DOI: https://doi.org/10.17323/j.jcfr.2073-0438.16.1.2022.83-98
JEL classification: G32, C10, D80, O16

Accounting for ESG Risks in the Discount Rate for Business Valuation

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Abstract

The research is aimed at developing tools for determining and justifying specific ESG risks for the purpose of accounting for projected cash flows in the discount rate in business valuation. A study of modern methods, standards and publications in this area has been conducted, and the need for their refinement and development for practical use has been determined.

The research used the results of the works by foreign and domestic authors, as well as their own professional experience. The authors used general scientific methods of cognition, such as classification, logical and system analysis, typology and generalization.

The proposed tools are aimed at substantiating, supplementing and clarifying the discount rate model (CAPM) by introducing additional coefficients that take into account the influence of ESG factors. The article proposes a scoring model for assessing risks on a point scale and tools for their subsequent translation into correction coefficients using the method of expert assessments, which already allow them to be applied in practice today. The model of accounting for specific risks is based on data from literary sources, and demonstrated using a practical example.

The author's tool is designed to provide analysts, appraisers and experts with a qualitative justification and calculation of specific risks associated with ESG factors when evaluating a business. It is also assumed that the proposed tools will serve as one of the criteria for managing business value, allowing for measures to reduce specific risks and increase company capitalization.

Keywords: ESG risks, business valuation, principles of sustainable development, risk accounting in business evaluation, specific risks, unsystematic risks, development of business evaluating methodology

For citation: Zakhmatov, D., Vagizova, V. and Valitov, G. Accounting for ESG risks in the discount rate for business valuation. *Journal of Corporate Finance Research.* 2022;16(1): 83-98. https://doi.org/10.17323/j.jcfr.2073-0438.16.1.2022.83-98

Introduction

Environmental, Social, and Corporate Governance (ESG) is an evaluation of a firm's collective conscientiousness in regard to social and environmental factors. It is typically a score that is compiled from data collected on specific metrics related to intangible assets within the enterprise. It could be considered a form of corporate social credit score. These three broad categories are used to define "socially responsible investors", i.e. the investors who consider it important to incorporate their values and concerns (such as environmental, governance, or community concerns) and then make an investment decision, rather than considering solely the potential profitability.

Today, the vast majority of companies pay attention to the most evident value creation factors: income, cost components, capital raising costs and others. At the same time, company management associates their value with the concept of sustainable development and related factors. The reason for this is the relationship between a number of sustainable development factors and key factors of a company's value and financial results. Thus, the issue of assessing the value of a business with regard to sustainable development factors becomes very relevant. Integrated reporting could best explain to users of financial statements the impact of factors of a company's activities on its market value [1–3].

In the comparative method of determining the business value of an ESG enterprise, these factors influence the valuation multipliers [4–6]. In the revenue method of determining the value of a business, these factors affect the components of the company's cash flows: revenue, costs, and capital investments [7]. Both research works and analysis within the framework of companies' development plans are devoted to these issues. At the same time, insufficient attention is paid to the definition and justification of the components of specific risks taken into account in the discount rate of projected cash flows. It was this aspect that the authors found interesting and set out to investigate.

This article discusses the proposals for the development of a business valuation methodology from the viewpoint of examining ESG factors when building a discount rate model for business valuation. The reports of analysts and appraisers either indicate subjective assessments of a company's specific (non-systematic) risks, or they are disregarded.

This article also discusses the advantages and limitations of existing approaches to assessing the premium for specific risks and suggests approaches to assessing the premium for specific risks with regard to ESG factors.

Hypothesis

The hypothesis set forth by the authors states that accounting for ESG factors when determining specific risks in the calculation of the discount rate increases the validity and reliability of business valuation

Results

As a result of analyzing the specific risk factors of an enterprise taken into account when designing the discount rate model and the classification of external social and environmental factors, it is advisable to detect the following factors:

- risks related to the quality of corporate governance
- stability risks and profit predictability
- risks associated with key personnel

The question arises as to the source of analytical data on these factors that allows them to be taken into account in enterprise value estimation models. The traditional financial reporting model does not currently satisfy investors and other interested users to a sufficient degree, and is increasingly being criticized for containing only economic indicators and relying on the already accomplished facts of economic activity. In this regard, an additional and important factor that must be taken into account when assessing the value of a business is the availability and content of its non-financial statements.

In many ways, non-financial reporting should be taken as seriously as financial reporting. These types of reporting complement each other, allowing stakeholders to get a comprehensive objective view of the organization.

To define non-financial reporting, the Association of Managers uses the term "corporate social report", which means "a public tool for informing shareholders, employees, partners and the whole society about how and at what pace the company implements the goals of economic sustainability, social well-being and environmental stability laid down in its mission or strategic development plans". A similar definition of the corporate sustainability report is provided by the Association of Chartered Chief Accountants (CGA – Canada). The Russian Social Information Agency uses the term |social report", which refers to a document describing the assessment of the company's public influence [8; 9].

Non-financial reporting standards guarantee a certain quality of a non-financial report, as they were developed and approved by expert groups that have identified the most significant aspects of the activities of organizations subject to public disclosure. However, certain experts in the field of corporate social responsibility express skepticism about these standards, since even their use does not prevent the so–called green conspiracy – an insincere demonstration of commitment to these principles.

The next aspect in accounting for these factors concerns their use directly in calculations, in particular, when designing the discount rate model.

Additional tools for incorporating these factors can be proposed in the development of the business assessment methodology, allowing the use of most of the methods mentioned in specialized literature, some of which are systematized in Table 2.

The authors propose to analyze ESG factors with a ranking of the impact on a particular indicator of specific risk.

Risks related to the quality of corporate governance

Analytical reviews submitted by the Russian Union of Industrialists and Entrepreneurs state that a non-financial report is a portrait of a company reflecting its public facade [10]. It allows to see what the company's strategy is, what it does to implement it, what results it achieves and at what price.

The reporting information provided characterizes the stability and reliability of the company. The very fact of submitting the report to the public indicates that the company is moving towards increasing information openness and transparent activities, is responsible for the costs of achieving results, is ready to engage in dialogue and cooperate with interested parties. Another important and relevant task is to further improve the quality of information disclosed by companies as a vital factor in building trust and reputation.

In practice, the following types of reporting have become widespread today: corporate social, sustainable development, socio-ecological and social. They disclose such company data as the number of jobs, average wages, the number of women in senior positions, methods of combating corruption, negative impact on the environment, etc. This suggests that the practice of non-financial reporting took on a global scale at the turn of the 21st century.

Non-financial company reports typically contain three main sections: economic, social and environmental.

The key principles of sustainable development and responsible business conduct reflected in non-financial reporting are:

- Business supports and respects the protection of human rights accepted by the international community;
- Business is sure that it is not involved in human rights violations;
- Business supports the freedom to form associations and recognizes the right to conclude collective agreements;
- Business supports the exclusion of all forms of forced and compulsory labor;
- Business supports the ban on child labor;
- Business supports the elimination of discrimination in hiring and employment;
- Business supports a careful approach to environmental issues;
- Business puts forward initiatives to ensure greater environmental responsibility;
- Business promotes the development and implementation of environmentally friendly technologies;
- Business fights all forms of corruption, including extortion and bribery.

Adherence to the principles of sustainable development and responsible investment contributes to a more effective achievement of companies' strategic goals, as it allows for long-term investments in creating a favorable social environment, while reducing the risks of the institutional and social environment.

Thus, the availability of non-financial reporting and the level of its application is an important indicator characterizing the quality of a company's corporate governance.

The authors propose to determine the impact on risks with regard to:

- applicable standards, platforms and guidelines for the preparation of non-financial reporting;
- the level of development of non-financial reporting in the industry/companies similar in scale of activity (with regard to the indicators of comparable companies, a comparative approach to evaluation).

The most well-known ratings in the field of environment, social sphere and management (ESG) are prepared by the following agencies: KLAR, Sustainalytics, Moody's ESG (Vigeo-Eiris), S&P Global (RobecoSAM), Refinitiv (Asset4) and MSCI [11].

The assessment of the availability factor and the level of its application in assessing the specific risks of a company is provided in Table 1.

Table 1. Availability of non-financial reporting

The analyzed factor	Level of development of the enterprise in question	Current level of development of non-financial reporting in the industry/ companies similar in scale of activity	Impact assessment for the comparative approach	Impact assessment for the revenue approach
Availability of non-financial reporting	Reporting is in place, the GRI application level is advanced (comprehensive) or IIRC full	not developed	maximum positive impact	maximum positive impact
		developed	positive impact	
	Reporting is in place, the GRI application level is basic (core) or IIRC partial	not developed	positive impact	positive impact
		developed	has no effect	
	No reporting is being implemented	not developed	has no effect	negative impact
		developed	negative impact	

Table 2. Availability of an environmental management system according to ISO 14001/ GOST R ISO 14001 or other standards

The analyzed factor	The state of development of the enterprise in question	The current level of development of the environmental management system in the industry/companies similar in scale of activity	Impact assessment for the comparative approach	Impact assessment for the revenue approach
Availability of an environmental management system according to ISO 14001/ GOST R ISO 14001 or other standards	Implemented in the company and/or the main production subsidiaries of the company; quantitative indicators of its effectiveness are reflected in the company's public documents	not developed	maximum positive impact	maximum positive impact
		developed	positive impact	
	Implemented in the company and/or the main production subsidiaries of the company; quantitative indicators of its effectiveness are not reflected in the company's public documents	not developed	positive impact	positive impact
		developed	has no effect	
	Not implemented in the company and/or the main production subsidiaries of the company	not developed	has no effect	negative impact
		developed	negative impact	

Stability risks and profit predictability

Modern conditions dictate new rules of the game to businesses, with a focus on "environmental friendliness". No industrial enterprise can function today without implementing a set of environmental measures. The policy of many states is aimed at "greening" the economy. The environmental component is now an integral part of the business sphere.

Investors understand that the implementation of an environmental management system provides a company with the following advantages:

- systematic reduction of negative impact on the environment;
- systematic reduction of production and operating costs;
- In addition, the introduction of an environmental management system provides a set of additional benefits, including:
- reducing the risks of emergency situations and the scale of consequences in case of their occurrence;
- increasing the competitiveness of the enterprise in foreign and domestic markets;
- the possibility of developing new markets;
- forming a favorable image and improving relations with consumers, partners, investors, government agencies and the public;
- improving investment attractiveness;
- reduction loan interest rates;
- reducing insurance payments.

The above set of additional advantages has a significant impact on the stability and predictability of profit, and the impact of the availability of an environmental management system should be taken into account in the estimates provided in Table 2.

Risks associated with key personnel

Among other things, this factor provides an assessment of social risks in a company's activities and evaluates the company in relation to stakeholders: compliance with the interests of employees, local communities, procurement policy and contractors, as well as respect for human rights and impact on society are considered.

The social policy assessment can be based on a comprehensive analysis of 5 groups of indicators focused on the analysis of key social policy elements in the company's activities:

- working conditions and safety at work – this indicator group comprises occupational injuries over the past three years;
- personnel policy – this group of indicators includes the average salary level in the company, staff turnover and other working conditions;
- social support – employee compensation is assessed in the form of benefits, medical care, pension insurance, etc.;
- human rights and discrimination – company policy and standards in the human rights sphere, as well as gender balance and information openness in regard to these issues are evaluated;
- interaction with local communities – this group of indicators includes charitable activities and social investments in the regions of presence, as well as interaction with the local population.

In assessing social policy, the proposed methodology is based on standards, guidelines and recommendations, including, but not limited to, the following documents:

- The Global Reporting Initiative's Sustainability Reporting Guide [12];
- Gold Standard – Business And The Sustainable Development Goals [13] ;
- Below are the groups of indicators and criteria for evaluating the social indicator block .

An assessment of the impact of risks associated with key personnel on the implementation of social policy, the company can receive from 0 to 5 points.

Further evaluation of the indicator is also proposed to be carried out in terms of correlating the indicators of a particular enterprise with the current level of development of the company's social policy in the industry/companies similar in scale of activity (Table 3).

Table 3. Social policy of the enterprise

The analyzed factor	The state of development of the enterprise in question in points	The current level of development of the company's social policy in the industry/companies similar in scale of activity	Impact assessment for the comparative approach	Impact assessment for the revenue approach
Social policy of the enterprise	0.00–1.75	0–1.75	no impact	negative impact
		2.0–3.25	negative impact	
		3.5–5	maximum negative impact	
	2.00–3.25	0–1.75	positive impact	positive impact
		2.0–3.25	no impact	
		3.5–5	negative impact	
	3.5–5.0	0–1.75	maximum positive impact	maximum positive impact
		2.0–3.25	positive impact	
		3.5–5.0	no impact	

Evaluation of the company's social policy is provided in Table 4.

Table 4. Evaluation of the company's social policy

Elements of social policy	Groups of indicators	Evaluation criteria
Working conditions and safety at work	Accident frequency coefficient	0.5 points – an indicator value lower than the industry average or (in the absence of an industry average) an indicator value close to 0 over the past three years; 0.25 points – an indicator value equal to the industry average or (in the absence of an industry average) an indicator value that shows a downward trend; 0 points – an indicator value is higher than the industry average or (in the absence of an industry average) an indicator value that shows a tendency to deteriorate
	The frequency coefficient of injuries with temporary disability	0.5 points – an indicator value lower than the industry average or (in the absence of an industry average) an indicator value close to 0 over the past three years; 0.25 points – an indicator value equal to the industry average or (in the absence of an industry average) an indicator value that shows a downward trend; 0 points – an indicator value higher than the industry average or (in the absence of an industry average) an indicator value that shows a tendency to deteriorate

Elements of social policy	Groups of indicators	Evaluation criteria
Personnel policy	Availability of personnel development/employee training programs	0.5 points – the company has training/advanced training/ additional education programs for employees and/or subsidized training programs at universities; 0.25 points – personnel training programs are limited to standard qualification courses/instruction; 0 points – there are no employee development and training programs
	Staff turnover rate	0.5 points – staff turnover rate is lower than the industry average; 0.25 points – staff turnover rate at the average industry level; 0 points – staff turnover rate is higher than the industry average
Social support	Availability of financial assistance programs for vulnerable categories of employees/their families	0.5 points – there is a financial assistance program for employees/families of employees (working women and other persons with family responsibilities, young workers, workers in the Far North, combat veterans, participants in the liquidation of the Chernobyl accident and other categories of workers in need of social benefits); 0 points – social benefits in excess of the legal requirements are not provided
	Availability of a voluntary health insurance program (VMI) and other forms of medical care for employees	0.5 points – there is a comprehensive VMI program and the possibility of voluntary medical insurance for family members of employees on preferential corporate terms or own medical infrastructure; 0.25 points – standard VMI program for employees; 0 points – there is no VMI/medical care program for employees
Human rights and discrimination	Availability of a feedback mechanism and/or a helpline on human rights violations, corruption and violations of the Labor Code	0.5 points – there is a hotline/anonymous channel for feedback/complaints on corruption, human rights violations and discrimination for company employees; 0.25 points – there is a feedback/complaints channel, but it is not anonymous; 0 points – there is no feedback/complaint mechanism for company employees
	Requirements for suppliers/contractors in the field of human rights/ ethics of doing business	0.5 points – there is evidence that the company imposes requirements on suppliers/contractors in the field of human rights/ethics of doing business and responsibly treats investment decisions from the point of view of ethics (relevant clauses in the standard contract or other documents); 0.25 points – the company has an official policy in the field of human rights protection and/or other regulatory documents, but the requirements for suppliers/contractors are not fixed in the contract and/or other documents; 0 points – there is no policy in the field of human rights protection or other regulatory documents establishing rules and standards in this area

Elements of social policy	Groups of indicators	Evaluation criteria
	Availability of a charity program	0.5 points – the company has a comprehensive charity program and a volunteer movement; information about charity expenses is publicly available; 0.25 points – the company implements individual/one-time charity projects; 0 points – the company does not conduct charitable activities
Interaction with local communities	Social investments and development of the regions of presence	0.5 points – the company implements a comprehensive program in the field of education/healthcare/social services, provision/infrastructure (construction of schools, hospitals, roads, assistance to the poor, etc.) in the regions of presence; 0.25 points – the company implements individual projects in the field of education, healthcare, social services, provision, infrastructure (construction of schools, hospitals, assistance to the poor, etc.) in the regions of presence; 0 points – the company implements no such projects

The proposed tools for accounting for non-financial risks can be demonstrated by a visual example (on the data for the construction materials industry enterprises as of 30.06.2021).

The determination of the discount rate of cash flow on proprietary invested capital for an enterprise is carried out with the current (traditional) and proposed justification of the specific enterprise's risks is provided in Table 5.

Table 5. Current (traditional) and proposed justification of the specific enterprise's risks

Indicator	Value	Value calculated using proposed tools	Source of information
Risk-free rate (Rf)	7.30%	7.30%	The rate of return on OFZ according to the website of the Central Bank of the Russian Federation
Coefficient β	1.14	1.14	The beta coefficient is adopted according to market data for the building materials industry without regard to leverage http://www.stern.nyu.edu/~adamodar/ The D/E indicator according to actual company data
Market Risk Premium (Rm – Rf)	6.15%	6.15%	Calculated as the difference between the arithmetic mean yield on corporate stocks and long-term treasury bonds of the US government; equals 6.15%
Premium for small companies; takes into account the size of the evaluated company (S1)	5.01%	5.01%	Premium size for the company size (based on the Evaluation Handbook – Guide to Cost of Capital, 2017)
Premium for the risk of investing in a specific company (S2)	2.86%	3.23%	Justification is provided after the table

Indicator	Value	Value calculated using proposed tools	Source of information
Discount Rate (CAPM)	22.18%	22.54%	Calculation
Cost of debt financing	10.50%	10.50%	The actual rate of attracting financing by the enterprise
Discount Rate (WACC)	19.43%	19.72%	Calculation

Substantiation of factors influencing the specific risk of the assessed company is provided in Table 6.

Table 6. Substantiation of factors influencing the specific risk of the assessed company

Risk factor	Traditional rationale	Proposed additional justification tools
Legislative risks	Adopted at the average level, since no initiatives that can affect the company's business have been identified in the cement production industry	
Set price level	Adopted at a high level, because the market competition is strong	
Dependence on key employees	Accepted at an intermediate level	A score of 1.25 was calculated for this enterprise, which characterizes the risk as increased
Quality of corporate governance	Accepted at a high level, since management of current assets requires sufficiently high competencies.	The company does not prepare non-financial statements. The risk is assessed as increased
Dependence on key consumers	Accepted at a high level, since the level of cement consumption in the region of the company's location and neighboring regions largely depends on several key projects in the construction industry that are being implemented as of the valuation date	
Dependence on key suppliers	Accepted at a low level, since the company has valid licenses for the development of key raw materials deposits. The company supplies itself with 98% of its quality raw material base (required for a raw material mixture consisting of 3 components) required for "dry" production (raw material mixture humidity <5%). The raw materials comply with GOST standards and are optimal for the production of cement of consistently high quality	
Logistical risks	Accepted at an average level due to satisfactory access to both raw material deposits and sales markets	
Risks related to business development prospects	Taken at the secondary level, since along with good company performance there are downside risks in the industry caused by the impact of COVID-19 on the global economy	The company does not implement environmental management systems. The risk is assessed as increased
Technological risks	Taken at the secondary level in connection with the specifics of the business	

Risk factor	Traditional rationale	Proposed additional justification tools
Financial risks	Taken at the average level on the basis of the evaluator analysis of the financial condition of the company	
Other risks	Taken at the average level, since neither low nor high risk for this type of business is revealed	

The premium amount is calculated depending on the values presented in the Table 7.

Table 7. The premium amount is calculated depending on the values

Degree of risk	Calculated value of the degree of risk	The amount of premium for a specific risk, %
Low	= 1, but <1.5	0–1
Average	>=1.75, but < 2.25	2–3
High	>= 2,75–3	4–5

Based on the analysis of factors, the algorithm provided in the Table 8 is used to determine the premium for the specific risk of the assessed company:

Table 8. Determination of the premium for a specific risk of the assessed company

Risk factor	Degree of risk			Result (traditional justification)	Result (extended justification)
	Low	Average	High		
Legislative risks	1	2	3	2	2
Set price level	1	2	3	3	2
Dependence on key employees	1	2	3	2	3
Quality of corporate governance	1	2	3	3	3
Dependence on key consumers	1	2	3	3	3
Dependence on key suppliers	1	2	3	1	1
Logistical risks	1	2	3	2	2
Risks related to business development prospects	1	2	3	2	3
Technological risks	1	2	3	2	2
Financial risks	1	2	3	2	2
Other risks	1	2	3	2	2
Total (amount)				24	26
Number of factors				11	11
Degree of risk				2.182	2.364

The calculated degree of risk is the result of dividing the sum of the degrees of risk by the number of risk factors; it equals:

2.182 for traditional justification, which corresponds to the degree of risk of 2.86%.

2.364 for extended justification, which corresponds to a risk level of 3.23%.

Literature Review

Recently, international and European associations of appraisers, as well as recognized methodologists, have been heeding close attention to the issues of incorporating ESG factors into an assessment.

Cornell, Bradford and Damodaran, Aswath [14] outline the main factors that should be considered in the development of an assessment methodology.

The International Valuation Standards Committee (IVSC) published three forward-looking papers on ESG in 2021. At the same time, the committee has not yet approved official standards in this area as of the date of preparation of this article.

The first IVSC «Perspectives Paper» on ESG and Business Valuation [15] dated March 2021 attempts to identify ESG characteristics that can be included in the value measurement process.

In the second «Perspectives Paper» ESG and Real Estate Valuation [16], published in May 2021, the relationship between investment in ESG and the creation and/or maintenance of the value of intangible assets and the resulting approaches to determining the degree of influence of ESG were the subject of research.

In October 2021, the third IVSC study [17] was published, representing the first steps of the IVSC towards a more systematic approach to incorporating ESG into business valuation practices and standards. While the previous two perspective papers have looked at ESG from a business and intangible asset perspective, the third perspective paper explores how ESG can be quantified as part of the real estate asset valuation process.

IVSC has also established an ESG working group, which includes representatives from the IVSC Standards Review Boards, stakeholders, and external experts to further discuss market needs [18].

As a result of the analysis of IVSC publications, it was revealed that the focus of attention in incorporating ESG factors in business valuation is on accounting for intangible assets, the procedure for selecting analogues in the comparative approach and when calculating the beta coefficient, analyzing forecast duration, the impact of tax incentives, revenue and cost forecasts. At the same time, no attention is paid to specific risk determination methods associated with ESG factors.

The ninth edition of the European Valuation Standards [19], published by TEGOVA and entered into force on 01.01.2021, includes a number of sections that are somehow related to ESG principles and incorporates them in determining the value.

The latest edition of the RICS Global Assessment Standards ("Red Book Global Standards"), which came into force on January 31, 2022, includes definitions and additional comments on issues related to ESG factors [20].

These studies mainly focus on the specifics of real estate valuation and do not cover the business valuation sphere, as well as ways to calculate ESG risks into the valuation.

It should be noted that a number of researchers pay attention to the impact of the ESG agenda on company capitalization [21], but do not offer a practical solution to the problems of incorporating specific risks in the discount rate for practical business assessments.

As a result of the analysis of the literature in regard to the definition of specific risks used by analysts and researchers, significant differences in the authors' opinions, a different set of factors and wide ranges of factor values were revealed.

G.R. Trugman [21] does not indicate the range of factor values, noting the need to incorporate the enterprise's financial and non-financial risks.

Z.Ch. Mercer [23] recommends a range of 0–5% for the degree of risk for each factor, while the aggregate indicator should not exceed 35%. In a later publication by the same author [24], the cumulative indicator is defined in the range from 0 to 8% and above.

Deloitte & Touche in different publications [25; 26] suggests using a smaller range from 0 to 3% for individual factors, while the cumulative adjustment cannot exceed 12%, and indicates a 3 to 8% range of cumulative adjustments for all factors.

The authors have not revealed more recent and detailed studies on this issue. At the same time, it should be noted that the publications do not specify the tools for determining the value of a risk factor in the proposed ranges. That is, the assigned factor indicator value is subjective, and there are no guidelines or ideas for their assignment.

Discussion

The influence of ESG factors characteristic of an enterprise in the assessment of its business from the profitability viewpoint entails:

- the projected level of income and expenses of the company, or cash flows,
- the discount rate at which the enterprise's projected cash flows are recalculated into the current value and reflect the risks of investing in a particular business.

The issue discussed in this article is the consideration of ESG factors when constructing a discount rate model for business valuation.

To determine the cost of the enterprise's own capital within the framework of the cash flow discounting method, the income approach is used, as a rule:

- long-term asset valuation model (capital asset pricing model – CAPM) when discounting cash flows on equity.
- weighted average cost of capital (WACC) model when discounting cash flows on invested capital

The influence of ESG factors of the assessed business on discount rate components is provided from the point of view of the author of the article in Table 9.

Table 9. The influence of ESG factors of the assessed business on discount rate components

Discount rate component	Influence of ESG internal factors	Comments
The rate of return on investments in risk-free assets (Rf)	no influence	Accepted at the level of risk-free assets (that is, assets with zero-risk investments). Profitability of government securities is usually considered.
Coefficient β	influence is present	Reflects the sensitivity of the security profitability indicators of a particular company to changes in market (systematic) risk. When analyzing the market indicators of the β coefficient, the influence of external ESG factors is due to the investors' attitude to changes in the enterprise industry.
Market Risk Premium (Rm – Rf)	no influence	The amount by which the average market rates of return on the stock market exceeded the rate of return on risk-free securities for a long time. Calculated on the basis of statistical data on market premiums for a long period and forecasts of their changes.
Premium for small companies; takes into account the size of the evaluated company (S1)	no influence	As follows from the economic meaning of the size premium, it reflects greater profitability of small companies compared to large companies, which, accordingly, is calculated into the risk rate.
Premium for the risk of investing in a specific company (S2)	influence is present	The risk factors of investing in a particular company are based on the analysis of company activities in the context of the specifics of its activities, projects, analysis of contractual relations, legislative risks, fixed price level, dependence on key employees, quality of corporate governance, risks associated with business development prospects, etc.
Cost of interest-bearing debt (Rd)	influence is present	Debt financing rate for a number of companies implementing ESG principles may be lower due to preferential loans, "green" bonds, etc.
Corporate Tax Rate (Tc)	influence is present	Effective corporate tax rate for a number of companies implementing ESG principles may be lower due to government support programs

The study of the discount rate component "Risk Premium for investments in a specific company (S2)", which has a significant impact on ESG factors specific to a particular business, is of particular interest.

If the cash flows generated by a company or a project are risk-free, i.e. they are expected with 100% probability, then there is no reason to account for the specific risk of investing in this company. Considering the fact that business is by definition characterized by entrepreneurial risk and its activities are influenced by numerous internal and external factors, it is quite difficult to imagine cases of risk-free receipt of forecast flows.

Since each business is unique in its own way, the risks associated with expected cash flows require analysis and accounting, and the greater the risks, the greater the investment risk premium. This premium is additional income that must be added to the risk-free rate in order to compensate the investor for the resulting risk. Since there are different approaches to determining the risk premium, and the premium is calculated in different periods, opinions on the value of this indicator differ significantly.

The complexity of accounting for this indicator is due to the lack of an objective data source to properly reflect or quantify a specific premium for a specific company risk. This is a matter of judgment and experience of the specialist performing the calculation. Many of the risk factors that are taken into account when determining the appropriate discount rate are the same factors that the valuation analyst uses to adjust the coefficients received from the reference companies in accordance with the market approach.

The proposed approaches to determining specific risks can be divided into two directions – qualitative and quantitative.

Despite the trend in the development of approaches, which provides for a transition from more subjective (qualitative) to more objective (quantitative) methods, in the context of the development of Russian business, qualitative research methods remain the most frequently used.

This factor is due to the following factors:

- The Russian stock market lacks the participation of individuals. The population has just begun to enter the financial market.
- The resources of institutional investors are insignificant; i.e., funds do not compete for profitability in the market of non-state pension funds (NPFs) due to regulation costs and the freezing of the pension savings system since 2014.
- Competition is declining, and the investment climate is unsatisfactory, which reduces the interest of Russian companies in raising capital (including through IPOs). Finally, the debt market and the derivatives market volumes are insufficient.

- Qualitative methods are characterized by the determination of the premium values for various types of specific risks based on the subjective professional opinion of an analyst who operates according to the following algorithm:
- selects the most significant factors of specific risks of the company being evaluated based on his experience and vision.
- assigns appropriate values to each type of specific risk (in percentage points – from the selected acceptable range of values).
- determines the total premium amount for specific company risks as the sum of all assessed premiums for each specific selected risk factor.

The literature provides various specific risk factors of the enterprise, which, as a rule, include, but are not limited to the following, presented in the Table 10.

Table 10. Specific risk factors in the literature

Source	Risk Factors	Range, %
1	**Financial:** • economic risk • business risk • operational risk • financial risk • asset risk • product risk • market risk • technological risk • regulatory risk • legal risk **Non-financial:** • economic conditions • industry conditions • location of the business • competition • control depth • quality of management • barriers to market entry	Not specified
2	• key indicators and company management • company size • financial structure • product/geographical diversification • customer diversification • profit: margin and historical predictability • other specific factors	0–5 Cumulative indicator 0–35%

Source	Risk Factors	Range, %
3	• dependence on key employees; • quality of corporate governance; • dependence on key consumers of services; • dependence on key suppliers.	0–3 Cumulative indicator 0–12
4	• dependence on key employees • quality of corporate governance • dependence on key consumers of electricity and heat that can influence the company's activities • dependence on key suppliers of raw materials, materials and services • that can influence the company's activities • restriction of access to borrowed capital • falling demand for electricity as a result of the introduction of energy-saving technologies • risk of slowing down the electric power industry reform and liberalization of the gas market	Cumulative indicator 3–8
5	• risks associated with key personnel (or lack of managerial capabilities, management depth), • risks of the absolute company size, financial structure • concentration risks (regarding the types of products, geographical location of activities or clientele), • stability risks and profit predictability, • other risks associated with a particular company.	Cumulative indicator 0–8 or more

Note that among the precise risk factors specific to a particular company, its non-financial indicators are explicitly or implicitly taken into account, which reflects their impact on the value of a business.

This fact is confirmed by one of the most popular concepts of value today, according to which various models of business valuation are being developed with regard to the impact of sustainable development, is the concept of "stakeholder" business value. According to this approach, "a business has value not only as a cash-generating unit, but also as an object with a positive and negative impact on interested parties ("stakeholders")".

A few years ago KPMG shared the opinion [27] that the creation or reduction of public value by a company has an increasingly direct impact on the drivers of corporate value, namely income, costs and risk.

The "true value" method of determining fair value proposed by the company [28] provides for the determination of positive and negative externalities and their monetization, that is, quantitative assessment. Then the information obtained should be combined with financial indicators, and specifically with the company's profit, in order to provide a comprehensive view of the cost.

The company has also developed a classification of a company's external effects, which are divided into economic, social and environmental, both positive and negative. It is noted that classification boundaries can be expanded – you can add external effects related to a specific company.

Taking the above circumstances into account, the author proposes a model for reflecting ESG risks when forming a discount rate during business valuation.

Conclusions

Clarification of the specific risk factor allowed:

- provide an expanded and reasoned judgment about the specific risks associated with the company's activities in order to form an objective opinion about the company's activities and risks;
- affected the calculation of the discount rate (an increase from 19.43 to 19.72%), which, when analyzing the cost of the company's equity, led to an adjustment (clarification) of the evaluation result.

In conclusion, it can be noted that the models and justifications used in traditional approaches to business valuation should be developed with regard to emerging modern requirements, in particular, taking ESG factors into account. Historically, external factors have had no impact on the income, expenses and cash flows generated by companies.

In modern conditions, globalization, digitalization, global financial crises, population growth, poverty, climate change and other socio-environmental factors are transforming business landscapes. As a result, the above external factors are internalized, opening up new opportunities,

or vice versa – new risks with significant consequences for companies. In this regard, in the generally accepted and applied methods of assessing business with a profitable approach, additional factors that affect reliable business assessment have been proposed.

The presented tools, which complement the traditional assessment methods due to the use of additional factors on a point scale and their subsequent translation into correction coefficients by the expert assessment method, already allow them to be applied in practice today.

References

1. Environmental, social, and governance (ESG) investing in the United States. Cerulli Associates. 2019. URL: https://info.cerulli.com/US-ESG-2019.html
2. Pastor L., Stambaugh R.F., Taylor L.A. Sustainable investing in equilibrium NBER Working Paper. 2020;(26549). URL: https://www.nber.org/system/files/working_papers/w26549/w26549.pdf
3. Akhmetshina A., Kaspina R., Vagizova V., Ivanov S. Business model as a tool for increasing the market capitalization and reducing environmental impact of the company. *Procedia Environmental Science, Engineering and Management*. 2020,7(3):367-373. URL: http://www.procedia-esem.eu/pdf/issues/2020/no3/10_42_Akhmetshina_20.pdf
4. Khorin A., Krikunov A. ESG-risk factors and value multiplier of telecommunications companies. *Journal of Corporate Finance Research*. 2021;15(4):56-65. https://doi.org/10.17323/j.jcfr.2073-0438.15.4.2021.56-65
5. Ashwin Kumar N.C., Smith C., Badis L., Wang N., Ambrosy P., Tavares R. ESG factors and risk-adjusted performance: A new quantitative model. *Journal of Sustainable Finance & Investment*. 2016;6(4):292-300. https://doi.org/10.1080/20430795.2016.1234909
6. Cornell B. ESG preferences, risk and return. *European Financial Management*. 2021;27(1):12-19. https://doi.org/10.1111/eufm.12295
7. Efimova O.V. Integrating sustainability issues into investment decision evaluation. *Journal of Reviews on Global Economics*. 2018;7:668-681. https://doi.org/10.6000/1929-7092.2018.07.61
8. Feoktistova E.N., Alenicheva L.V., Dolgikh E.I., Kopylova G.A., Ozeryanskaya M.N., Khonyakova N.V. Analytical review of corporate non-financial reports: 2015-2016. Moscow: Russian Union of Industrialists and Entrepreneurs; 2017. 136 p. URL: https://rspp.ru/document/1/7/4/743222fc4c6650093518c635d0e8ecdd.pdf (In Russ.).
9. Zakhmatov D.Yu. The attitude of corporate business in the Russian Federation to the management of environmental, social risks, as well as corporate governance risks (ESG risks). *Kazanskii ekonomicheskii vestnik = Kazan Economic Bulletin*. 2021;(6):29-38. (In Russ.).
10. Feoktistova E.N., Alenicheva L.V., Kopylova G.A., Ozeryanskaya M.N., Purtova D.R., Khonyakova N.V. Analytical review of corporate non-financial reports: 2017-2018. Moscow: Russian Union of Industrialists and Entrepreneurs; 2019. 104 p. URL: https://рспп.рф/download/a48b14d9858856285b5f7aba0c57b076/ (In Russ.).
11. Berg F., Kölbel J.F., Rigobon R. Aggregate confusion: The divergence of ESG ratings. *SSRN Electronic Journal*. 2019. http://dx.doi.org/10.2139/ssrn.3438533
12. A practical guide to sustainability reporting using GRI and SASB standards. Amsterdam: Global Reporting Initiative; 2021. 42 p. URL https://www.globalreporting.org/media/mlkjpn1i/gri-sasb-joint-publication-april-2021.pdf
13. Verles M., Vellacott T. Business and the sustainable development goals: Best practices to seize opportunity and maximise credibility. Geneva: Gold Standard; 2018. 19 p. URL: https://www.goldstandard.org/sites/default/files/documents/sdg_report_optimized.pdf
14. Cornell B., Damodaran A. Valuing ESG: Doing good or sounding good? *SSRN Electronic Journal*. 2020. http://dx.doi.org/10.2139/ssrn.3557432
15. Perspectives paper: ESG and business valuation. IVSC. Mar. 02, 2021. URL: https://www.ivsc.org/perspectives-paper-esg-and-business-valuation/
16. Perspectives paper: A framework to assess ESG value creation. IVSC. May 26, 2021 URL: https://www.ivsc.org/a-framework-to-assess-esg-value-creation/
17. Perspectives paper: ESG and real estate valuation. IVSC. Oct. 14, 2021 URL: https://www.ivsc.org/esg-and-real-estate-valuation/
18. Aronsohn A. Survey: ESG & valuation. IVSC. Feb. 14, 2022. URL: https://www.ivsc.org/esg-survey/
19. European valuation standards (EVS). TEGOVA. 2021. URL: https://tegova.org/european-valuation-standards-evs
20. RICS valuation – global standards. London: RICS; 2021. 296 p. URL: https://www.rics.org/globalassets/rics-website/media/upholding-professional-standards/sector-standards/valuation/2021-11-25_rics-valuation--global-standards-effective-2022.pdf
21. Ilhan E., Sautner Z., Vilkov G. Carbon tail risk. *The Review of Financial Studies*. 2021;34(3):1540-1571. https://doi.org/10.1093/rfs/hhaa071
22. Trugman G.R. Understanding business valuation: A practical guide to valuing small to medium sized

businesses. 3rd ed. New York: American Institute of Certified Public Accountants; 2008. 943 p.

23. Mercer Z.C. The adjusted capital asset pricing model for developing capitalization rates: An extension of previous "build-up" methodologies based upon the capital asset pricing model. *Business Valuation Review*. 1989;8(4):147-156. https://doi.org/10.5791/0882-2875-8.4.147
24. Mercer Z.C., Harms T.W. Business valuation: An integrated theory. Hoboken, NJ: John Wiley & Sons, Inc.; 2008. 288 p.
25. Practical guide to valuating RUSNANO assets. Moscow: ROSNANO; 2010. 132 p. URL: https://www.ocenchik.ru/site/met/rosnano1.pdf (In Russ.).
26. Methodology and guidelines for conducting business and/or assets valuation of RAO "UES of Russia" and SDCs of RAO "UES of Russia". Deloitte & Touche. 2007. URL: https://www.ocenchik.ru/method/business/260/ (In Russ.).
27. Dellham D., Mueller H. A new vision of value: Connecting corporate and societal value creation. Amstelveen: KPMG; 2014. 116 p. URL: https://home.kpmg/content/dam/kpmg/pdf/2014/11/A-New-Vision-of-Value.pdf
28. The true price of jeans. Amsterdam: Impact Institute; 2019. 30 p. URL: https://trueprice.org/wp-content/uploads/2019/06/Impact-Institute-Report-True-Price-of-Jeans.pdf

Contribution of the authors: the authors contributed equally to this article.

The authors declare no conflicts of interests.

The article was submitted 16.01.2022; **approved after reviewing** 18.02.2022; **accepted for publication** 14.03.2022.