

The Impact of ESG Ratings on Corporate Financing Costs

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Abstract. In the current era of green development, the concept of sustainable development has become increasingly embedded in public consciousness, and corporate ESG (Environmental, Social, and Governance) performance has gradually become a focal point of attention. As firms pursue economic benefits, actively fulfilling their responsibilities in environmental protection, social contribution, and corporate governance helps enhance their overall competitiveness and reduce financing costs. Based on data from 2014 to 2022, this study conducts an in-depth analysis of the impact of ESG ratings on corporate financing costs and explores the underlying mechanisms. The findings indicate that ESG ratings significantly reduce financing costs, a conclusion that remains robust across various tests. Mechanism analysis reveals that return on total assets and financing constraints mediate the relationship between ESG performance and financing costs. Furthermore, heterogeneity analysis shows that the cost-reducing effect of ESG ratings is more pronounced among non-state-owned enterprises and firms located in eastern regions. This study enriches the literature on the economic impact of ESG ratings and holds significant practical implications for enterprises seeking to optimize ESG practices to lower financing costs and achieve sustainable development.

Keywords: ESG rating, financing cost, green credit, return on total assets, financing constraint

1. Introduction

In recent years, the ESG (Environmental, Social, and Governance) investment philosophy has garnered increasing attention, and ESG ratings have become a key indicator for evaluating a firm's capacity for sustainable development. According to the theory of shared value, ESG practices can help companies improve their policies and operational models, thereby enhancing competitiveness [1]. Based on the resource-based view, ESG practices enable firms to accumulate unique strategic resources, thereby reducing the difficulty of obtaining external financing[2]. Signaling theory further suggests that a high ESG rating can convey superior risk management capabilities and long-term development potential to the market, mitigating risk perceptions among creditors and investors and thus improving firm performance[3]. Financing cost refers to the compensation paid by capital users to capital providers and is commonly measured by the ratio of financial expenses to average interest-bearing liabilities. It is directly related to a firm's investment decisions and financial performance. However, evaluating a firm's overall capability also requires consideration of its non-financial

performance. ESG ratings play a vital role in the long-term operations of a firm, serving as a comprehensive evaluation system of its environmental, social, and governance performance.

2. Literature review

A review of relevant literature reveals that ESG ratings can significantly reduce corporate financing costs[4]. From the perspectives of information economics and stakeholder theory, high-quality ESG disclosures can alleviate information asymmetry between firms and external investors. This, in turn, helps build trust with stakeholders such as banks, suppliers, and customers, ultimately lowering the cost of financing. However, some scholars, drawing on agency cost theory, argue that ESG practices may increase short-term operating costs. If these practices cannot be promptly translated into economic benefits, they may impose additional financial burdens on firms[5]. This challenge is particularly pronounced in emerging markets, where firms often face the dilemma of compliance-driven ESG activities. Engaging in ESG initiatives merely to meet regulatory requirements often fails to generate substantial economic returns. As the largest emerging economy in the world, China's unique institutional context gives rise to significant heterogeneity in the economic consequences of ESG practices, providing theoretical space for innovation in this study.

In terms of mechanism pathways, existing scholars have explored how ESG ratings specifically reduce financing costs from two main perspectives: financial performance and financing constraints. It is argued that ESG practices enhance firms' financial performance by optimizing the efficiency of resource allocation[6]. High-quality ESG performance signals strong growth prospects and robust risk management capabilities to external stakeholders, thereby broadening firms' financing channels in capital markets characterized by information asymmetry[7]. However, most existing studies focus on a single mediating mechanism and offer limited insight into the unique institutional context of China. In light of this, the present study investigates the impact of ESG ratings on corporate financing costs through the dual mechanisms of financial performance and financing constraints.

The marginal contributions of this study are as follows. First, drawing upon signaling theory and the resource-based view, this paper constructs a theoretical framework of "ESG → financial performance/financing constraints → financing cost," systematically clarifying the impact of ESG on corporate financing costs and its underlying mechanisms. Second, using a mediation effect model, the study empirically tests the mediating roles of return on total assets and financing constraints, revealing that the mediating effect through financing constraints is significantly greater than that through financial performance. Third, through subgroup regressions, the paper conducts an in-depth analysis of the heterogeneity across ownership types, regions, and industries. The results confirm that the cost-reducing effect of ESG ratings is more pronounced among non-state-owned enterprises and firms in eastern China[8], while the effect is generally consistent across industries. These findings provide valuable insights for promoting sustainable economic development.

3. Theoretical framework and research hypotheses

3.1. The relationship between ESG ratings and financing costs

According to signaling theory, ESG ratings communicate a firm's performance in environmental management, social responsibility, and corporate governance to capital markets. A high score in the environmental dimension signals a firm's capacity for low-carbon transformation; a high social score indicates long-term commitments to stakeholders; and a high governance score reflects reduced agency costs, thereby increasing investor trust. From the perspective of the resource-based

view, ESG practices constitute strategic resources that contribute to the development of a firm's core competitive advantage. Investments in environmental technologies can reduce operational costs in the long term; social responsibility initiatives can enhance brand equity; and sound governance structures can improve decision-making processes and reduce managerial short-termism [9]. Based on the above, the following hypothesis is proposed:

Hypothesis 1a: ESG ratings are significantly negatively associated with corporate financing costs—i.e., firms with better ESG performance incur lower debt financing costs.

3.2. Mechanisms through which ESG affects financing costs

3.2.1. Financial performance pathway

Environmental investments can promote technological innovation and reduce long-term operational costs. Social investments, in essence, enhance brand reputation and strengthen consumer identification with the company's cultural values[10], thereby increasing their willingness to pay and facilitating the upgrading of the firm's revenue structure. Governance investments aim to reinforce internal controls and risk management, thus reducing unexpected losses and maintaining stable profitability. When firms improve their return on total assets through ESG practices, their sustained profitability and stable cash flow enhance the certainty of debt repayment. This lowers creditors' assessment of default risk. A sustainable profit model also alleviates concerns among financial institutions regarding the firm's long-term solvency. As a result, creditors are more likely to reduce the risk premium in pricing decisions, thereby lowering the firm's financing costs[11]. Based on this reasoning, the following hypothesis is proposed:

Hypothesis 2a: ESG ratings indirectly reduce financing costs by increasing a firm's return on total assets.

3.2.2. Financing constraint pathway

Globally, the continuous rollout of green finance policies has led regulatory authorities to encourage financial institutions to allocate more resources toward firms that meet ESG standards. As a result, ESG-leading firms are able to obtain low-cost capital under more favorable terms. Institutional investors have also begun to incorporate ESG factors into their investment decisions. ESG-themed funds tend to exclude high-pollution and high-emission firms, while increasing investment in companies with strong environmental and social performance. This broadens financing channels and influences other investors to adjust their investment preferences accordingly. Detailed and transparent ESG disclosures help the market better understand corporate risk. Certification by third-party ESG rating agencies serves as a form of “credibility endorsement,” granting firms greater leverage in financing negotiations. When financing constraints are alleviated, firms gain easier access to external capital, which in turn leads to a significant reduction in financing costs. Based on this logic, the following hypothesis is proposed: Hypothesis 2b: ESG ratings indirectly reduce financing costs by alleviating financing constraints.

4. Research design

4.1. Data sources and preprocessing

This study employs annual data from 2014 to 2022 on A-share listed non-financial firms in China to empirically investigate the impact of ESG ratings on corporate financing costs. The data were

processed as follows: (1) firms designated as ST and *ST were excluded; (2) samples from the financial industry were excluded; (3) listed firms with missing financial data were removed; and (4) to ensure the robustness of data analysis and mitigate the influence of extreme values, continuous variables were winsorized at the 1st and 99th percentiles. After the above steps, the final sample comprises 28,659 firm-year observations. The data used in this study are sourced from the Huazheng ESG Rating Database and the CSMAR Database.

4.2. Variable selection

4.2.1. Dependent variable

Following the approach of Zhang Weihua et al.[12], this study measures financing cost (COD) using the ratio of a firm's financial expenses to its average interest-bearing liabilities, expressed in percentage terms. This indicator provides a comprehensive measure of the overall cost of debt financing and has been validated in existing research as being associated with ESG ratings.

4.2.2. Independent variable

The core independent variable is the ESG rating (ESG). Currently, there is no unified standard for ESG evaluation. After an in-depth comparative analysis of mainstream rating systems, the Huazheng ESG evaluation framework stands out due to its broader coverage and more frequent updates. Based on these advantages and following the methodology of Li Zengfu and other scholars [13], this study adopts Huazheng ESG data to measure corporate ESG performance. To eliminate potential distortions caused by different measurement scales, this study draws on the approach of Wang Linlin et al.[14] by assigning numerical values to ESG ratings. The nine rating categories from C to AAA are coded from 1 to 9, respectively, resulting in the variable *esg*. After this transformation, higher values of the variable indicate better ESG performance and more comprehensively reflect a firm's strengths in environmental, social, and corporate governance aspects.

4.2.3. Mediating variables

The mediating variables include financial performance (ROA) and financing constraints (SA). ROA is measured by the ratio of net profit to total assets, reflecting the firm's profitability. The SA index, constructed based on the method developed by Hadlock and Pierce, captures the degree of a firm's external financing constraints[15].

4.2.4. Control variables

Following the approach of Zhu Jie[16], the control variables include firm size (measured by the natural logarithm of total assets), leverage ratio (total liabilities divided by total assets), current ratio (current assets divided by current liabilities), board size (natural logarithm of the number of directors), cash flow (net cash flow from operating activities divided by total assets), and revenue growth rate (current period revenue divided by prior period revenue). These variables are included to control for the potential effects of firm characteristics, governance structure, and macroeconomic conditions on financing costs.

4.3. Model specification

This study employs the following baseline model to examine the effect of ESG ratings on corporate financing costs:

$$COD_{i,t} = \alpha + \beta_1 ESG_{i,t} + \gamma Control_{i,t} + \varepsilon_{i,t}$$

Where $COD_{i,t}$ denotes the financing cost of firm i in year t (financial expenses divided by average interest-bearing liabilities); α is the intercept term; β_1 represents the coefficient capturing the direct effect of ESG on financing costs; $ESG_{i,t}$ is the ESG rating of firm i in year t (standardized score from 1 to 9); γ is the vector of coefficients for control variables; $Control_{i,t}$ denotes the set of control variables described above; and ε_{it} is the random error term.

Construct the following mediation models:

$$ROA_{i,t} = \alpha_1 + \beta_2 ESG_{i,t} + \gamma Control_{i,t} + \varepsilon_{i,t}$$

$$COD_{i,t} = \alpha_2 + \beta_3 ESG_{i,t} + \beta_4 ROA_{i,t} + \gamma Control_{i,t} + \varepsilon_{i,t}$$

$$SA_{i,t} = \alpha_3 + \beta_5 ESG_{i,t} + \gamma Control_{i,t} + \varepsilon_{i,t}$$

$$COD_{i,t} = \alpha_4 + \beta_6 ESG_{i,t} + \beta_7 SA_{i,t} + \gamma Control_{i,t} + \varepsilon_{i,t}$$

Where $ROA_{i,t}$ denotes the return on total assets of firm i in year t (net profit divided by total assets), measuring profitability; α_1 is the intercept term; β_2 is the regression coefficient of ESG on ROA, reflecting the direct effect of ESG on profitability; α_2 is the intercept term; β_3 represents the direct effect of ESG on financing costs; β_4 is the coefficient of ROA on financing costs, indicating the effect of profitability improvement on reducing financing costs; $SA_{i,t}$ denotes the financing constraint index; α_3 is the intercept term; β_5 is the regression coefficient of ESG on financing constraints, reflecting the direct effect of ESG on alleviating financing constraints; α_4 is the intercept term; β_6 represents the direct effect of ESG on financing costs; β_7 is the coefficient of the SA index on financing costs, indicating the effect of financing constraints on financing costs; all other variables remain consistent with those defined previously.

5. Empirical analysis

5.1. Descriptive statistics

The descriptive statistics presented in Table 1 indicate that the distribution characteristics of all variables are reasonable, with no obvious outliers or data quality issues. The mean ESG score is 4.24, suggesting that the sampled firms generally perform well in ESG practices, though there remains a certain degree of dispersion. This provides sufficient variability for subsequent regression analysis. The distributions of the control variables also align with expectations, effectively controlling for their potential influence on the dependent variable (COD).

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
cod	28659	0.016	0.016	-0.26	0.946
esg	28659	4.24	0.966	1	8
size	28659	22.219	1.264	19.525	26.452
lev	28659	0.389	0.19	0.049	0.908
liquid	28659	2.735	2.69	0.264	19.846
cash flow	28659	0.052	0.065	0.194	0.267
growth	28659	0.28	0.739	-0.928	11.188
board	28659	2.1	0.195	1.609	2.708

5.2. Baseline regression

This study empirically tests the effect of ESG and other factors on COD by constructing regression models. (1) The results in column (1) show that without control variables, the coefficient of ESG on COD is -0.072, which is significantly negative at the 1% level, indicating a significant negative correlation between ESG and COD. (2) After including control variables, as shown in column (2), the coefficient of ESG on COD is -0.050, remaining significant at the 1% level. This result demonstrates that firms with better ESG performance have lower financing costs, thereby supporting Hypothesis 1a.

Table 2: Baseline regression

	(1) COD	(2) COD
esg	-0.072*** (-4.191)	-0.050*** (-3.063)
Control Variables	yes	yes
_cons	2.251*** -30.253	1.878** -2.022
id	yes	yes
year	yes	yes
N	28659	28659
r2	0.02	0.048
F	26.853	49.315

Note: *** indicates $p < 0.01$, ** indicates $p < 0.05$, * indicates $p < 0.1$; t-values are reported in parentheses. The same notation applies to Tables 3 to 5.

5.3. Robustness test

To ensure the robustness of the research findings and more accurately examine the role of ESG performance, this study first conducts robustness checks by gradually adding control variables. As shown in Table 3, columns (1) and (2) present regression results where Tobin's Q (tobinq) and firm

age (firm age) are sequentially introduced as control variables. The coefficient of ESG remains largely consistent with the baseline regression results. Specifically, the coefficient of tobinq on COD is -0.056 and is significantly negative at the 1% level, indicating that the improvement in corporate ESG performance effectively reduces financing costs. This confirms the robustness of the basic regression results.

Secondly, a robustness check was conducted by changing the regression period to 2015–2022. As shown in column (3) of Table 3, the regression coefficient of ESG on COD is -0.050 and remains significant at the 1% level. This indicates that the results remain robust even after altering the sample period.

In addition, a high-dimensional control approach was employed. Column (4) of Table 3 shows that after controlling for industry fixed effects on top of firm and year fixed effects, the regression results remain largely consistent with the baseline regression. This further confirms the robustness of the baseline findings.

Table 3: Robustness tests

	(1) COD	(2) COD	(3) COD	(4) COD
esg	-0.051*** (-3.107)	-0.050*** (-3.062)	-0.050*** (-3.063)	-0.049*** (-2.993)
Control Variables	yes	yes	yes	yes
tobinq	-0.056*** (-5.285)	-0.061*** (-5.651)		
firm age		1.737*** -6.36		
_cons	2.510** -2.545	-1.713* (-1.693)	1.878** -2.022	6.299*** -6.403
id	yes	yes	yes	yes
year	yes	yes	yes	yes
industry	no	no	no	yes
N	28659	28659	28659	28659
r2	0.049	0.052	0.048	0.055
F	47.345	45.875	49.315	50.233

6. Further analysis

6.1. Heterogeneity analysis

The empirical results presented in Table 4 show that columns (1) and (2) represent state-owned and non-state-owned enterprises, respectively. The impact of ESG performance on COD is significant for non-state-owned enterprises but not significant for state-owned enterprises, indicating a noticeable difference in the extent to which ESG reduces financing costs across ownership types.

Columns (3) and (4) report results for firms located in eastern and central-western regions, respectively. ESG performance has a more significant effect on reducing COD in eastern China.

Although the effect is also significant in the central-western regions, the level of significance is lower than that in the eastern region. This finding aligns closely with regional differences in marketization levels and the distribution of green finance pilot policies.

Column (5) represents manufacturing firms, and column (6) represents non-manufacturing firms. In both cases, the effect of ESG performance on reducing COD is significant, with no noticeable difference between the two groups. This indicates that regardless of whether a firm operates in the manufacturing or non-manufacturing sector, ESG performance can effectively lower financing costs, suggesting that industry characteristics have a limited impact on the cost-reducing effect of ESG.

Table 4: Heterogeneity analysis

	(1) COD	(2) COD	(3) COD	(4) COD	(5) COD	(6) COD
esg	-0.024 (-1.589)	-0.055** (-2.456)	-0.034*** (-3.003)	-0.091* (-1.715)	-0.057** (-2.481)	-0.036** (-2.049)
Control Variables	yes	yes	yes	yes	yes	yes
_cons	3.752** -2.557	1.919 -1.602	1.733* -1.84	1.745 -0.767	1.92 -1.518	1.259 -1.038
N	8220	20439	21194	7460	19963	8696
r2	0.134	0.037	0.055	0.041	0.051	0.047
F	28.072	32	39.262	18.351	40.695	14.363

6.2. Mediation effect

6.2.1. Financial performance pathway

This study first examines the impact of corporate ESG performance on return on total assets (ROA). As shown in column (1) of Table 5, the regression coefficient of ESG on ROA is 0.001, indicating that ESG performance can improve ROA. Column (2) of Table 5 shows that the coefficient of ROA on COD is -2.081, suggesting that higher ROA reduces corporate financing costs. These results demonstrate that ROA plays a mediating role between ESG performance and financing costs, thereby supporting Hypothesis 2a.

6.2.2. Financing constraint pathway

This study first examines the impact of corporate ESG performance on financing constraints. As shown in column (3) of Table 5, the regression coefficient of ESG on SA is -0.003, indicating that ESG performance can reduce financing constraints. Column (4) of Table 5 shows that the coefficient of SA on COD is 1.280, suggesting that alleviating financing constraints can lower corporate financing costs. These findings demonstrate that financing constraints play a mediating role between ESG performance and financing costs, thereby supporting Hypothesis 2b.

It is noteworthy that the mediating effect of SA is stronger than that of ROA, indicating that in debt financing, the improvement in external funding accessibility has a more direct impact than the enhancement of internal profitability.

Table 5: Mediation effects

	(1) roal	(2) COD	(3) sa	(4) COD
esg	0.001 [*]	-0.049 ^{***} (-5.063)	-0.003 ^{***}	-0.047 ^{***} (-4.855)
roal		-2.081 ^{***} (-13.064)		
sa	-1.764		(-5.461)	1.280 ^{***} -6.895
Control Variables	yes	yes	yes	yes
_cons	-0.447 ^{***} (-15.325)	0.948 [*] -1.807	3.718 ^{***} -40.129	-2.881 ^{***} (-3.332)
N	28659	28659	28659	28659
r2	0.201	0.054	0.881	0.05
F	177.647	81.794	3533.214	74.188

7. Research conclusions and policy recommendations

7.1. Research conclusions

Based on data from China's A-share non-financial listed companies from 2014 to 2022, this study confirms that ESG ratings significantly reduce corporate financing costs through two pathways: enhancing financial performance and alleviating financing constraints. The effect is particularly pronounced in non-state-owned enterprises and firms located in eastern China. Among these mechanisms, the mediating effect of financing constraints is significantly greater than that of financial performance, indicating that improvements in external financing conditions play a more direct role in driving down financing costs. This study provides empirical support for the economic value of ESG practices and holds important practical implications for achieving sustainable development.

7.2. Policy recommendations

First, the government should further improve the green finance policy framework and strengthen the market-guiding role of ESG ratings to create a more favorable financing environment for enterprises with high ESG ratings. Policies should be tailored to local conditions, with appropriate increases in support for the central and western regions. The green finance pilot experiences from the eastern regions should be extended to the central and western areas to promote coordinated regional development of ESG.

Second, financial institutions should integrate ESG factors into their credit decision-making processes by developing dynamic ESG risk assessment models. They should establish green approval channels for firms with outstanding ESG performance, while increasing risk premiums for enterprises with environmental violations or governance deficiencies. Additionally, financial

institutions should innovate ESG-related financial products, such as issuing sustainability-linked bonds, to incentivize continuous improvement in ESG performance.

Third, enterprises should incorporate ESG practices into their long-term strategic planning and regularly disclose ESG reports to build sustainable financing capabilities. Non-state-owned enterprises, in particular, should increase investment in research and development, balancing short-term costs with long-term value. By doing so, they can overcome financing constraints in ESG-oriented capital markets and achieve synergistic growth in economic performance and social value.

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