



# The Impact of Environmental, Social, and Governance Performance on Corporate Financing Constraints: Evidence from China's Listed Companies

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**Abstract.** This paper focuses on A-share listed companies in non-financial industries in China from 2013 to 2022 as the research subject, and empirically analyzes the impact of ESG evaluation on corporate financing constraints. The study reveals that strong ESG performance significantly alleviates corporate financing constraints, with robust and reliable results. Furthermore, through grouping tests, it is evident that the effect of ESG performance on alleviating financing constraints is particularly pronounced in companies that voluntarily disclose their ESG performance. Hence, it is imperative for enterprises to prioritize the development of ESG practices, and for governments to enhance incentives and guidance.

**Keywords:** ESG performance; Financing constraints; Sustainable development

## 1 Introduction

With the rapid development of the economy and society, humanity has excessively exploited global resources, resulting in increasingly severe environmental pollution and related social problems. Currently, China is undergoing a phase of high-quality development, yet it is also grappling confronted with various environmental issues such as climate change and soil erosion. Considering the "dual carbon" goal, green development, business ethics, and other requirements, the performance of enterprises in sustainable development has become a crucial consideration in the investment decision-making process for all stakeholders.

ESG (Environmental, Social, and Governance) serves as a crucial indicator for sustainable development, measuring the impact on the environment, society, and governance. It provides enterprises with an effective framework to implement high-quality and sustainable practices. The concept of ESG requires businesses to broaden their focus from purely economic value creation to encompass social and environmental values, aligning with public expectations for corporate environmental responsibility and social accountability. By integrating ESG indicator into decision-making processes, enterprises can better connect with investors and optimize resource allocation through

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responsible investment behaviors<sup>1</sup>, which ultimately encourages businesses to fulfill their social responsibilities while promoting sustainable development.

The ability of an enterprise to secure long-term and stable financing is one crucial factor that impacts its high-quality development. "The 2022 National Survey and Assessment Report on the Burden of Industrial Enterprises" emphasizes that optimizing the business environment and reducing financing costs are urgent needs for enterprise development. ESG information not only comprehensively evaluates corporate performance in environmental responsibility, social responsibility, and corporate governance responsibility but also plays a positive role in enhancing corporate information transparency, reducing default risk, overcoming financing challenges, and lowering debt contract costs<sup>2</sup>, thereby enhancing corporate value. Hence, it is highly significant for enterprises seeking long-term social resources and high-quality development to clarify the relationship between ESG information disclosure and financing constraints.

The potential contributions of this paper are threefold. Firstly, it examines the heterogeneity of ESG performance in alleviating corporate financing constraints from the perspectives of disclosure nature, thereby enriching empirical research on the impact of ESG performance on corporate financing constraints. Additionally, by offering evidence from an ESG perspective, this paper presents a novel approach to addressing the challenges of "difficulty in financing" and "expensive financing" faced by enterprises. Lastly, it empirically tests the positive effect of ESG performance on corporate governance using the KZ index with high comprehensiveness and sensitivity. This serves to encourage the integration of ESG concepts within enterprises and among investors, thereby providing impetus for sustainable development in China's economic market.

## 2 Theoretical Basis and Research Hypotheses

In terms of the relationship between ESG performance and financing constraints, scholars both domestically and internationally have not reached a consistent conclusion. On one hand, some scholars argue that ESG performance may exacerbate financing constraints, drawing on theories such as impression management and managerial opportunism hypothesis. Derwall et al. suggested that ESG information disclosure and related activities could impose additional costs on enterprises<sup>3</sup>. Gjergji et al. found that for small-scale companies, the cost of improving ESG performance outweighs the benefits, thereby exacerbating their financing difficulties<sup>2</sup>. On the other hand, legitimacy theory and signaling theory provide theoretical support for ESG performance to alleviate corporate financing constraints. Ghoual et al. concluded that enterprises with excellent ESG performance would experience a reduction in their financing costs<sup>4</sup>. Similarly, Cheng et al. discovered that ESG reports could alleviate financing constraints by reducing information asymmetry<sup>5</sup>.

Research in ESG-related fields is heavily influenced by a country's macroeconomic policies, level of social development, as well as its institutional and cultural environment. Moreover, within the same country, variations in social capital<sup>6</sup> and industry characteristics<sup>7</sup> across different regions can impact the quality of ESG information disclosure, leading to differing effects on corporate financing constraints.

Relevant research on the economic consequences of ESG performance in the Chinese context must consider China's unique economic development level and institutional environment. For one thing there are disparities in ESG information disclosure between China and Western developed countries. The level of ESG information disclosure and the establishment of rating agencies in China are still in their early stages, with no mandatory disclosure requirements imposing cost burdens on enterprises. For another ESG not only aligns with the overall framework of "Five-in-one" and the new development concept but also provides a management framework for companies to pursue low-carbon transformation and achieve carbon neutrality goals. With the introduction of the "dual carbon" strategic goal, there has been a heightened focus on ESG performance. Improving ESG performance can transmit positive signals to stakeholders and foster a favorable reputation. Based on these points, this paper proposes the following hypothesis:

H: Enhancing ESG performance can help alleviate the financing constraints faced by businesses.

### 3 Research Design

#### 3.1 Sample Selection and Data Sources

This study selects China's A-share listed companies from 2013 to 2022 as the initial research sample. The following screening criteria are applied: (1) exclusion of companies in the financial and insurance industries; (2) exclusion of ST and \*ST companies; (3) exclusion of companies with missing main variables. To mitigate the impact of outliers on empirical results, all continuous variables are winsorized at the 1% level, resulting in a final sample size of 11,170 valid observations for econometric analysis. ESG performance data is obtained from the Wind database, and Company financial data is sourced from the CSMAR database, with STATA18 utilized as the analysis software.

#### 3.2 Variable Selection and Measurement

**Explained Variable:** financing constraints. Based on the KZ index method constructed by Kaplan and Zingales (1997), Wei Zhihua et al. (2014) measured dividends with "cash dividends/total assets at the beginning of the year" and added Tobin's Q value to measure the degree of financing constraints with five influencing indicators. The calculation formula for the KZ index estimated in this paper is shown in Equation (1), which can be utilized to calculate the financing constraints of each company. The higher the KZ value, the more pronounced the financing constraints experienced by the listed company.

$$KZ_{i,t-1} = -7.737 \left( \frac{CF_{i,t}}{A_{i,t-1}} \right) - 26.053 \left( \frac{DIV_{i,t}}{A_{i,t-1}} \right) - 4.335 \left( \frac{C_{i,t}}{A_{i,t-1}} \right) + 4.429LEV_{i,t} + Q_{i,t} \quad (1)$$

**Explanatory Variable:** enterprise ESG performance. This article assigns values to the 9 levels of the Huazheng ESG rating system, with AAA to C ratings corresponding to 9 to 1 in descending order, denoted as ESG. The larger the value, the higher the evaluation level of the enterprise, and the better the ESG performance.

**Control Variables:** based on previous studies, the following control variables have been chosen: return on equity (Roe), asset-liability ratio (Lev), liquidity ratio (Liq), operating capacity (Profit), growth capacity (Grow), proportion of fixed assets (Fix), company size (Scale), integration of two positions (Both), ownership concentration (Owncon), board size (Board), proportion of independent directors (Dire). In addition, factors such as industry and year are controlled.

### 3.3 Model Building

To test the hypothesis H, this paper establishes the following regression model:

$$KZ_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \sum Controls_{i,t} + Industry + Year + \varepsilon \quad (2)$$

Where  $i$  represents the listed company,  $t$  represents the year,  $KZ_{i,t}$  represents the financing constraints of the enterprise,  $ESG_{i,t}$  represents the ESG performance of the enterprise,  $Controls_{i,t}$  is the control variable. Industry and Year are considered as fixed effects of industry and year respectively.  $\varepsilon$  denotes the random error term,  $\alpha_0$  is the constant term of the regression model, and  $\alpha_1$  is the regression coefficient of the core variable. If  $\alpha_1$  is negative, H is verified.

## 4 Empirical Test

### 4.1 Descriptive Statistics

Table 1 presents the results of descriptive statistics. According to Table 1, the mean value of KZ, which serves as a proxy indicator of financing constraints, is 0.893, with a standard deviation of 1.755. The minimum and maximum values are -4.871 and 4.484 respectively, indicating that different enterprises are subject to varying degrees of financing constraints due to their individual circumstances. The average value of ESG is 4.170, exceeding the median of 4 and approximately equivalent to a grade B level, which suggests that the overall ESG performance level of sample enterprises is not particularly high, leaving ample room for improvement. Moreover, the maximum ESG is 8 while the minimum is 1, highlighting significant disparities in ESG performance among different sample enterprises.

**Table 1.** Results of descriptive statistics

Variables	Sample size	Mean	Median	Minimum	Maximum	Standard deviation
KZ	11170	0.893	1.131	4.871	4.484	1.755

Variables	Sample size	Mean	Median	Minimum	Maximum	Standard deviation
ESG	11170	4.170	4.000	1.000	8.000	0.924
Roe	11170	0.071	0.070	0.366	0.358	0.101
Lev	11170	0.426	0.419	0.060	0.855	0.193
Liq	11170	2.267	1.640	0.304	14.238	2.108
Profit	11170	0.599	0.517	0.077	2.367	0.392
Grow	11170	0.144	0.093	0.502	2.003	0.338
Fix	11170	0.215	0.180	0.002	0.713	0.163
Scale	11170	22.581	22.379	20.197	26.425	1.296
Both	11170	0.251	0.000	0.000	1.000	0.434
Owncon	11170	0.555	0.552	0.225	0.909	0.152
Board	11170	2.136	2.197	1.609	2.708	0.200
Dire	11170	0.376	0.357	0.333	0.571	0.054

## 4.2 Principal Regression Analysis

Table 2 shows the regression and robustness test results of ESG performance and financing constraints. Column (1) of Table 2 presents the regression findings on the impact of ESG performance on financing constraints. The coefficient for ESG is found to be significantly positive ( $\alpha_1 = -0.0946$ ,  $p < 0.01$ ). This suggests that as the value of financing constraints KZ increases, the degree of constraints decreases. Therefore, the regression results indicate that higher ESG performance among listed companies leads to smaller financing constraints they face, thereby confirming hypothesis H.

**Table 2.** Regression and robustness test results of ESG performance and financing constraints

Variables	KZ(1)	KZ(2)	KZ(3)
ESG	-0.0946*** (-7.31)		-0.149*** (-5.04)
ESG1		-0.160*** (-5.90)	
Roe	-4.760*** (-30.77)	-4.792*** (-31.01)	-4.054*** (-17.17)
Lev	5.774*** (60.81)	5.810*** (61.14)	5.695*** (45.21)
Liq	-0.0695*** (-7.59)	-0.0694*** (-7.57)	5.605*** (34.48)
Profit	-0.270*** (-7.83)	-0.271*** (-7.85)	-0.245*** (-4.29)
Grow	-0.293*** (-4.89)	-0.286*** (-4.78)	-0.169 (-1.49)
Fix	-0.00514 (-0.07)	0.00501 (0.06)	-0.0334 (-0.25)

Variables	KZ(1)	KZ(2)	KZ(3)
Scale	-0.148*** (-11.67)	-0.161*** (-12.91)	-0.0802*** (-3.72)
Both	-0.0611* (-2.29)	-0.0598* (-2.25)	-0.0357 (-0.75)
Owncon	-1.177*** (-14.29)	-1.174*** (-14.25)	-1.606*** (-10.37)
Board	-0.194** (-2.84)	-0.200** (-2.93)	-0.312** (-2.63)
Dire	0.160 (0.64)	0.0776 (0.31)	0.337 (0.78)
Cons	3.872*** (12.99)	4.085*** (13.69)	3.101*** (6.05)
Industry&Year	Control	Control	Control
N	11170	11170	11170
R <sup>2</sup>	0.594	0.593	0.622
F	360.9	357.6	232.8

Note: t values are in parentheses, and \*\*\*, \*\* and \* indicate significance at the level of 1%, 5% and 10%, respectively.

### 4.3 Robustness Test

This paper assigns the value of ESG rating grade A (AAA, AA, A) to 3, the value of ESG rating grade B (BBB, BB, B) to 2, and the value of ESG rating grade C (CCC, CC, C) to 1. The resulting assignment is marked as ESG1. Subsequently, a regression analysis is conducted on the relationship between ESG1 and corporate financing constraints. As shown in Column (2) of Table 2, it is observed that ESG1 and corporate financing constraints are significantly negatively correlated at the level of 1%, indicating that Hypothesis H has withstood the robustness test after altering the measurement method of ESG performance.

The outbreak of COVID-19 at the end of 2019 has significantly impacted the development of enterprises. Thus, it is crucial to examine samples from this period in order to better understand the effect of ESG performance on enterprise financing in a negative environment. As a result, this paper adjusts the sample period for regression analysis to 2019-2021. The findings are presented in Column (3) of Table 2, revealing that after adjusting the observation window, the regression coefficient of ESG is -0.149, indicating statistical significant at the 1% level. Hence, Hypothesis H passes the robustness test. These results demonstrate that enhancing corporate governance and ESG performance serves as an important strategy for alleviating enterprise financing challenges during periods of external environmental turbulence.

## 5 Further Analysis

**Table 3.** Results of grouping regression according to the nature of disclosure

Variables	Regulated disclosure	Voluntary disclosure
	KZ (1)	KZ (2)
ESG	-0.122*** (-4.71)	-0.115*** (-7.72)
Control variables	Control	Control
Cons	2.164*** (3.58)	5.842*** (15.08)
Industry&Year	Control	Control
N	1912	9258
R2	0.644	0.595
F	68.90	313.7

Note: t values are in parentheses, and \*\*\*, \*\* and \* indicate significance at the level of 1%, 5% and 10%, respectively.

In 2008, the Shenzhen Stock Exchange and Shanghai Stock Exchange issued a requirement for compulsory disclosure of social responsibility information for certain enterprises, while also encouraging voluntary disclosure of such information for other enterprises. The impact of mandatory versus voluntary disclosure on the increment of ESG information may differ. For companies that voluntarily disclose ESG information, ESG disclosure can convey their commitment to sustainable development. Investors with ESG preferences are willing to allocate more funds to companies with good ESG performance, even at the expense of lower expected returns<sup>8</sup>. However, most enterprises are required to disclose ESG information to comply with legal regulations, leading them to be less proactive about ESG information disclosure. This fails to substantially alleviate the degree of corporate financing constraints.

According to whether disclosure of information related to social responsibility is a regulated or voluntary behavior, the samples are grouped by regression. Table 3 shows the results of grouping regression according to the nature of disclosure. Based on the data presented in columns (1) and (2) of Table 3, it is apparent that the regression coefficient value for ESG performance is -0.122 for enterprises subject to regulatory disclosure and -0.115 for those subject to voluntary disclosure; both coefficients are negatively correlated at a significance level of 1%. Overall, ESG performance significantly influences the financing constraints encountered by enterprises, with reduction effect often being stronger in companies that voluntarily disclose such information.

## 6 Conclusions

Based on empirical research regarding the impact of ESG performance on corporate financing constraints, this paper draws the following conclusions. Firstly, heightened corporate ESG performance is associated with lower degrees of financing constraints. Secondly, Whether the disclosure of social responsibility information is voluntary or mandatory will also affect the mitigation effect of ESG performance on the degree of

financing constraints. Considering these findings, this paper presents the following policy implications:

For one thing enterprises should integrate ESG concepts into strategic planning, product development and marketing, employee recruitment and training, etc., in order to facilitate the green transformation and promote the high-quality development of enterprises. Enterprises should actively engage in environmental protection, charitable donations, and other activities to build a positive image and reputation while seeking external resources support. For another governments and regulatory authorities should actively develop laws, regulations, and regulatory systems that facilitate the green transformation of enterprises. Further analysis reveals that companies voluntarily disclosing social responsibility are better able to convey positive information to the public. Thus, it is imperative for the government and regulatory authorities to adhere to the development laws of the capital market. They should also actively promote enterprises to voluntarily disclose ESG information as well as establish and enhance reward policies for high-quality ESG performance. These measures will encourage enterprises to proactively improve their ESG performance and facilitate sustainable development.

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