stakeholders “Corporation” and “Investors/Shareholders”.

During the period including the crisis associated with COVID-19 and foreign economic sanctions, the positive impact on the stakeholder value of the network of macro conditions associated with export volumes is reduced as a result of foreign trade restrictions, which is a signal for increased managerial attention to this area of network value creation.

Changes in the volume of imports into the Russian Federation for the product group “Computing machines and units” do not affect the entrepreneurial and environmental activity of the corporation. Also, restrictions on imports into the Russian Federation of products under the Commodity Nomenclature of Foreign Economic Activity group “Machinery for the extraction of coal and rocks” do not affect the productivity of the enterprise’s employees.

The results obtained correspond to the real situation in the corporation’s business environment, which indicates the validity of the methodology for the task of quickly assessing the impact of macroenvironmental conditions on stakeholder value. This technique can become a tool for making management decisions, in demand both by company management to identify particularly vulnerable areas of corporate relations, and by government authorities to justify and determine directions for providing government support to businesses in times of crisis.

The principle of using data from open official sources underlying the methodology creates the basis for automating the process of assessing stakeholder value, ensuring the requirement for the efficiency of generating information in a rapidly changing external environment.

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