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Impact of ESG Rankings on the Credit Spreads of Corporate Bonds in Russia

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Abstract

The article discusses the impact of corporate ESG activity on the cost of bond issues in the context of the growing interest in sustainable development in Russia. Using panel data models and the ESG rankings of the RAEX rating agency, we demonstrate the significant impact of sustainable performance indicators on credit yield spreads using a sample of 2,646 corporate bond issues of 328 manufacturing companies and 76 financial organizations between the second half of 2019 and the end of 2023. We employ unique data on the dynamics of ESG rankings for each of the components (E - environmental, S - social and G - governance) across a wide range of companies. The explanatory variables include characteristics of bonds and issuers as well as macroeconomic indicators. We show that companies moving up in the ESG ranking in both sectors of the economy reduce their cost of bond issues. ESG components have a uniform impact for manufacturing companies yet show a varying influence for financial organizations. High environmental and social indicators increase a required bond yield, while a high governance component reduces it. Investors value information transparency in both sectors. Real-sector companies place greater importance on environmental and social responsibility, despite the associated costs, while the financial sector often views it as unnecessary. Sustainable bonds enable the Russian economy to adopt the ESG agenda faster. Our findings assist bond issuers in calculating risk premiums more realistically and allow corporate bond investors to consider sustainable development when making investment decisions.

Keywords: ESG ranking, credit spreads, bonds, sustainable development, environmental performance, social performance, management component

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Introduction

Today, companies are paying increasing attention to environmental, social and corporate governance issues. The adoption of the ESG (Environmental, Social, Governance) agenda entails both positive and negative implications for businesses, triggering animated discussions in the academic literature. The indicators and standards for evaluating the conformity of company operations with sustainable development principles, as well as ESG rating and ranking methods, are still often in the development and testing phases. As a result, different agencies can assign different rating scores to the same company. In this paper, we will consider not only whether the RAEX agency has included a corporate bond issuer in its ranking but also the company's position in the ranking based on the aggregated indicator and each individual component (E – environmental, S – social, G – governance).

There is no consensus in the academic literature dedicated to the empirical analysis of rankings and other quantitative indicators of ESG components regarding how compliance with sustainability standards influences companies' performance, measures of profitability, and bond and share risks, which in turn affect the efficiency of investment strategies. Some researchers argue that implementing sustainability practices and principles generally incurs certain costs and investments for companies. However, a wide range of studies indicate that sustainable development, far from being merely an added expense, offers companies numerous opportunities for growth, competitiveness, and long-term success, with the benefits of implementing ESG principles and standards often outweighing the potential additional costs.

The above factors highlight the relevance of empirical studies examining the relationship between companies' ESG compliance ranking and the yields of the financial instruments they issue. The contribution of this research to addressing these problems is as follows. First, we analyzed a large sample of bonds issued by 404 Russian companies from the second half of 2019 to 2023 and were the first to demonstrate that obtaining an ESG ranking from the RAEX agency brings a reduction in the yield premium, considering for issue parameters and liquidity in the stock market. Second, we substantiated the claim that higher ESG ranking for Russian companies correspond to lower credit spreads on corporate bonds, accounting for issuer-specific features and bond issue characteristics. Finally, our research revealed that, in the Russian financial market, the influence of ESG components differs between manufacturing companies and financial organizations.

The paper is structured as follows. First, we review academic papers that analyze the influence of ESG standards on the yield and credit spreads of corporate bonds and formulate hypotheses based on this review. Next, we describe the sample and research methodology. In the third section, we focus on testing the hypotheses regarding the influence of ESG rankings on bond credit spreads and explaining these findings using various samples of corporate bond issuers. The conclusions are presented in the last section.

Describing and Testing Academic Theories

The theoretical literature on the ESG activities of companies offers a variety of opinions about the latter's influence on bond yield spreads, with a lot of theories being advanced on this topic.

The first and most popular approach – *stakeholder theory* [1] – suggests that a company's active fulfillment of its environmental, social and governance obligations to society reduces moral and adverse selection risks by building trust-based relations with interested parties – the government, shareholders, creditors, suppliers, consumers and other stakeholders. According to this theory, the active adherence to ESG principles is in line with investors' ethical interests and leads to a reduction in the bond credit spread.

The hypothesis of a discount of corporate bond yield as a result of responsible financing is also proposed by *resource dependence theory* [2] advanced by J. Pfeffer and G. Salancik. This conception is based on the postulate that any managerial decision is aimed at providing resources for the company, including debt financing. To achieve this goal, companies strive to promote a good image among their investors.

However, alternative theories suggest otherwise. The active implementation of ESG principles by a company limits its access to debt financing and, in particular, bond loans. One such theory is the famous *agency theory (principal-agent problem)* [3], which asserts that company management participates in responsible financing for personal motives, such as concealing negative news about certain company activities, increasing managers' remuneration by getting bonus awards for allegedly finding promising funding targets, and creating a positive corporate image in the eyes of investors. Such behavior compromises the transparency of corporate information, tainting the corporate image in the eyes of investors. As a result, the latter demand an increased risk premium on bonds.

According to the *trade-off theory* [4], investments in ESG projects distract companies from core business activities, decreasing their paying capacity and competitive advantages. This results in an increase in the bond yield required by investors, incrementing the credit spread.

In view of the high cost of obtaining a sustainable development ranking from national rating agencies in Russia, only large companies disposing of the necessary resources tend to get it. In this case, investors have reasons to trust established firms, ignoring the principal-agent problem, which reduces the motivation for increasing the required bond yield. Such trust also negates the compromise effect in investing: investors have reasons to assume that the company makes investments in the ESG agenda without substantial detriment to its core business. Thus, one may conjecture that an active stance on sustainable development issues by Russian companies will decrease the yield spreads of their bond issues.

Empirical literature on the impact of a company's ESG activities on its bond yield spread considers, in particular, the impact on the company's access to financing, separately studying the influence of company environmental, social and governance activities in different papers.

For example, T. Schneider [5] showed that low environmental performance may be indicative of liability risks, which may potentially result in company bankruptcy and higher cost of placing bonds. P. Eichholtz et al. [6] and S. Polbennikov et al. [7] revealed that environmentally certified buildings and high overall ESG ratings are related to lower bond spreads. Thus, these studies show that high environmental performance may decrease the yield spread of corporate bonds.

S. Bhojraj and P. Sengupta [8] emphasized the influence of corporate governance mechanisms, which may be related to the alignment of company activities on the sustainable development approach, issuers' ratings and bond yields. They showed that companies with vast institutional property and strict external control by the board of directors get less expensive bond loans and higher ratings for their new bond issues.

Social projects implemented by issuers may exert a significant impact on their bond yield. In particular, W. Ge and M. Liu [9] and I. Oikonomou et al. [10] found that improved indicators of corporate social responsibility are related to lower yield spreads, which reflects the positive attitude of bond holders about indicators. C. Stellner et al. [11] showed that corporate social indicators are remunerated in the form of a lower bond yield only if they are in line with real environmental, social and country governance indicators. At the same time, H. Huang et al. [12] and K. Menz [13] revealed that the social responsibility of corporations has little influence on the credit spreads of their corporate bonds. This means that other factors, such as financial indicators and market conditions, may have a more significant impact.

International studies show that manufacturing companies and financial institutions invest in ESG in different ways. For example, manufacturing companies in China benefit greatly from investments based on ESG principles, obtaining higher investment returns and a lower credit risk (Lu et al., 2022) [14]. On the other hand, financial institutions, especially in the USA, offer a wide range of investment options related to sustainable development: from efficient investments to ESG-oriented share investment funds (J. Hill, 2020) [15]. There is a widespread belief that sustainable development practices have a positive impact on company effectiveness, including financial performance. Nevertheless, this impact is different in the manufacturing and banking sectors: sustainable development reporting has a positive effect on financial performance in the real economy yet a negative effect in the banking sector (A. Buallay, 2020) [16].

Russian economists are taking a growing interest in the influence of ESG components on corporate performance. For example, I. Ivashkovskaya and A. Mikhaylova [17] demonstrated that, in emerging countries, green bonds provide a discount on the required yield in comparison to non-targeted bonds, which may encourage responsible financing. Moreover, they showed that disclosure of sustainable development activity by Russian corporations makes their market value rise [18]. Russian researchers made similar conclusions for Asian markets [19] and BRICS countries [20] after analyzing the influence of ESG ratings on financial performance in these groups of countries. Nevertheless, in a study of the impact of corporate governance attributes on risk information disclosure in emerging countries, HSE economists found that companies pay less attention to institutional risks, including environmental risks, than to operational risks [21]. I. Ivashkovskaya and I. Frecautan [22] explored the relationship between the governance performance of companies in emerging capital markets and their access to targeted bond loans. They revealed the significant influence of a range of corporate governance indicators on the required yield for green bonds in 16 emerging markets. For example, from the standpoint of the institutional environment, a strong CEO and a smaller board of directors ensure higher yields on green bonds.

Although sustainable development efforts seem to have an indirect impact on bond yield spreads through various channels, further studies are necessary to fully understand the character of this relationship. The diversity of theories and research results makes the present paper particularly relevant in the emerging Russian market, where interest in sustainable development strategies is deepening among both market participants and the government.

The reviewed literature allows us to formulate hypotheses regarding the potential influence of ESG components on corporate bond yield spreads, with a preference for stakeholder theory and resource dependence theory, as these align more closely with the realities of the contemporary Russian securities market.

We shall test the following hypotheses:

Hypothesis 1. The presence of an ESG ranking reduces the credit spread of corporate bonds issued by Russian companies, taking into account issuer-specific features and bond issue characteristics.

Hypothesis 2. Higher ESG ranking of Russian companies correspond to lower corporate bond credit spreads, taking into account issuer-specific features and bond issue characteristics.

Hypothesis 3. The influence of ESG components bonds of the manufacturing companies and financial organizations is different.

Methodology and Data

Our sample included all corporate bonds in the Russian market except for the following issue categories: short-term bonds, structured bonds, bonds intended for qualified investors, and non-market and perpetual bonds according to the Cbonds classification. Illiquid bonds[1] were also eliminated. The resulting sample comprised 2,646 bond issues

[1] Bonds whose bid-ask-spread exceeded 500 b.p. within the considered period.

of 404 companies over the period from the second half of 2019 to the end of 2023. To test our hypotheses, we divided all bonds into the real and financial sectors: 1,191 issues of 328 manufacturing companies and 1,455 issues of 76 financial companies[2].

The potential difference in the impact of ESG activities of manufacturing and financial companies may be related to the fact that financial institutions inflict a relatively smaller damage on the environment. In addition, stakeholders of financial companies may have concerns that the latter chose a wrong investment area or suspect them of greenwashing, which on the contrary produces a negative impact on the cost of debt financing.

We selected the time interval based on RAEX's initiation of monthly ESG rankings for Russian companies in early 2021. For earlier data points, the rankings were recorded at their values as of January 2021. The RAEX rankings for each ESG component are used as a measure of a company's sustainable development efforts, as these rankings are the only ones updated monthly in the Russian market and so enable the tracking of ESG activity dynamics. A higher ESG ranking value indicates lower compliance with ESG principles. The number of companies included in the rankings varies from 68 to 160, depending on the period.

The impact of the presence of an ESG ranking on corporate bond risk was tested by means of a dummy variable indicating a company's presence in the ranking in the considered month. To check the sustainability of results and study the dynamics of each ESG ranking component, we selected two curtailed samples with just 449 issues of 67 manufacturing companies and 1,002 issues of 17 financial companies which are known to have ESG ratings. All companies that have never been assigned rankings were excluded from this sample. The remaining companies accounted for approximately 62.1% of the outstanding bonds in the original sample.

We selected the yield spread of corporate bond issues relative to government bond yields of corresponding duration (G-spread), averaged by month and sourced from the Cbonds database, as the dependent variable. The input data for analysis also included the companies' ESG performance metrics, along with several control variables, forming an unbalanced panel of monthly observations.

The classical factors of bond yield were taken as the control variables to ensure unbiased model estimates. These factors include issue indicators such as volume, liquidity, and the bid-ask spread as well as issuer indicators such as credit rating, size and age proxies. We also used a range of sector-specific factors. We employed ratio of long term debt to corporate assets for manufacturing companies and the ratio of outstanding bonds to assets for financial companies as proxies for debt sustaintability and coefficients of return on equity (ROE) and return on assets (ROA).

This model does not take into account the impact on credit spreads of government participation in the ownership structure of the considered companies. The reason is that, according to available information, the government owns a significant share in most companies with ESG rankings and that issuers have experienced problems in disclosing their ownership structure since 2022 due to anti-sanction measures. So, it is impossible to compile representative samples for each group of ownership structures on the basis of publicly available data and to evaluate this factor correctly in the model.

The complete list of regressors is presented in Table 1.

Table 1. Response variable and regressors

Variable	Value
Response variable	
G-spread	Mean value of the bond's G-spread during the preceding month, b.p.
Regressors (explanatory variables)	
Log(Volume)	Logarithm of the outstanding bond volume, bln rub.
Liquidity	Accrued bond turnover per month, % of the turnover volume
Volatility	Average bond volatility over the last four months, b.p.
BidAsk	Difference between bond quotations for purchase and sale based on the results of a trading session on all trading platforms, b.p.
Maturity	Number of days left to the maturity date, days
Age	Number of days since the date of bond placement, days
dummyESG	Dummy variable: 1 if the company has an ESG ranking by the RAEX rating group and 0 otherwise

[2] The financial sector comprises banking organizations, insurance companies, microfinance providers, development institutions, financial markets and other financial institutions.

Variable	Value
EXRA_E	E-component of the ESG ranking by the RAEX rating group
EXRA_S	S-component of the ESG ranking by the RAEX rating group
EXRA_G	G-component of the ESG ranking by the RAEX rating group
CrRate	Credit rating indicator that ranges from 17 (AAA) to 1 (B-), with 0 corresponding to no credit rating assigned by Russian rating agencies
Arang	Place number on the list of companies ranked by company asset value in ascending order
D/A*	Ratio of long-term debt to corporate assets
Sec/A*	Ratio of issued bonds, expressed as a monetary equivalent, to total assets
ROA*	Return on assets – ratio of net income to assets
ROE*	Return on equity – ratio of net income to shareholders' equity
Rate	Key interest rate of the Central Bank of the Russian Federation averaged over a month, %

Notes: * only for issues of real sector companies; ** only for issues of financial sector companies.

We chose the panel data model using the F-test, Hausman's test and the Breusch-Pagan test. After running all these tests on all the samples considered in this paper, we chose the fixed time effects model (within), taking into consideration the variability within each bond issue based on the deviation of the variables' values from their time-mean values.

The descriptive statistics of all the variables are presented in Appendix 1. An analysis of correlations between the variables shows some important specific features of the total sample as well as differences between observations from the real and financial sectors (Figures 1, 2). In this case we used the dummy variable of the presence of a ranking as a characteristic of company ESG activity.

Figure 1. Correlation matrices of variables for the total sample of Russian bonds in the real sector

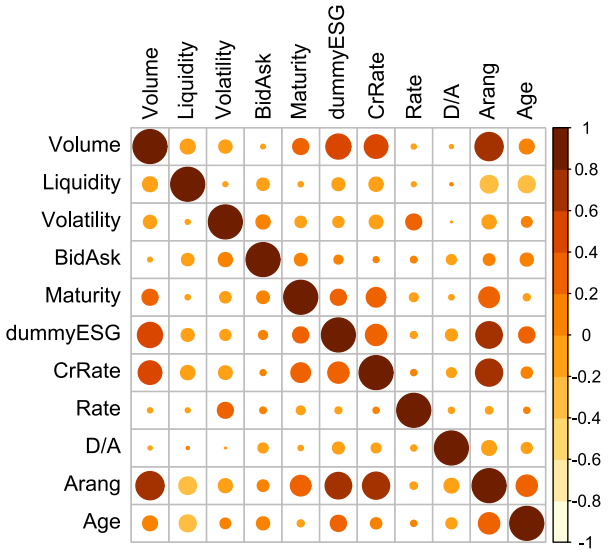
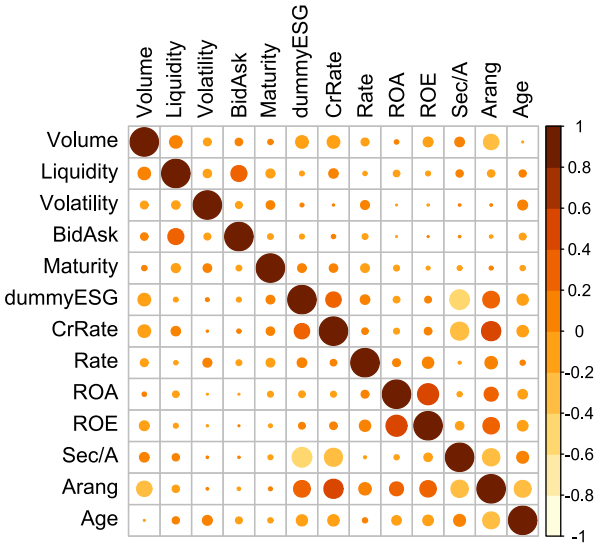


Figure 2. Correlation matrices of variables for the total sample of Russian bonds in the financial sector

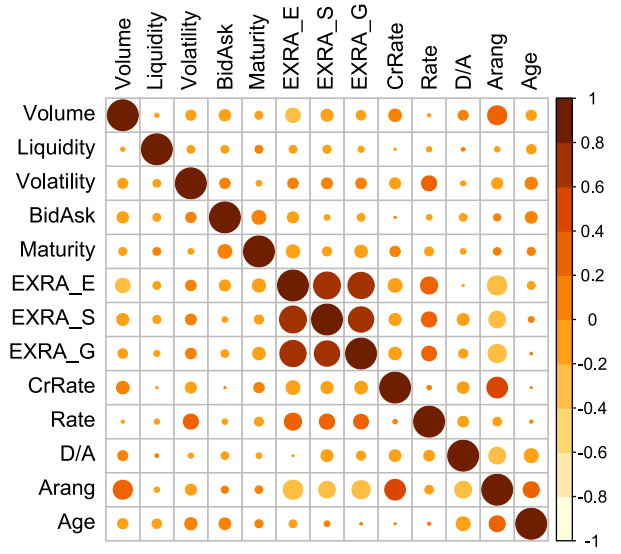


Manufacturing companies have a high correlation between the presence of an ESG ranking and the value of their assets. A possible reason is that large companies often obtain ESG rankings to assure investors of their competitive advantages. Such companies have no problems covering expenses related to their inclusion into the ranking. There is also a high correlation between the presence of an ESG ranking and the issue volume: companies with high issue volumes are interested in obtaining sustainable development rankings as an instrument for building trust-based relations with investors.

Financial companies have a weaker correlation between the presence of an ESG ranking and company size indicators. The reason may be that a substantial part of this sector consists of banks, for which the creation of competitive advantages, including sustainability, is important irrespective

of business size. This is possibly linked to the importance of conformity in the banking sector: the absence of a sustainable development ranking may exert a negative impact on the bank's image, so smaller credit institutions are also forced to follow the current trends of the sector.

Figure 3. Correlation matrices of variables for the sample of Russian bonds of real-sector companies with RAEX ESG rankings



Predictably, we detected a high correlation between the profitability indicators ROA and ROE. The proxy of debt sustainability for financial companies (ratio of corporate outstanding bonds to assets) correlates negatively with the credit rating. At the same time, its high correlation to the presence of an ESG ranking may seem surprising. This implies that companies with a relatively high debt load are less concerned with obtaining an assessment of their activity in the responsible financing area. This may be partially due to the fact that the main volume of issues was formed long before sustainable development trends emerged.

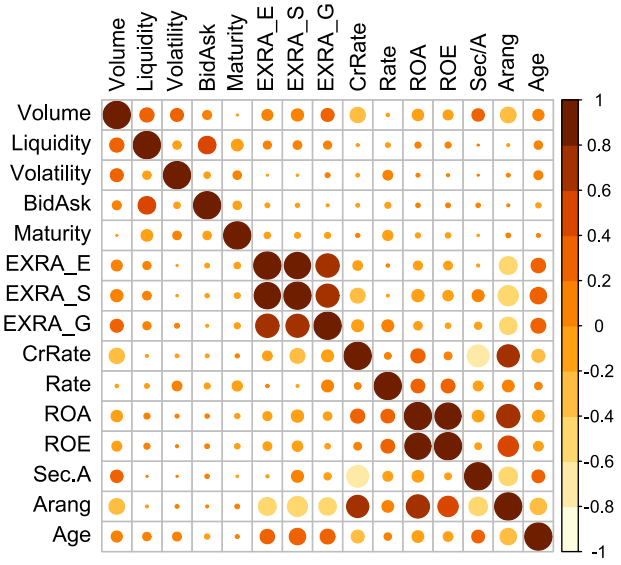
In the preliminary correlation analysis for the curtailed sample of bond issues consisting only of issuers with ESG rankings, ranking dynamics are measured for each component separately (Figures 3, 4).

The results show a number of significant changes in comparison to the total sample. In particular, for manufacturing companies the relationship between size and success in achieving sustainable development goals becomes unobvious. This indicates that small companies are on a par with larger ones in pursuing sustainable activities.

In the financial sector, the correlation between the environmental and social components turns out to be stronger than the correlation between each of these components and governance.

The weaker correlation between issue volume and assets for manufacturing companies makes it possible to include this data in one regression equation, unlike for the financial sector.

Figure 4. Correlation matrices of variables for the sample of Russian bonds of financial companies with RAEX ESG rankings



Results of Hypothesis Testing

The tests conducted to choose the type of panel data model also allowed us to select and evaluate within-models with fixed effects for each sector.

Table 2. Results of regression analysis for the total sample of Russian bonds

	Sample of manufacturing companies		Sample of financial companies	
	I	II	I	II
Volatility	0.877*** (0.011)	0.876*** (0.011)	0.311*** (0.015)	0.313*** (0.015)
BidAsk	0.298*** (0.050)	0.264*** (0.050)	0.504 *** (0.069)	0.525*** (0.069)
Maturity	-0.104*** (0.005)	-0.106*** (0.006)	-0.084*** (0.012)	-0.0859*** (0.011)
Age	-0.005 (0.004)	-0.005 (0.004)	-0.004 (0.005)	-0.004 (0.005)

	Sample of manufacturing companies		Sample of financial companies	
	I	II	I	II
dummyESG	-13.915* (8.070)	-14.067* (8.074)	-186.970*** (9.815)	-176.590*** (9.906)
CrRate	29.358* (16.407)		-1.423 (9.975)	
D/A	79.208*** (14.333)	83.494*** (14.333)		
Arang	-0.002*** (0.0002)	-0.002*** (0.0002)	-0.006* (0.002)	-0.008*** (0.002)
ROE			-483.031 (30.047)	
ROA				-1242.601*** (284.75)
Rate	12.327*** (0.600)	12.263*** (0.601)	-8.712*** (0.992)	-10.724*** (0.997)
R^2	0.2543	0.2534	0.0836	0.0703
Adj. R^2	0.2191	0.2181	0.0784	0.0654

Notes: the standard deviation of coefficient estimates is given in parentheses; coefficient significance levels: * p <0.1, ** p <0.05, *** p <0.01.

The negative sign of the coefficient estimates of the ranking presence dummy shows that both manufacturing and financial companies which have obtained ESG ranking tend to have lower required yields on bond-secured loans; moreover, this influence is stronger for financial companies. This may be due to the aforementioned sustainable development trends that are particularly characteristic of the banking sector where all market participants strive to match the expectations of the unified market of customers.

Obtaining an estimate of a company's sustainable development activities from a rating agency allows investors to grant a "discount" on its bonds, supporting stakeholder theory. This may be attributed to increased transparency in the company's operations. Companies with higher disclosure ratings across different ESG components generally experience lower credit spreads. High-quality ESG rankings help reduce the impact of information asymmetry, in terms of both the volume and the quality of information. This non-financial business metric complements the data provided by financial statements, offering stakeholders a more comprehensive understanding of the company's overall standing.

Furthermore, sustainable development indicators help to mitigate corporate financial risk. A company's interest in obtaining sustainable development ratings indicates its orientation towards addressing social issues alongside profit generation. This focus helps build a positive relations with investors, potentially leading to an "insurance effect" [23]. Even in challenging market conditions or during temporary setbacks, a strong corporate image can help mitigate financial losses, as stakeholders' confidence in the company remains intact.

The results obtained also highlight notable factors influencing bonds in the Russian debt financing market. The model estimates indicate the significance of all control variables, except for the time a bond circulates in the market. The sign of the liquidity indicator, represented by the bid-ask spread, demonstrates that bonds with lower liquidity risk are more popular: domestic investors tend to avoid instruments with low liquidity. The volatility of the yield spread serves as a risk indicator, prompting investors to demand a risk premium due to income uncertainty. Additionally, as the bond's maturity date approaches, the yield spread increases, suggesting that investors in the current Russian securities market prefer shorter-dated bonds due to elevated uncertainty. A positive effect from debt sustainability suggests that investors favor bonds from companies that are more resilient to default risk. The results for credit ratings are mixed, most likely because high-yield bonds were not set apart in this sample. Company size has an inverse relationship with bond yield spreads, confirming that investors favor established companies.

In the financial sector, profitability indicators are clearly important for investors, with return on assets having a stronger impact on bond yield spreads. These metrics provide stakeholders with a deeper understanding of how effectively corporate management generates profits using the company's limited resources.

The conclusions regarding the key interest rate, the main macroeconomic indicator in this model, are particularly interesting. Typically, an increase in the key rate results in a corresponding rise in nominal bond rates. According to classical theory, this should raise credit risks due to higher debt financing costs for credit institutions, thus widening

yield spreads. However, the regression analysis revealed the opposite effect for financial companies. This could be because the key rate increases observed during the study period enabled banks to significantly raise rates for credit products, thereby enhancing their financial stability without substantially increasing credit risks.

The obtained determination coefficients show that the explanatory power of the financial companies' sample is lower than that of manufacturing companies. This may be attributed to non-market factors affecting financial sector bonds, such as reputation, customer loyalty, and popularity. However, excluding Sberbank bonds from the sample (of which they constitute the greater part) improves the model's forecasting ability.

Table 3 provides model estimates to test the hypothesis of a significant relationship between a company's bond yield and its ESG activity, using a sample of companies with an ESG ranking at the time of observation.

Table 3. Results of the regression analysis for the sample of Russian bonds issued by companies with RAEX ESG rankings

	Manufacturing companies			Financial institutions		
	I	II	III	I	II	III
Volatility	0.824*** (0.017)	0.824*** (0.017)	0.823*** (0.017)	0.362*** (0.019)	0.367*** (0.020)	0.366*** (0.019)
BidAsk	0.062** (0.029)	0.059** (0.026)	0.057*** (0.048)	0.503*** (0.084)	0.501*** (0.084)	0.526*** (0.085)
Maturity	-0.049*** (0.006)	-0.049*** (0.006)	-0.048*** (0.006)	-0.194*** (0.014)	-0.138*** (0.014)	-0.138*** (0.014)
EXRA_E	0.381*** (0.110)			-0.810*** (0.262)		
EXRA_S		0.273*** (0.107)			-0.791*** (0.236)	
EXRA_G			0.276*** (0.098)			0.122** (0.061)
Rate	6.447*** (0.616)	6.558*** (0.614)	6.615*** (0.612)	-10.188*** (1.180)	-7.854*** (1.241)	-7.343*** (1.252)
D/A	30.632* (18.589)	27.193* (17.561)	30.198* (18.261)			
Arang	-0.008* (0.003)	-0.009** (0.005)	-0.010** (0.005)			-0.009*** (0.003)
Sec/A				5,938.583*** (620.005)		
ROA					-2,022.501*** (585.121)	-2,288.601*** (599.691)
ROE				-505.373*** (56.053)		
Age	-0.005** (0.002)	-0.005* (0.003)	-0.004 (0.003)	-0.005 (0.005)	-0.005 (0.005)	
R^2	0.2817	0.2811	0.2900	0.1054	0.0962	0.0960
Adj. R^2	0.2437	0.2431	0.2892	0.0814	0.0859	0.0857

Notes: the standard deviation of coefficient estimates is given in parentheses; coefficient significance levels: * p <0.1, ** p <0.05, *** p <0.01.

The regression analysis of the sample of manufacturing companies with RAEX ESG rankings revealed that success in sustainable development significantly influences bond yield spreads. For manufacturing companies, active ESG engagement does indeed lead to lower borrowing costs through bond-secured loans.

The first factor contributing to this "discount" on bond yields is information transparency. Companies with high ESG performance are less likely to hide negative news, resulting in more accurate and reliable disclosure of their operations.

A second reason is the loyalty of consumers who are sensitive to global challenges. By improving their ESG ratings, companies build a positive brand image and social reputation, attracting stakeholders to a relatively new concept in the Russian market. This drives up demand for the company's products and boosts profitability.

The third reason is that strong ESG performance can mitigate the debt agency problem. Shareholders seeking personal gain can take actions detrimental to creditors, such as under-investing, over-distributing dividends, or substituting assets. Companies with high ESG indicators, however, have lower costs associated with the debt agency problem. The governance component of ESG contributes to greater transparency, reducing the principal-agent problem between management and bondholders. Additionally, it is assumed that management in stable, responsible companies adheres to stronger ethical standards.

Thus, the analysis of the impact of ESG rankings on manufacturing companies' bond yields aligns with stakeholder theory. By using non-market mechanisms to enhance their reputation and operational transparency, companies raise investor confidence and encourage investment in their securities.

However, for financial companies, the regression analysis revealed a paradox: higher compliance with environmental and social principles actually increases the required bond yield, making bond-secured loans more expensive. In contrast, the governance component has a positive effect on reducing the cost of debt financing – financial companies with strong governance typically face lower required yields.

Given that 57.14% of bonds in the sample were issued by PJSC Sberbank, an additional regression analysis excluding Sberbank's bonds was performed, and the main conclusions remained consistent.

This paradox is supported by certain economic theories. R. Freeman [1] argued that the primary goal of a company is to increase stakeholder welfare, and so pursuing non-financial objectives may reduce efficiency. Other studies have shown that ESG initiatives can increase costs, leading to negative economic repercussions and reduced company value. A. Buallay [16], focusing on emerging markets, concluded that this phenomenon is particularly evident in the banking sector, where trust-based relationships with investors and improved ESG reporting are still being developed.

Descriptive statistics for RAEX ESG rankings of Russian companies in each sector, presented in Appendix 1, show relative homogeneity within sectors. In particular, the financial sector data does not indicate significant bias, outliers, or large variations in rankings.

However, unlike manufacturing firms, the financial sector demonstrates heterogeneity between ESG components, with the governance component significantly outperforming the others. Judging from the results of model estimation, this component is the key factor reducing bond-secured loan costs. In contrast, the underperforming components increase bond yield spreads, making loans more expensive for financial companies. These results suggest that bond yield reductions primarily benefit ESG leaders, which are mostly manufacturing firms. For companies in the early stages of responsible financing, particularly in the financial sector, ESG compliance may still represent additional costs rather than benefits.

Conclusions

Our quantitative analysis of corporate bond credit spread factors in the Russian market not only showed the expected influence of issuer characteristics, bond features, and macroeconomic indicators but also revealed the specific impact of sustainable development infrastructure on the cost of securing bond-financed loans. The majority of our hypotheses are supported by empirical data and align with theories explaining risk sources for corporate bonds. The impact of sustainable development varies between manufacturing and financial companies. High governance ranking reduce the required bond yield for both groups by mitigating the information asymmetry between businesses and investors. However, the environmental and social components of sustainable development have different effects: manufacturing companies benefit from a "discount" on loan costs for performing these activities, while financial companies, conversely, face a risk premium due to stakeholder skepticism.

The Russian market has seen a decline in information disclosure in recent years, forcing investors to rely on multiple sources when making decisions. Therefore, the finding that investors value enhanced transparency through ESG rankings, particularly regarding the governance component, is significant. Environmental and social responsibilities largely represent additional costs, which are important for high-emission manufacturing firms but are considered unnecessary for the financial sector. This observation aligns with trade-off theory: customers of banks and financial institutions believe ESG investments could be better used to improve customer service or reduce product costs. Supplementing this with agency theory, investors may perceive "green" initiatives in the financial sector as a way to mask underlying business challenges, such as shrinking net interest margins or rising credit risk, rather than genuine ESG commitments. In the realities of modern life banks try to withhold information on the paradoxical negative spread between loans and deposits, which may entail a drop in net interest income and an increase in the credit risk. Instead, they aim at informing stakeholders about the carbon neutrality of offices, which may be unsettling for experienced investors.

In this context, the issue of greenwashing cannot be ignored. Bernd Villhauer, a German scholar and entrepreneur, highlighted the prevalence of greenwashing in banking, noting that society is not yet willing to pay for "green finance". He asserts that "the idea of making pollution a privilege that can be paid for is unacceptable to society" [24].

Despite these challenges, bonds from companies engaged in sustainable development are a promising instrument for the Russian economy, which is in the early stages of ESG development. For investors, these financial instruments may serve as an alternative to charitable environmental programs, offering targeted investment in the most sustainable Russian companies with better returns.

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Appendix

Table 1. Descriptive statistics of variables

	Manufacturing companies					Financial companies				
	min	p25	median	p75	max	Min	p25	median	p75	max
G	0	101.1	202.4	444.9	5 719.4	-1112.1	0.01	110.2	707.9	5,890.7
Log (Volume)	7.6	20.7	22.3	23.0	25.9	12.6	19.7	20.9	22.3	25.1
Liquidity	0.00	0.00	0.01	0.03	0.96	0.0	0.00	0.00	0.01	1.00
Volatility	0.1	18.9	36.3	76.7	3,744.0	0.0	23.1	48.1	109.9	6,088.9
BidAsk	0.0	13.9	29.1	78.4	6,254.1	0.0	23.10	230.7	528.7	7,897.0
Maturity	-29.0	579.0	1,056.0	2,076.0	12,717.0	0.0	441.0	886.0	1,426.0	13,886.0
EXRA_E	1.0	15.0	30.0	44.0	158.0	1.0	38.0	46.0	56.0	146.0
EXRA_S	1.0	18.0	27.0	48.0	156.0	1.0	26.0	38.0	51.0	151.0
EXRA_G	1.0	8.0	28.0	48.0	154.0	1.0	19.0	32.0	36.0	159.0
CrRate	0.0	0.0	9.0	14.0	17.0	0.0	15.0	17.0	17.0	17.0
Rate	4.3	5.5	7.5	7.9	20.0	0.0	5.5	7.5	8.0	20.0
D/A	0.0	0.2	0.4	0.5	5.6					
Arang	0.0	8.56	100.3	535.1	26,089.3	0.0	7.5	20,859.0	41,165.5	49,267.1
Age	2.0	341.0	739.0	1,275.0	5,271.0	2.0	306.0	637.0	1,052.0	5,026.0
Sec/A						0.0	0.02	0.02	0.04	1.0
ROA						- 0.2	0.01	0.01	0.02	0.4
ROE						- 4.1	0.1	0.1	0,2	1.2

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