

Analysis The Impact and Mechanisms of Firms' ESG Performance on Their Financing Constraints--Evidence from Chinese Listed Companies

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Abstract. ESG performance is a significant non-financial measure used to assess a company's environmental, social responsibility, and corporate governance. Its influence on a company's financing constraints has increasingly become a research focus in the field of sustainable development and ecological civilization construction. This paper explores the impacts and mechanisms of ESG performance on firms' own financing constraints, and finds that: the enhancement of firms' ESG performance can alleviate their own financing constraints; firms' enhancement of ESG performance can alleviate their own financing constraints through the channel of improving the firms' information transparency; firms' enhancement of ESG performance can alleviate their financing constraints more strongly in the samples with a high proportion of the entire majority shareholders' holdings and those from the eastern part of China.

Keywords: ESG Performance, Financing Constraints, Information Transparency.

1. Introduction

In light of the adverse consequences of accelerated economic expansion, nations and organizations have started to prioritize environmental protection concerns as the world confronts progressively severe resource, climate, and environmental dilemmas. Investors have come to understand that a company's financial performance can be influenced by its environmental performance. In 2006, Goldman Sachs incorporated environmental, social, and governance principles and formally established the ESG concept to evaluate the long-term viability of corporate activities and their influence on societal values. China's objective of advancing environmentally, socially, and governance (ESG) development must be bolstered, given its status as the second largest economy globally and its significant contribution to carbon emissions. Simultaneously, China is seeing heightened economic challenges and unfavorable business circumstances, necessitating the implementation of steps to alleviate the issue of corporate financing. Studying the influence of ESG scores on corporate finance not only evaluates the significance of corporate ESG performance but also offers practical recommendations for corporate finance.

Prior research has examined the relationship between ESG performance and financing constraints, with some studies indicating that there is a negative correlation between a company's ESG performance and its own financial constraints [1][2]. The majority of research in this field mostly examines the capital markets of developed nations, with only a limited number of studies investigating the impact of corporate environmental, social, and governance (ESG) performance on financing constraints in China's capital market. In addition, numerous researchers have extensively examined the study of the impact mechanism of ESG performance on financing constraints. These studies have encompassed stakeholder theory [1], information asymmetry theory [3], information transmission theory [4], and other related theories. By examining the pertinent literature, it is noted that existing scholarly studies have established a negative relationship between ESG performance and corporate finance constraints, as well as identified certain mechanisms through which this relationship operates. However, it remains uncertain whether firms' information transparency serves as a transmission channel in this context.

Examining corporate ESG performance and financing constraints, this paper attempts to determine whether corporate information transparency serves as a channel between financing constraints and

ESG performance. Accordingly, this study chooses Shenzhen A-share publicly traded companies from 2009 to 2021 as the research sample for analysis. The marginal contributions of this paper are as follows: firstly, it expands our understanding of how corporate ESG performance affects corporate financing constraints by examining new mechanisms and channels of influence. Secondly, it goes beyond previous studies by investigating the impact of the proportion of major shareholders and the geographical location of the firm on the relationship between ESG performance and financing constraints. Lastly, this paper not only offers insights for firms to enhance their financing policies through increased focus on ESG performance, but also provides guidance for the development of ESG practices.

2. Literature Review

This paper deals with the study of the impact of corporate ESG performance on financing. In order to sort out the literature research progress in these two areas in recent years, the research topics related to this paper are organised into two categories.

2.1. Research progress on ESG performance affecting financing constraints.

Over the past few years, social and environmental issues have gained attention, and a growing body of literature has focused on the impact of corporate social responsibility and financing.

Most of the literature suggests that ESG performance on the other hand has a facilitating effect on financing. Hou [4] found that its enhancement can bring about the alleviation of financing constraints for firms by examining the ESG performance of publicly traded companies in China from 2012-2019. Furthermore, there is additional literature that delves into the mechanism by which ESG performance affects finance. Existing work suggests that ESG performance can impact finance through the lens of stakeholder theory [1]. Higher Environmental, Social, and Governance (ESG) standards can facilitate effective communication between businesses and external stakeholders. This, in turn, helps to minimize information asymmetries during the financing process and enhances stakeholders' positive perception of businesses. Other scholars point out that ESG performance can generate positive feedback to investors in terms of corporate reputation, sending positive signals to investors [3] and reducing the difficulty of corporate financing. Some scholars have also argued that investors' access to ESG performance reduces the likelihood of principal-agent relationships between investors and firms [6].

2.2. Developments in researching the effects of ESG performance.

Since its proposal in 2004, experts have extensively researched the influence of ESG performance, primarily examining its economic, risk, and environmental implications. Some work examines the correlation between ESG performance and firm value when analyzing the economic implications of ESG performance. Wu [6] examines the influence and mechanism of ESG scores on firm value, focusing on equity structure. The study utilizes panel data from publicly traded companies in China's manufacturing industry between 2016 and 2022. The findings indicate that ESG performance has a positive effect on firm value, with a stronger impact observed in China's eastern and western regions.

Several researchers have examined the relationship between ESG performance and sustainability strategies to analyze the risk effect. Folqué[7] examines the influence of ESG risk performance on sustainability investments by utilizing parametric ANOVA with portfolio data on ESG risk. The study reveals that a low-risk ESG performance plays a significant role in attaining sustainability strategy goals. Avramov [8] also noted that ESG performance affects sustainability investment and that its uncertainty increases market premiums and demand for equities and noted that lower levels of ESG performance uncertainty can promote sustainability investment.

Through a comprehensive analysis of existing literature, it is evident that there is a substantial amount of study on the influence of ESG performance on financing. However, due to variations in research viewpoints and content, experts have not yet arrived at consistent conclusions. Scholars in

the literature on ESG performance have primarily focused on investigating the influence of ESG in relation to financing constraints. Nevertheless, there is scope for enhancement in this research. Existing literature primarily examines the influence of ESG performance on financing constraints from a research standpoint. However, the specific mediating mechanism remains unclear. This lack of clarity has significant implications for enhancing corporate financing policies and regulating corporate risks through relevant institutions. Hence, the article employs micro-data from Chinese publicly traded companies to analyze the influence of ESG performance on financing constraints and investigate the underlying mediating mechanisms.

3. Theoretical analyses and research hypotheses

As per the notion of information asymmetry, investors face restrictions due to their market position and information accessibility, resulting in a significant asymmetry of information between the investor and the investee. And Information asymmetry is a significant factor contributing to the financing constraints faced by firms [9]. Investors cannot obtain enough key information about a firm to judge its investment value from only the financial reports and corporate announcements that the enterprise publishes on a regular basis. Therefore, firms that voluntarily disclose high-quality financial and non-financial information about their firms to the market help investors to understand their development status and future business direction and provide them with less expensive financing to alleviate the firms' own financing constraints [10]. The disclosure of ESG performance serves as the most valuable non-financial information supplement. It provides insight into the actual governance capacity and developmental ideology of enterprises in relation to environmental concerns, social responsibility, and corporate governance standards. Moreover, it significantly improves the transparency of corporate information. According to risk theory, when the future business risks of enterprises increase, investors will compensate for their own investment risks by increasing the necessary rate of return on investment and adding constraints on investment. These measures will increase the firm's financing constraints. An important part of the risk is the risk of information uncertainty [3], when the quality and quantity of corporate disclosure information to enhance the transparency of corporate information can significantly enhance corporate information transparency, so as to mitigate the risk of information uncertainty, and thus alleviate their own financing constraints.

Furthermore, based on the principal-agent and stakeholder theories, the existence and growth of a company are intricately linked to its many stakeholders. However, conflicts of interest may give rise to principal-agent issues among these stakeholders. On the one hand, investors want to get the highest possible short-term return and prompt enterprises to invest and engage in sectors with significant levels of pollution and excessive energy use; on the other hand, management of the firm may choose to invest in green production and other ventures that have a long investment cycle and yield poor returns, in order to align with national policies and ensure the long-term success of the enterprise. The incentives of the two are contradictory, and investors will think that the return of investing in the enterprise is lower and give up the investment or improve the return of investment as their own compensation. These behaviours will tighten the financing constraints of enterprises. However, by disclosing ESG performance, companies can attract investment from investors with a shared development philosophy. When investors and firms have the same development philosophy, the possibility of principal-agent problems between investors and enterprises will be reduced, and for the return on investment will be relatively low, all of which will alleviate the financing constraints of firms. Signalling theory suggests that companies that are motivated to enhance their ESG performance are also inclined to allocate more resources towards corporate ESG development. This serves as a signal to external stakeholders that the company's business prospects, and future outlook are favorable. Meanwhile, according to reputation theory, when a company's ESG performance improves, it will enhance the firm's reputation, effectively gather favourable resources and reduce the degree of impact of negative events, as well as alleviate financing constraints.

In summary, this paper proposes the following hypotheses:

Hypothesis H1: Improving corporate ESG performance can increase corporate information transparency thereby alleviating corporate financing constraints.

4. Empirical analysis

4.1. Sample Selection and Data Sources

This paper utilizes the dataset of Shenzhen A-share publicly traded companies spanning from 2009 to 2021 as the initial sample. The data undergoes the following treatments: 1. The samples from ST, *ST, and PT enterprises are excluded; 2. The samples from the financial industry data are excluded; 3. The samples of other samples that have serious data missing are excluded; 4. Truncating the tails of all continuous variables at the 1st and 99th percentiles to mitigate the impact of outliers. processing to avoid the influence of extreme values. Finally, a total of 32805 data are obtained. Among them, the corporate ESG performance is selected from the WIND database, and the rest of the financial data are from the CSMAR database.

4.2. Variables Definition

4.2.1 The Explained Variable

In this paper utilizes the logarithm of the absolute value of the SA index (FC) as a metric to assess the level of corporate financing limitations. The severity of financial limitations experienced by the firm in the current era increases as the absolute value of the SA index grows larger. Additionally, the complexity and cost of financing also increase.

4.2.2 The Explanatory Variable

This paper utilizes a scale called "C-AAA" to evaluate the ESG performance of companies. Each of the nine scales is assigned a number ranging from 1 to 9, which is then used as an indicator of the company's ESG performance. A higher value indicates superior ESG performance of the firm.

4.2.3 The Control Variables

In this paper, firm size ($SIZE$), Asset liability ratio (LEV), total asset turnover (ATO), total asset profitability (ROA), Tobin's Q ($TOBQ$), book-to-market ratio (BM), cash flow ratio (CF), State-Owned Enterprise (SOE), and share of capital of major shareholders ($Occupy$) are selected as control variables, and year and industry dummies are also added to control for time and industry effects. Specific variables are defined as shown in Table 1.

Table.1. Variable definitions and explanations

Variable type	Variable name	Variable symbol	Description of variables
Explained Variable	Financing Constraint	FC	The absolute value of the SA index
Explanatory Variable	ESG performance	ESG	Assigning Huazheng's ESG performance from "C" to "AAA" from 1 to 9.
Control Variables	Firm Size	SIZE	Ln (total assets of the firm at the end of the period)
	Asset liability ratio	LEV	Total liabilities at end of period/total assets at end of period
	total asset turnover	ATO	Operating income/total assets
	Return on Assets	ROA	Net profit/average total assets
	Tobin's Q	TOBQ	Market value/total assets
	Book-to-Market ratio	BM	Book value/total market value
	Cash flow ratio	CF	Cash and cash equivalents/current liabilities
	State-Owned Enterprise	SOE	1 for State-owned, 0 for non-State-owned
	Share of capital of major shareholders	Occupy	Substantial shareholders' investment/total investment
	Year	Year	Year dummy variable
	Industry	Industry	Industry dummy variables

4.3. Modelling

In order to test hypothesis H₁, this paper constructs model (1) to explore the relationship between firms' ESG performance and the degree of financing constraints.

$$FC_{i,t} = \beta_0 + \beta_1 \times ESG_{i,t} + \sum Controls_{i,t} + \gamma_k + \lambda_t + \varepsilon_{i,t} \quad (1)$$

Where $FC_{i,t}$ is the degree of financing constraints of the explained variable, $ESG_{i,t}$ is the ESG performance of the firms of the explanatory variable; $\sum Controls_{i,t}$ represents the nine selected control variables, and $\varepsilon_{i,t}$ is the random perturbation term. We also try to control for industry and time effects in the model, with γ_k as the industry fixed effect and λ_t as the time fixed effect. Among the above variables, i and t represent individuals and time, respectively. When β_1 is significantly negative, it indicates that the accompanying improvement in firms' ESG performance will alleviate their financing constraints.

The variable $FC_{i,t}$ represents the degree of financing constraints for the explained variable, whereas $ESG_{i,t}$ represents the ESG performance of the enterprises for the explanatory variable. $\sum Controls_{i,t}$ represents the nine selected control variables, and $\varepsilon_{i,t}$ represents the random perturbation term. In addition, we incorporate industry and time fixed effects into the model. The industry fixed impact is denoted by γ_k , while the time fixed effect is denoted by λ_t . Of the variables mentioned, i represents individuals and t represents time. When the coefficient β_1 is significantly negative, it suggests that there is a strong indication that the improvement in enterprises' ESG performance will help to reduce their financing constraints.

4.4. Empirical Analysis

4.4.1 The Descriptive statistics

The statistical characteristics of the primary variables are displayed in the columns of Table 2. The data presented in Table 2 reveals that the average firm ESG performance value is 4.145, which corresponds to a level of B. This indicates that the sample enterprises' overall ESG performance level is not particularly high. The maximum value recorded is 8, the minimum value is 1, and the standard deviation is 1.083. These values suggest that there are notable variations in the firms' ESG

performance levels. The average firm financing constraints value is 3.783, with a maximum value of 8. Publicly traded companies exhibit a higher degree of variation in their financing constraints.

Table.2. The result of Descriptive statistics

Variable	Obs	Mean	SD	Min	Max
SA	32,805	3.783	0.270	1.805	5.646
ESG	32,805	4.145	1.083	1	8
Size	32,805	22.17	1.300	19.41	26.43
Lev	32,805	0.421	0.207	0.0274	0.925
ATO	32,805	0.659	0.446	0.0531	2.907
ROA	32,805	0.044	0.065	-0.398	0.254
TobinQ	32,805	2.073	1.399	0.802	17.73
BM	32,805	1.030	1.203	0.051	10.14
Cashflow	32,805	0.048	0.070	-0.224	0.283
SOE	32,805	0.362	0.480	0	1
Occupy	32,805	0.015	0.023	9.23e-05	0.202

4.4.2 Reporting of baseline regression results

Table 3 reports the results of the benchmark regression between firms' ESG performance and the degree of financing constraints. Regression (1) only controls for industry and time effects and does not include control variables. In regression (2) further control variables are added on top of controlling for industry and time effects. The results show that corporate ESG performance is negatively related to financing constraints, and both are significant at 1%. The above results indicate that the improvement of corporate ESG performance can alleviate their financing constraints. Consistent with the expectation of this paper, hypothesis H₁ is verified.

Table.3. The result of baseline regression

	(1) No Controls	(2) Controls
VARIABLES	FC	FC
ESG	-0.008*** (-18.23)	-0.007*** (-18.10)
SIZE		0.018*** (21.25)
LEV		0.083*** (23.72)
ROA		-0.016** (-2.22)
ATO		0.005*** (3.46)
CF		0.003 (0.62)
BM		-0.038*** (-73.86)
TOBQ		-0.009*** (-24.65)
SOE		0.024*** (10.93)
Occupy		-0.135*** (-7.46)
Constant	3.503*** (280.32)	3.101*** (146.75)
Observations	33,805	32,805
Number of id	3,853	3,853
Year FE	YES	YES
Industry FE	YES	YES

z-statistics in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

4.4.3 Robustness Testing

(1) Replacement of explained variable measures.

For the explained variable, the degree of firms' financing constraints, this paper adopts another widely used KZ index to replace the original SA index. Firms encounter more challenging financing conditions when the KZ index increases. The regression findings are presented in column (1) of Table 4. Upon substituting the explained variables, it is evident that the regression coefficients of ESG and FC remain negatively associated at a significance level of 1%, hence confirming the robustness of the model.

(2) Replacement of explanatory variable measures

This paper chooses Bloomberg ESG scores as the explanatory variable to represent firms' ESG performance. Bloomberg ESG scores range from 0 to 100, with higher scores indicating better ESG performance. The regression results are presented in column (2) of Table 4. Upon substituting the explanatory factors, the regression coefficients of ESG and FC continue to exhibit a significant negative correlation at the 1% level, suggesting that the findings are stable.

(3) Adding model more controls variables.

This study introduces additional control variables, namely the growth rate of operational income (*GROWTH*), the proportion of independent directors (*INDEP*), the fraction of shares held by the largest shareholder (*TOP1*), and the management expense ratio (*MFEE*). The regression results in Column (3) of Table 4 demonstrate a significant negative correlation between the degree of financing limitations and firms' ESG performance at the 1% level. This finding confirms the model's robustness.

(4) Province fixed effects

This paper further controls for province fixed effects to verify the stability of the model. There are many politics and natural differences between Chinese provinces which may affect the direction of local firms as well as their ESG performance. Column (4) of Table 4 reports the regression results. According to the regression results, it can be found that the degree of corporate constraints is still significantly and negatively associated with firms' ESG performance at the 1% level after controlling for the province effect. The robustness of the model is verified.

(5) Endogeneity analysis (PSM—Propensity Score Matching method)

To mitigate potential interference caused by enterprises with strong ESG performance and lenient financing constraints in the chosen sample, and to address the bias stemming from sample selection, this study used the PSM (propensity score matching) method to examine endogeneity. The factors chosen for 1:3 matching include firm size, return on total assets, cash flow ratio, book-to-market ratio, and large shareholders' capital utilization ratio. These variables have successfully passed the balance test. After performing matching, regression tests are carried out on the new samples. The results of these regression tests are presented in column (5) of Table 4. These findings indicate that the estimated coefficients of ESG performance and financing constraints remain considerably negative. Therefore, the conclusions drawn from these regression tests are considered robust.

Table.4. The result of robustness testing

	(1) Change Explained Variable	(2) Change Explanatory Variable	(3) Add control variables	(4) Controlling for province fixed effects	(5) Propensity Score Matching
VARIABLES	FC	FC	FC	FC	FC
ESG	-0.080*** (-11.15)	-0.002*** (-16.20)	-0.007*** (-17.56)	-0.007*** (-17.97)	-0.005*** (-11.32)
Constant	2.771*** (10.89)	4.563*** (122.65)	3.179*** (144.30)	3.100*** (136.41)	2.834*** (117.14)
Observations	30,805	10,989	32,805	32,805	22,044
Number of id	3,853	1,367	3,853	3,853	3,764
Controls	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Province FE	NO	NO	NO	YES	NO

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

(6) Testing through lagged variables

When firms' ESG performance improves, the degree of firms' financing constraints will be alleviated. However, it is also possible that this phenomenon may compromise model robustness due to bidirectional causality resulting from biases in data selection. Therefore, this paper lags the explanatory variables by one to three periods before conducting the regression, and Table 5 reports the regression results. The regression results show a significant negative relationship at the 1 per cent level. The robustness of the model is verified.

Table.5. The regression results after lagged treatment of variables.

	(2)	(3)	(4)
VARIABLES	FC	FC	FC
L ESG	-0.006*** (-14.79)		
L2 ESG		-0.005*** (-11.51)	
L3 ESG			-0.004*** (-8.59)
Constant	3.384*** (153.52)	3.648*** (156.40)	3.909*** (159.50)
Observations	28,677	24,993	21,737
Number of id	3,769	3,395	3,251
Controls	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.4.4 Heterogeneity analysis

(1) Heterogeneity of shareholdings of all major shareholders

This paper utilizes the shareholding ratio of the top ten shareholders of a company as a metric for the overall shareholding ratio of all significant shareholders. A company that surpasses the median is categorized as a high major shareholder shareholding company, while one that falls below the median is classified as a low major shareholder shareholding company. The group regression results are presented in column (1)(2) of Table 6. The coefficient for corporate ESG performance is -0.010 in the high shareholding ratio group and -0.003 in the low shareholding ratio group. These coefficients

were found to be significantly different based on the between-group coefficient test. This suggests that ESG performance is more effective in alleviating financing constraints in firms with a high percentage of ownership by all major shareholders. The reason for this is that in firms with a high proportion of majority shareholders, due to the "majority shareholding effect", majority shareholders have strong incentives and ability to monitor the management in order to pursue equity incentives and control gains. According to Gu [11], large shareholders prefer value investment, and they expect corporate development to increase long-term corporate value. Improving ESG performance is precisely the type of conduct that boosts the long-term prospects and elevates the firm's value. In companies where there are many major shareholders, these shareholders play a crucial role in overseeing management's opportunistic actions by monitoring the allocation of resources towards long-term ESG performance improvement and other valuable investments [11]. Additionally, as the ESG performance improves, there is a chance that major shareholders will invest more to help alleviate the financing constraints of the firms.

(2) Moderating effects in East, Central and West China

In different regions of China, there are different business and policy environments, and these external factors may have an impact on the financing constraints associated with improved corporate ESG performance. In this paper, the eastern and non-eastern regions of China are divided according to 1 and 0 to generate the cross-multiplier term (interact) between location and firms' ESG performance. The regression findings, presented in Table 6, indicate that firms located in the eastern region can mitigate their financing constraints. Specifically, in row (3), the regression coefficient of the cross-multiplier term is -0.004, which is statistically significant at the 1% level. This suggests that for firms in the eastern region, there is a stronger negative relationship between their ESG performance and financing constraints.

There are differences in the external environments of China's eastern, central and western regions in terms of government policy support and economic level. Compared with the central and western regions, the eastern region has a high level of economic development, a high degree of openness of the information market, and a relatively mature financial regulatory system, which has stronger regulation for the evaluation of ESG performance and the release of ESG information of enterprises and better guarantees the authenticity of the information, which will enhance the investor's understanding of the enterprise, reduce the degree of information uncertainty, and through the provision of more mature policy support and financial service support, at the same level of ESG performance to alleviate financing constraints in more and more effective ways. More and more effective ways to alleviate financing constraints under the same ESG performance.

Table.6. The results of Heterogeneity analysis

	(1)	(2)	(3)
	LowTop10	HighTop10	Moderating effects
VARIABLES	FC	FC	FC
ESG	-0.003*** (-5.94)	-0.010*** (-16.39)	-0.004*** (-5.92)
Position			-0.043*** (-9.10)
interact			-0.004*** (-4.91)
Constant	2.917*** (104.57)	3.273*** (102.02)	3.123*** (145.44)
Observations	16,399	16,406	32,805
Number of id	2,383	3,204	3,853
Controls	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5. Further Research

5.1. Analysis of the mechanism of mediated effects

Improvement in firms' ESG performance reflects firms' active long-term development strategies, which will provide unique non-financial information to the outside world, which, according to He ^[12], will significantly enhance firms' information transparency. And the increase in corporate information transparency will mitigate the investment risk caused by information uncertainty. And the risk of information uncertainty is an important part of the risk sources ^[3]. According to risk theory, when the risk increases, investors will either limit their capital injection into the firm or demand a higher required rate of return. Either of these will significantly increase the firm's financing constraints; the other way round, they will ease the financing constraints. In addition, the improvement of enterprise information transparency will also enable investors to grasp more comprehensive information about the enterprise, enhance the real value of the enterprise ^[6], and improve investor confidence to alleviate the enterprise financing constraints.

The mechanism variable in this paper is corporate information transparency (Transparency). This paper takes the information disclosure collection assessment results released by the Shenzhen Stock Exchange, and assigns the scores of "excellent", "good", "qualified" and "unqualified" in accordance with 4, 3, 2 and 1 respectively. The higher the score, the better the disclosure status of the firm in the year and the higher the transparency of the enterprise's information. This paper conducted regression analysis of ESG performance and three sub-indicators on information transparency, the results are reported in Table 7, the regression coefficient of ESG performance of enterprises is 0.102 and the four regression coefficients are all significant at 1% level, which indicates that the enhancement of ESG performance and its sub-indicators can significantly improve the transparency of corporate information. It is verified that ESG performance can alleviate financing constraints by improving corporate information transparency, and hypothesis H₁ is verified.

Table.7. The results of regression analysis of mediation effects

	(1)	(2)	(3)	(4)
VARIABLES	Transparency	Transparency	Transparency	Transparency
ESG	0.102*** (26.04)			
E Grade		0.011*** (2.81)		
S Grade			0.093*** (24.96)	
G Grade				0.089*** (30.52)
Constant	0.184 (1.36)	0.234* (1.67)	0.251* (1.86)	-0.303** (-2.27)
Observations	20,419	20,419	20,419	20,419
Number of id	2,288	2,288	2,288	2,288
Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. Conclusions

In recent years, along with the gradual promotion of China's ecological civilisation construction, the concepts of sustainable development and green development are taking root in people's hearts, and the performance of enterprises in terms of ESG is also deeply concerned by investors. Based on this, this paper analyses the impacts and mechanisms of corporate ESG performance on their own financing constraints with a sample of Chinese publicly traded companies from 2009 to 2021 and conducts empirical tests on this basis. The test results indicate the following: firstly, enhancing firms' ESG performance can alleviate their own financing constraints; secondly, enhancing firms' ESG performance can alleviate financing constraints by enhancing their own information transparency; furthermore, the impact of firms' enhancement of ESG performance in alleviating their financing constraints is more pronounced in samples with a higher proportion of shareholdings by major shareholders and in the eastern region of China.

The policy implications of this paper are as follows: firstly, there is a need to enhance the understanding of ESG concept and promote market-based incentives. This can be achieved by increasing the focus on ESG performance and improving the quality of information disclosure by companies. Additionally, it is important to ensure that the management and major shareholders of companies play a supervisory and guiding role, aligning the company's investment and development with the principles of ESG and long-term sustainability. Secondly, the financial sector should strengthen the support of financial services in all regions, improve the market regulatory system, and enhance the level and evaluation of ESG disclosure by enterprises, so that enterprises with truly good ESG performance can have more ways to effectively alleviate their financing constraints in the market. At the same time, more attention should be paid to the development of financial services in China's non-eastern regions, to improve the level of marketisation and the ability to monitor information, so that the improvement of corporate ESG performance can be harvested in the market. Thirdly, we should promote the growth of ESG investment scale, encourage the leading role of head brokerage firms, banks and funds, and form a virtuous circle of ESG performance and corporate financing constraints, so as to better utilise the power of market players in green sustainable development.

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