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The Managerial Aspect of Accounting ESG Factors in Assessing the Value of a Company

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ABSTRACT

The subject of the study is ESG factors (Environment, Social, Government) and their inclusion in the value of Russian companies. The purpose of the paper is to reveal the theoretical and methodological aspects of taking into account ESG factors when assessing the value of companies. The relevance of the study is determined by the influence of the ESG rating of companies on changes in their value. The scientific novelty of the study lies in the development of a general scheme, which includes four stages: substantiation of key external and internal factors influencing ESG-assessments of the company's value; analysis of the nature of the impact of key factors on ESG assessments; assessment of the impact of the ESG-factor on the elements of value creation (forecast period, discount factor, cash flows, post-forecast growth rates); building a financial model for assessing the value of companies taking into account ESG factors. Methods: general scientific methods (comparative analysis, generalization, formalization) and empirical (observation, comparison, modeling). The DCF (discounted cash flow) approach was proposed as the main method for assessing the value of a company, which allows not only to estimate the value of a company over a specific period of time, but also acts as a cost management tool. An analysis of scientific and theoretical points of view and methodological approaches to assessing the influence of ESG factors on the value of companies was carried out, significant factors influencing the ESG assessment of the company's value were identified, and a financial model for assessing the value of the company taking into account ESG factors was proposed. The model for assessing the impact of ESG on cash flow generation elements was tested using the example of PJSC Polymetal. It is concluded that the ESG assessment of a company's value is influenced by both external factors (international regulation, country specifics, industry specifics) and internal ones (specifics of the capital structure, specifics of production). The developed financial model for assessing the value of a company makes it possible to take into account ESG factors in the output forms of reporting: balance sheet, profit and loss statement, cash flow statement. The proposed model is addressed to top managers of the company for the purpose of using it in the process of assessing the degree of influence of ESG factors on the cost of equity capital, potential investors and appraisers.

Keywords: ESG-factors; company value; company; discounted cash flow; financial model of the company

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INTRODUCTION

In the current conditions of geopolitical change, there is a slowing of the movement towards sustainable development and a suspension of the solution to this problem in Russia. However, as A. Sharonov notes, even after reorienting to Asian and Middle Eastern markets, Russia remains subject to stringent *ESG* requirements.[1] For this reason, Russian companies are forced to continue to adapt global *ESG* practices to the national market. Among the most important factors in determining the necessity of the *ESG* agenda are the following: a reduction in the number of investments in companies with low *ESG* ratings; consideration of companies' *ESG* ratings when lending to banks; and the possible impact of *ESG* factors on the company's valuation.

The research was done in accordance with the initial hypothesis on the impact of *ESG* factors and the possibility of including them in the valuation of Russian companies. The purpose of the study is to reveal the theoretical and methodological aspects of *ESG* factors in the valuation of companies. In order to achieve this goal, tasks related to the analysis of theoretical studies of the impact of *ESG* factors on the value of companies were consistently addressed; identifying the significant factors affecting the *ESG* valuation; and developing a financial model for the valuation of companies taking into account *ESG* factors.

THEORETICAL PROBLEMS OF RESEARCHING

The scientific literature presents a large number of works devoted to the research of the impact of *ESG* factors on the activities of companies.

S. Wu et al. explored the relationship between *ESG* factors and the value of Chinese production companies listed on the stock exchange. Authors have concluded that *ESG* efficiency is important for increasing the value of the company, management responsibility and institutional responsibility have a positive and significant impact on the company's value [1].

M. Aydoğmuş et al. studied the impact of environment, social and governance indicators (*ESG*) on the value and profitability of a company. As a result, they concluded that the total combined *ESG* score was positively and significantly linked to the value of the company [2].

E. Saygili et al. examined the impact of environment, social and governance (*ESG*) practices on corporate financial performance (*CFP*) in Turkish companies listed on the stock exchange. The results of the study showed the negative impact of environmental disclosure on *CFP*. Provisions relating to shareholders' rights and the board of directors have a positive impact on *CFP* in terms of governance [3].

G. H. Ionescu et al. found that the management factor had the most important influence on the market value of companies regardless of the geographical region in which they were located [4].

G. Cohen analyzed the relationship between ESG sustainability indicators and company' ratings [5].

D. Ikbaev's study argues that companies with thoughtful proposals in the field of environmental protection, social development and corporate governance (ESG) can create higher value for shareholders and for society as a whole.[2]

V. V. Aleksandrov on the basis of econometric models showed linear

[1] What will happen to the Russian ESG agenda in the new conditions. URL: https://news.ecoindustry.ru/2022/10/chto-budet-s-rossijskoj-esg-povestkoj-v-novyh-usloviyah/ (accessed on 16.02.2023).

[2] Ikbaev D. How to increase the value of a company with ESG. Five leverages through which ESG factors affect company value and cash flows. URL: https://kapital.kz/experts/96039/kak-uvelichit-stoimost-kompanii-s-pomoshch-yu-esg.html (accessed on 16.02.2023).

dependency, as well as the degree of impact of *ESG* rating of oil and gas companies on capitalization indicators [6].

Research of the University of Perugia based on *ESG* rating data of Sustainable Corporate Governance 2020 and 2021 confirms the positive link between the level of sustainable corporate governance and the financial performance of the company.[3]

D. Yu. Zakhmatov and G. Sh. Valitov examined the relationship between the market value of Russian companies from different industries and their financial and non-financial information for the period 2018–2021. In the course of research, a reverse relationship was identified between the company's market capitalization and effective *ESG* policy [7].

A. V. Babkin and E. D. Malevskaia-Malevich found that securities of companies with high ESG ratings have increased investment attractiveness in the course of Socially Responsible Investment (SRI) because they act in synchronously with new development prospects [8].

D. V. Ovechkin found that ESG *goals* are not always in conflict with profit maximization, and that companies with high *ESG* ratings tend to be more profitable [9].

The impact of *ESG* factors on the financial position and investment attractiveness of companies was also considered by N. N. Shash, N. D. Dosaeva [10], I. S. Belik, A. S. Dutsinin, N. L. Nikulina [11], G. Friede, T. Busch, A. Bassen [12], S. S. Galazova [13], I. N. Tkachenko, L. A. Ramenskaya [14], Y. Abdi, X. Li, X. Càmara-Turull [15], S. V. Kibovskaya, K. P. Malikova, N. V. Emelyanova, O. A. Kurda [16] etc.

A discounted cash flow approach is used in the great majority of studies on measuring the influence of the *ESG* factor on value creation aspects [17–22].

In practice, among the many *ESG* indicators, those that have a significant impact on the performance and cost of companies are updated. Thus, the consulting company McKinsey&Company concludes that the five *ESG* factors are the most effective.[4] According to the paper's authors, when determining key elements affecting the company's *ESG* value estimates, they should be classified into two groups: unmanaged factors are external, and controlled factors are internal. *External factors* are linked to the following:

– *international regulation,* which includes the regulatory requirements of foreign governmental bodies and international non-governmental organizations. In this context, companies are forced to comply with the norms and principles of conducting business in international markets, which is especially relevant for export-oriented Russian companies and/or with production outside Russia;

– *country characteristics*. This aspect requires us to consider the rules and restrictions of doing business in a specific state, such as regulatory and legal requirements, tax and environmental regulations, etc. Furthermore, this group considers non-financial factors such as the region's poor environmental situation, social destitution, reaction to the state's foreign policy, etc.;

– *industry specificity*. The factor is decisive in the *ESG* rating of the company, as for some industries, the most important issue in the subject of *ESG* is the environment and the company's contribution to the socio-economic development of the region of presence, for others with low capital

[3] Corporate governance in the context of ESG: a new understanding of sustainability. Moscow, 2021. 31 p. URL: http://corptransparency.ru/documents/corporate-governance-in-the-context-of-esg.pdf (accessed on 28.02.2023).

[4] Getting the most out of your sustainability program // McKinsey&Company, 2015. URL: https://www.mckinsey.com/industries/retail/our-insights/getting-the-most-out-of-your-sustainability-program (accessed on16.02.2023).

intensity, — corporate governance, the degree of social responsibility.

Internal factors:

– *specifics of capital structure*. Consideration of this factor in *ESG* estimates of company value is key. Thus, the *G*-factor rises as a result of the borrowed-to-own capital ratio, because, on the one hand, the presence of an important percentage of loan financing promotes companies to become more transparent, respect to anti-corruption rules, implement frequent auditing practices etc. On the other hand, a study of one of the largest consulting companies *MSCI*[5] shows that more advanced *ESG* companies on average "saving" on the value of equity by almost 1%, and on the cost of borrowing — 1.5%. At the same time, the most significant increase in profits occurs in companies with poor *ESG* performance, as the improvement of their *ESG* activity causes a decrease in the interest rate on loans and the required rate of return on investments in shares, thereby reducing the cost of debt service and increasing their market value;

– *specifics of production*. Factors reflect the features of the company's functioning, the parameters of the organizational structure, and the relationship between employees (communication, corporate culture, etc.).

MATERIALS AND METHODS OF RESEARCH

Traditionally, the basis of the financial approach to estimating the value of a firm is the analysis of discounted cash flows (further —*DCF*). Its fundamental purpose is to evaluate the cash flows available for distribution among the main stakeholders (shareholders and creditors) in real time and adapt the calculated money flows to the level of risk.

The advantage of the *DCF* model is not only in estimating the company's value in the current and forecast periods, but also as a tool for managing the value of the firm, as it works at all levels of the management process: formulation of strategy, setting of target standards, organization of promotional systems and evaluation of performance. For this reason, this approach is used in the work of assessing the impact of *ESG* factors on key value creation elements, which means such elements of the *DCF* model as cash flows, discount rate and project lifetime.

According to the *DCF* approach, the valuation of the company for shareholders is made using the following expression:

$$EV = \sum_{t=1}^{n} \frac{FCFE_t}{(1+r_e)^t} + \frac{FCFE_{n-1}(1+g)}{r_e - g}, \quad (1)$$

where *EV* — enterprise value; *FCFE* — cash flows for shareholders; r_e — discount rate reflecting the value of equity (e. g. calculated using the *CAPM* model); *g* — average rate of revenue growth in the post-forecast period; *t* — discount period; *n* — number of discount periods.

The *CAPM* model, developed in the 1960s by W. Sharpe [23], J. Lintner [24] and J. Treynor [25], is the most common.

The estimated value of the company for all capital suppliers is determined by the expression (2):

$$EV = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_{n-1}(1+g)}{WACC - g}, \quad (2)$$

where *FCFF* — cash flows for all capital holders; *WACC* — weighted average value of capital.

RESULTS OF THE RESEARCH

A scheme to assess the impact of *ESG* factors on value elements has been developed, the order of which is presented in *Fig. 1*.

[5] ESG and the cost of capital. MSCI, 2020. URL: https://www.msci.com/www/blog-posts/esg-and-the-cost-of-capital/01726513589 (accessed on 21.02.2023).

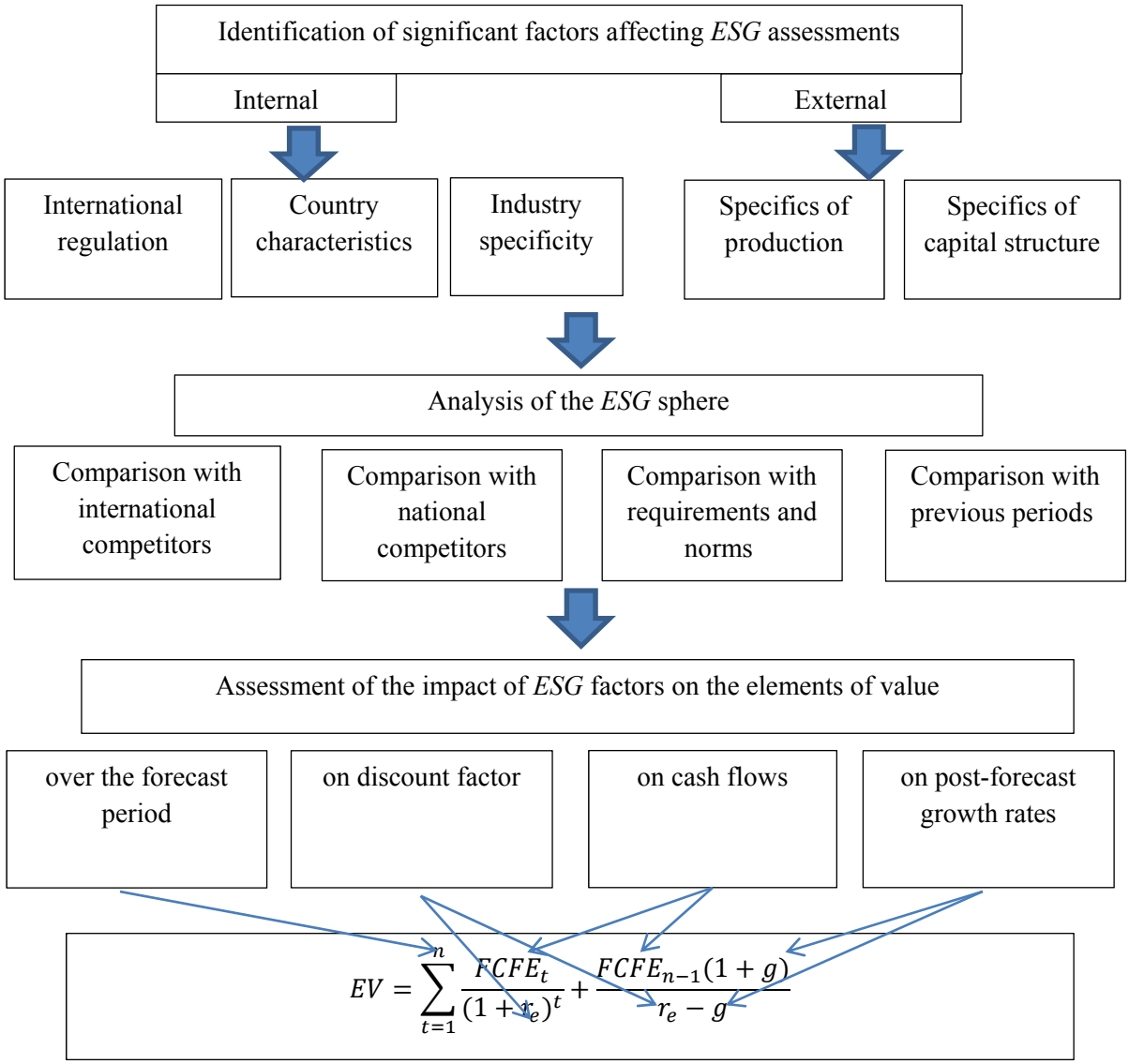

Fig. 1. **General Scheme of the Impact of the ESG Factor on the Value of the Company**

Source: Compiled by the authors.

The evaluation of the scheme is based on the principles of *substantiality, comparability* and *measurability.*

According to the *ESG* factor influence scheme (*Fig. 1*), the first level confirms the importance of external and internal factors influencing the company's *ESG* valuation.

In the second phase, compare the *ESG* performance of the company with that of *international competitors*, identifying best practices in this field. The analytics database is constructed directly from the non-financial reports of international corporations, as well as aggregated data provided by significant news organizations. In the future, industry and international averages will be calculated, and a regression analysis with financial indicators, specifically *FCFF*, will be performed. An investigation of the state of circumstances in the *ESG* sphere at the *national level* is being carried out in the second phase (*Fig. 1*). In terms of the importance of the results obtained, this analysis is comparable to international competitors, since creditors, institutional and private investors are considering alternatives in the national market.

$$EV = \sum_{t=1}^{n} \frac{FCFF_t}{(1 + (1 - T_c) * r_D * \frac{D}{V} + r_E * \frac{E}{V})^t} + \frac{FCFF_{n-1}(1+g)}{WACC - g}$$

Factors of decline	Factors of increase	Factors of decline	Factors of increase	Factors of decline	Factors of increase
1.Reduce the risk of default through more sustainable business practices 2. *ESG* increases the money that can be used to repay loans 3. Monetary system promotion of *ESG*-advanced companies	1. Overinvestment in *ESG* projects, which will reduce the cash flow for lenders and increase the risks of the borrower 2. Non-compliance with the *ESG* covenant under the loan agreement 3. Cases of "greenwashing" detection by the company in order to overvaluation positive indicators and create an impression of high *ESG* achievements	1. Reduction of stock price volatility 2. Stable dividend payments through the introduction of quality corporate governance practices 3. Promotion of the company in reputable *ESG* ratings	1. Pressure from financial indicators 2. Price volatility of a company with a lower *ESG* rating 3. The presence of a "green" premium that affects the final value of equity	1. Increased risks of problems with public authorities on *ESG* related issues 2. Significant reduction in company revenue due to global trend failure 3. Closure of key counterparties from long-term cooperation	1. Active environmental care will enable the company to use the main mining facilities for longer periods of time 2. Company can use *ESG* penetration into consumption culture to increase revenue growth 3. The implementation of *ESG* will take consideration of the interests of many steakholders, allowing the company to remain in the market for a longer period of time.

Fig. 2. **Scheme of Potential Assessment of the Impact of ESG on the Discount Factor**

Source: Compiled by the authors.

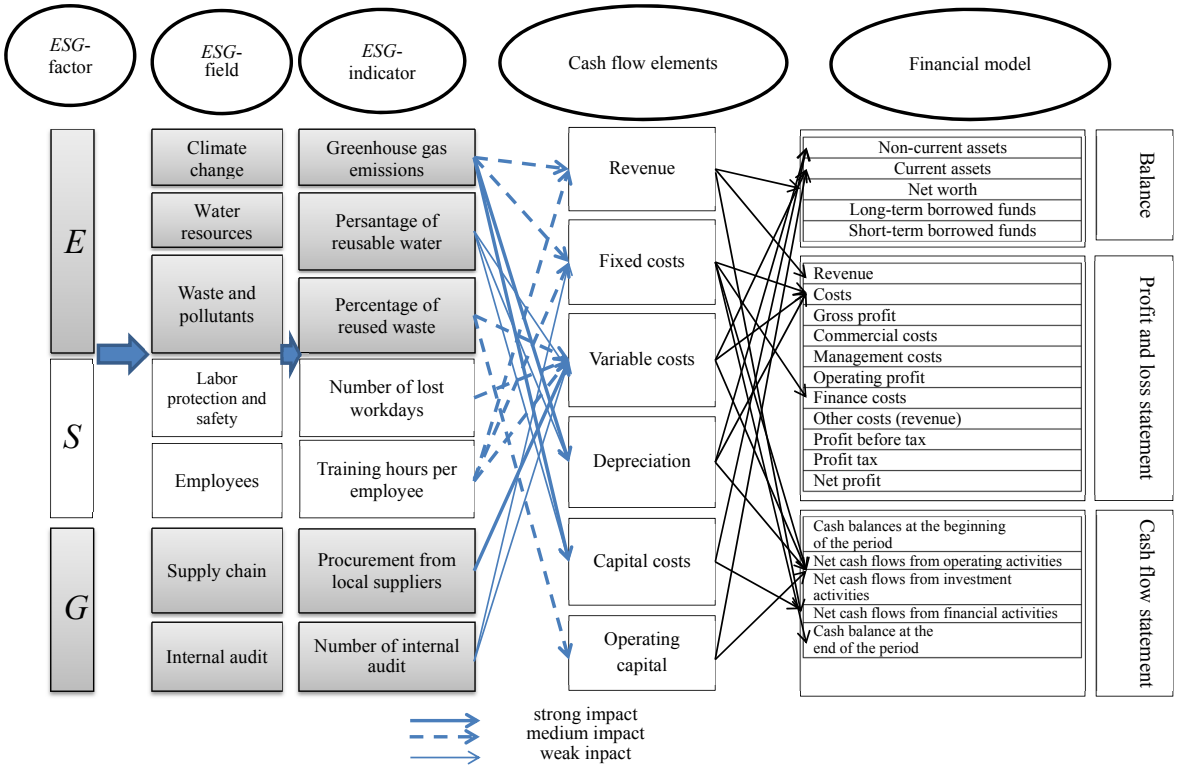

Fig. 3. **Scheme of the Impact of ESG Factors on Cash Flows and Financial Model of PJSC Polymetal**

Source: Compiled by the authors.

Table

Characteristics of ESG-Indicators (PJSC Polymetal)

Elements of FCFF formation	ESG indicators	The format of the impact on cost elements
Revenue	Greenhouse gas emissions	Some buyers may refuse to buy from excessively polluting suppliers
	Training hours per employee	By investing in the professional growth of its employees, the company increases revenue through competent analytics, improved production efficiency and increased staff productivity
Fixed costs	Greenhouse gas emissions	Attracting climate-related special loans, reflected in the increased cost of servicing such debts
	Training hours per employee	By increasing employee competence, the company increases the possibility of discovering new methods of production optimization and cost savings.
	Number of internal audit	Internal checks help to detect ineffective disruptions and reduce them
Variable costs	Percentage of water reused	The company can reduce operating costs for the purchase (mining) of new similar materials
	Percentage of recycled waste	By reusing already spent resources, the company can reduce operating costs for the purchase (mining) of new similar materials
	Number of lost workdays due to disability	The company is forced to incur additional costs for disability compensation and has alternative costs when the injured employee is not useful
	Training hours per employee	By increasing the competence of the employee, the company hopes to find ways to improve the efficiency of the use of operating resources
	Procurement from local suppliers	The company saves on transportation costs and uses the possibility of discount for purchases
	Number of internal audit	Internal auditor will help to find inefficient "meta" of the use of operating funds
Depreciation	Greenhouse gas emissions	Deductions for additional depreciation due to the adoption of ecologic equipment and technology
	Percentage of water reused	Introduction of water management equipment/technologies in water management projects is reflected in the annual report*
Capital costs	Greenhouse gas emissions	Increase in capital expenditures for acquisition and/or construction of treatment plants, upgrading of equipment, renewable energy sources
	Percentage of water reused	Capital investments in water projects as reflected in the annual report *
Operating capital	Percentage of recycled waste	An increase in recycling decreases the requirement for additional material purchases, lowering operating costs while preserving or increasing production

Source: Compiled by the authors.

Note: * Integrated Annual Report of PJSC Polymetal for 2021. URL: file:///C:/Users/qwer/Downloads/Polymetal_integrated-report-2021%20(1).pdf (accessed on 25.01.2023).

Also in the second phase, the *requirements* and *norms* put forward by the main capital suppliers (creditors, institutional investors) to specific industries (mining, oil and gas industry, banking) are analysed.

The *dynamic analysis* of indicators carried out in the second phase is implemented in the study of almost all economic phenomena, including *ESG*. An idea of how the company develops in the *ESG* sphere allows it to establish the change in its indicators, to link the direction of the dynamics of the development of *ESG* indicators with internal and external processes, identify gaps, and to form recommendations to improve its position in this field.

In the third phase, according to the scheme (*Fig. 1*), the description of valuation indicators and the nature of their impact on value creation elements are carried out.

In the fourth phase, a financial model of the impact of *ESG* factors on value creation elements is formed on the evaluation of the use of the *DCF* approach (*Fig. 1*). The financial model identifies three types of reporting: balance sheet, profit and loss report, and cash flow report.

The scheme for integrating *ESG* into the company's valuation is presented in *Fig. 2*. *ESG* factor accounting is carried out through a premium or discount when assessing the company's net worth according to the *CAPM* model, since it demonstrates the firm's position in the field of sustainable development.

$$r_{green\ equity} = r_f + \beta\left(r_m - r_f\right) + r_{green}, \quad (3)$$

where $r_{green\ equity}$ — cost of net worth with ESG factor; r_f — risk-free rate of return; r_m — market returns; β — beta-coefficient of a specific share; r_{geen} — net worth premium for low *ESG* ratings or discount for high *ESG* ratings and investor's willingness to provide a discount on company's successes in *ESG*.

In this case, the "green disccount" (r_{green}) is valued by the method of estimating the value of intangible assets or an integral goodwill. The latter is an excess of the market value of net assets over their balance value. In order to obtain the "green discount" of the company, it is necessary to combine additional costs in the form of capital investments in treatment plants, filters, etc., and operating costs for the conduct of *ESG* events, the purchase of more environmentally friendly materials, etc.

All these additional costs affect the elements of cash flow generation, in particular *Capex* (capital costs), *NWC* (net operating capital) and *DA* (calculated wear and depreciation).

ESG factors also affect the cost of borrowing, as they can increase cash flows from capital providers, because they reduce the value of loan financing through various preferential programs, special credit lines, and discounts from banks to *ESG* advised companies.

APPLICATION OF RESULTS ON THE EXAMPLE OF PJSC "POLYMETAL"

Polymetal is a public joint-stock company operating in Russia and Kazakhstan. Active implementation of *GRI* standards since 2014, disclosure according to the Sustainability Accounting Standards Board (*SASB*), and from 2021 to publish information on the recommendations of the Task Force on Climate Related Financial Disclosures (*TCFD*).

In the scheme shown in *Fig. 3*, the first three columns show the area and indicators selected by groups of *ESG* factors affecting the elements of cash flows. The description of *ESG* indicators relevant to the company and the nature of their impact are given in *Table*.

The fourth and fifth pillars reproduce the links between the value creation elements

of the company and the financial model and reflect their impact on reporting (information important to investors and traders).

CONCLUSION

A four-stage general scheme was developed to assess the impact of *ESG* factors on value elements:

1) justification of the importance of external and internal factors on the *ESG* value estimates of the company;

2) analysis of the state of the *ESG* sphere;

3) assessment of the impact of *ESG* factors on the elements of value creation;

4) construction of a financial model of valuation of companies with an *ESG* factor.

The scheme of the impact of *ESG* factors on the elements of cash flow generation was tested on the example of PJSC "Polymetal".

The conclusion is that by increasing its position in the *ESG* field, the company decreases the risks of doing business, working with unreliable counterparties, having tax inspection problems, etc. At the same time, investors assume that the company is focused on long-term growth by such actions, so the investment in it is more likely to pay off compared to *ESG* neutral companies. In this situation, the value of borrowed capital decreases due to increased cash flows that can be directed towards debt repayment and reduced risks.

The research provided in this case will help to establish a comprehensive methodology for assessing the impact of *ESG* factors not only on the company's value, but also on its investment attractiveness. Companies can use the results of the research to develop management strategies to help them progress toward sustainable development.

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