

The impact of ESG performance on equity financing costs of A-share listed companies and its mechanisms

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Abstract. This study uses A-share listed companies on the Shanghai and Shenzhen stock exchanges from 2011 to 2024 as a sample to investigate the impact of corporate ESG performance on equity financing costs. The results indicate that improved ESG performance significantly reduces the cost of equity financing, and this conclusion remains robust after variable replacements and the exclusion of samples from the COVID-19 period. Commercial credit and earnings per share serve as transmission mechanisms between ESG performance and equity financing costs, while the role of stock liquidity follows a specific logic. Heterogeneity analysis shows that the effect is more pronounced in non-polluting firms, firms outside the eastern region, non-asset-intensive firms, and firms whose executives have a financial background.

Keywords: ESG performance, equity financing cost, ESG information disclosure

1. Introduction

Existing studies have confirmed that Environmental, Social, and Governance (ESG) performance is related to a company's financing costs. Yang Shue proposed that forward-looking estimation methods are more suitable for measuring the cost of equity financing, making the OJ model the primary computational tool. Zhou Fangzhao, Xu Lihe, and others examined the influence of firm characteristics on financing costs, providing a reference for selecting control variables. In addition, Bi Qi and Tian Tian analyzed the transmission mechanisms between corporate financial and market performance from the perspectives of commercial credit and stock liquidity. These studies provide a solid foundation for exploring the relationship between ESG performance and equity financing costs; however, there remains room for further research in expanding the scope to examine differences across companies with varying characteristics.

2. Research design

2.1. Sample selection and data sources

This study selects data from A-share listed companies on the Shanghai and Shenzhen stock exchanges from 2011 to 2024 to empirically examine the impact of corporate ESG ratings on equity financing costs. The data are obtained from the Wind and CSMAR databases. The data were processed as follows:

- (1) Samples labeled ST, *ST, and PT were excluded;
- (2) Financial industry samples were excluded;
- (3) Samples with substantial missing data were excluded;
- (4) To ensure the robustness of the analysis and reduce the potential influence of extreme values, all continuous variables were winsorized at the 1st and 99th percentiles.

After processing, a total of 19,291 observations were obtained.

2.2. Variable definitions

2.2.1. Dependent variable

Cost of equity financing (COC): Referring to the study by Yang Shue [1], which provides an in-depth analysis of the effectiveness of ex-ante estimation methods, the research indicates that compared with other models, this method is better suited for measuring a firm's equity financing cost. Therefore, this study adopts the OJ model to measure the level of corporate equity financing costs. The specific formula is as follows (Equation (1)):

$$P_0 = \frac{EPS_1 + (EPS_2 - EPS_1) \cdot \frac{r - g_\infty}{r - g_s}}{r - g_\infty} \quad (1)$$

2.2.2. Independent variable

Corporate ESG performance (ESG): Given the unique advantages of the Huazheng ESG evaluation system, primarily its broader coverage and faster update frequency, this study uses Huazheng ESG data to measure corporate ESG performance. To eliminate the impact of different measurement scales, the data are divided by 100. A higher value indicates better ESG performance. For robustness checks, Bloomberg ESG data are also employed.

2.2.3. Control variables

Based on prior literature (Durinson [2]; Fangzhao Zhou [3]; Lihe Xu [4]), this study controls for variables that may affect equity financing costs, including firm size, return on assets, financial leverage, Tobin's Q, ownership nature, ownership concentration, and firm age. The specific definitions are presented in Table 1.

Table 1. Definitions of research variables

Variable Type	Variable Name	Symbol	Definition and Calculation
Dependent variable	Cost of equity financing	COC	Calculated using the OJ model
Independent variable	Corporate ESG performance	ESG	Huazheng ESG score / 100
Mediating variable	Accounting comparability	CA	Mean comparability of the firm's accounting information with all other industry peers
Moderating variable	Market competition	CR	Revenue of top 10 firms in the industry / total main business revenue of the industry
	Firm size	Size	Natural logarithm of total year-end assets
	Return on assets	ROA	Net profit / average total assets for the year
	Book-to-market ratio	BM	Book value per share / stock price
	Ownership concentration	Top1	Shareholding ratio of the largest shareholder
	Tobin's Q	TobinQ	Market value / total assets

Table 1. Continued

Control variables	Management shareholding	Mshare	Shares held by management / total shares
	Independent directors ratio	Indep	Number of independent directors / board size
	Firm age	Age	Natural logarithm of years since establishment by year-end
	Separation of control & ownership	Sep	Difference between control rights and ownership
	Ownership balance	Balance	Shareholding ratio of the second-largest shareholder / largest shareholder
	β	Beta	Risk index: stock beta coefficient

2.3. Model specification

To investigate the impact of corporate ESG performance on equity financing costs, this study employs a two-way fixed-effects model, specified as follows (Equation (2)):

$$Oj - cost_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_i + \delta_t + \mu_{i,t} \quad (2)$$

Where: $Oj - cost$ is the dependent variable representing equity financing cost; ESG is the independent variable, represented by the Huazheng ESG score; $Controls$ include the control variables listed above; ε_i and δ_t denote individual and time fixed effects, respectively; μ is the random error term.

3. Empirical results analysis

3.1. Descriptive statistics

Table 2 presents the descriptive statistics for the core variables used in this study. The mean of the sample firms' equity financing cost ($Oj - cost$) is 0.163, with a standard deviation of 2.107. The difference between the maximum and minimum values is 1.944, indicating that the distribution of equity financing costs across the sample is relatively concentrated, with moderate variation. The minimum value is 0.030, and the maximum value is 236.963, reflecting substantial differences in equity financing costs among individual firms. The mean ESG score of the sample firms is 74.358, with a standard deviation of 5.379, indicating that, overall, ESG performance differences are relatively small, though some firms exhibit larger disparities. The control variables generally conform to a normal distribution, with no evident outliers or erroneous values.

Table 2. Descriptive statistics

Variable	N	Mean	Std. Dev.	Min	Max
oj_cost	19,291	0.163	2.107	0.030	236.963
esg	19,291	74.358	5.379	41.870	100.000
Size	19,291	22.347	1.397	15.577	28.636
ROA	19,291	0.063	0.055	-0.382	0.255
Lev	19,291	0.409	0.201	0.008	0.988
TobinQ	19,291	2.059	2.344	0.641	259.146
SOE	19,291	0.357	0.479	0.000	1.000
Top1	19,291	0.363	0.152	0.081	0.758
age	19,291	2.817	0.379	0.693	4.205
Cashflow	19,291	0.075	0.057	0.000	0.726

3.2. Baseline regression analysis

This study employs an OLS model with firm and year fixed effects. Table 3 reports the regression results of corporate ESG performance on equity financing costs. Column (1) shows a simple regression of ESG scores on equity financing costs without any fixed effects. The ESG coefficient is negative and significant at the 5% level. Column (2) adds both firm and year fixed effects, and the ESG coefficient is negative and significant at the 1% level. Column (3) presents the baseline regression results with full control variables included; the ESG coefficient remains significantly negative. Overall, these results confirm that ESG information disclosure contributes to reducing firms' equity financing costs.

Table 3. Baseline regression analysis

	(1)	(2)	(3)
Variable	oj_cost	oj_cost	oj_cost
esg	-0.0087** (-2.1455)	-0.0115*** (-2.7879)	-0.0110*** (-2.6439)
Size			-0.0212 (-0.4354)
ROA			-1.2044** (-2.5249)
Lev			-0.8388*** (-4.1523)
TobinQ			-0.0029 (-0.2949)
SOE			-1.4533***

Table 3. Continued

			(-10.0348)
Top1			0.0257
			(0.0859)
age			0.4460**
			(1.9901)
Cashflow			-0.5481
			(-1.4288)
Constant	0.8135***	1.0224***	1.1824
	(2.6843)	(3.3169)	(0.9504)
Firm FE	No	Yes	Yes
Year FE	No	Yes	Yes
Observations	18,726	18,726	18,726
R-squared	0.185	0.186	0.193

3.3. Robustness tests

To ensure the robustness of the regression results, several robustness tests were conducted, as shown in Table 4. These include replacing the dependent variable, replacing the independent variable, including industry fixed effects, and excluding the 2020 sample affected by the COVID-19 pandemic.

3.3.1. Replacing the dependent variable

The PEG model was used to re-measure equity financing costs, following Yang Zhihan [5]. The ESG coefficient remains significantly negative at the 1% level, confirming robustness.

3.3.2. Replacing the independent variable

Corporate ESG ratings were used instead of ESG scores to measure ESG levels. The regression coefficient is negative and significant at the 1% level, further validating robustness.

3.3.3. Including industry fixed effects

To control for potential heterogeneity across industries, industry fixed effects were included. The ESG coefficient remains significant at the 5% level, indicating robustness.

3.3.4. Excluding the 2020 COVID-19 sample

Considering the significant impact of the 2020 pandemic on the global economy and firm operations, data from 2020 were excluded. The regression results remain negative and significant at the 5% level, demonstrating that ESG performance continues to reduce equity financing costs even when pandemic effects are excluded.

Table 4. Robustness tests

	(1)	(2)	(3)	(4)
	Replace Dependent Variable	Replace Independent Variable	Add Industry Fixed Effects	Exclude 2020 Pandemic Sample
VARIABLES	oj_cost	oj_cost	oj_cost	oj_cost
esg	-0.0001*** (-3.2837)		-0.0098** (-2.3587)	-0.0116** (-2.5524)
esg_level		-0.0594*** (-3.0049)		
Controls	Yes	Yes	Yes	Yes
Constant	0.0517*** (6.0423)	0.6179 (0.5054)	0.9541 (0.7443)	1.0656 (0.7991)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	18,726	18,726	18,726	17,215
R-squared	0.689	0.193	0.199	0.209

4. Mechanism tests

4.1. Business credit mechanism

Following the measurement method of Bi Qi [6] on business credit, business credit is regarded as an important short-term financing source for firms. It reflects a firm's position within the supply chain and the degree of trust between it and its partners. Higher business credit indicates that a firm can more easily obtain preferential terms from suppliers and other partners, such as prepayments, which can help alleviate liquidity pressure to some extent. The regression results are reported in Column (1) of Table 5. The ESG score, as the primary explanatory variable, has a positive and statistically significant coefficient at the 1% level. This indicates that higher ESG scores significantly enhance a firm's access to business credit, thereby reducing equity financing costs.

4.2. Stock liquidity mechanism

This study follows Tian Tian [7] in measuring stock liquidity, using turnover rate as a proxy. Turnover rate reflects the frequency of stock trading and the degree of market activity; higher turnover indicates more frequent trading, making it easier for buyers and sellers to find counterparties, thereby lowering transaction costs.

The regression results are presented in Column (2) of Table 5. The ESG score has a negative and statistically significant coefficient at the 5% level. At first glance, this may appear contradictory. However, further analysis suggests that firms with strong ESG performance typically focus on long-term sustainable development, and their investment structures tend to favor long-term investments. Consequently, the trading frequency of their stocks may be lower, but this does not imply that low liquidity substantially increases equity financing costs.

4.3. Earnings Per Share (EPS) mechanism

Following Zhang Ruchuan [8], EPS is used to reflect the profitability per share of a firm. Higher EPS attracts greater investor attention, thereby enhancing the firm's market value and financing capacity. As shown in Column (3) of Table 5, the ESG score has a positive and statistically significant coefficient at the 1% level for EPS. This indicates that higher ESG performance significantly improves EPS. In other words, superior ESG performance contributes to enhanced corporate profitability, which in turn helps reduce equity financing costs.

Table 5. Mediating mechanisms

	(1)	(2)	(3)
VARIABLES	Business Credit credit	Stock Liquidity Dturn	EPS EPS
esg	0.0007*** (6.3492)	-0.0020** (-2.4922)	0.0053*** (5.2044)
Controls	Yes	Yes	Yes
Constant	0.2501*** (7.8738)	-2.6967*** (-10.6717)	-4.9515*** (-16.2507)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	18,726	18,726	18,726
R-squared	0.829	0.437	0.767

5. Heterogeneity tests

5.1. Heterogeneity by pollution type

Following the National Bureau of Statistics' classification of environmentally polluting industries, the sample was divided into polluting and non-polluting sectors. The regression results are reported in Columns (1) and (2) of Table 6. For non-polluting firms, the ESG coefficient is significantly negative at the 1% level, while for polluting firms, the coefficient is not statistically significant.

The underlying mechanism is that non-polluting industries generally have high technological content and are innovation-oriented, placing greater emphasis on long-term development and brand image. Superior ESG performance signals proactive actions in environmental protection, social responsibility, and governance, thereby attracting investors who prioritize sustainability and social responsibility. These investors tend to favor companies with higher ESG ratings due to their lower risk-return profile, which in turn reduces equity financing costs.

5.2. Heterogeneity by regional distribution

Based on the standard geographic classification by the National Bureau of Statistics, mainland China is divided into Eastern and non-Eastern regions. The regression results are reported in Columns (3) and (4) of Table 6. In the Eastern region, ESG performance is not statistically significant, whereas in non-Eastern regions, ESG is significantly negative at the 5% level.

The mechanism lies in the characteristics of Eastern markets, which have a developed economy, mature financial markets, high-quality investors, and widespread access to transparent information. In such

environments, investors can comprehensively evaluate firms, considering not only ESG scores but also overall potential, including financial health, market competitiveness, and technological innovation. Therefore, even if ESG ratings improve, the impact on equity financing costs may not be immediately apparent. In contrast, in non-Eastern regions, ESG scores significantly reduce equity financing costs.

Table 6. Heterogeneity tests (pollution type & region)

	(1)	(2)	(3)	(4)
	Non-Polluting	Polluting	Eastern Region	Non-Eastern Region
VARIABLES	oj_cost	oj_cost	oj_cost	oj_cost
esg	-0.0160*** (-2.8231)	0.0002 (1.3288)	-0.0001 (-0.7328)	-0.0334** (-2.3809)
Controls	Yes	Yes	Yes	Yes
Constant	1.8614 (1.0956)	-0.0289 (-0.4811)	0.1818*** (5.3877)	-0.8670 (-0.2016)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
R-squared	0.195	0.352	0.389	0.207

5.3. Heterogeneity by asset intensity

Using capital input per unit of output as a criterion, the sample was divided into asset-intensive and non-asset-intensive firms. Regression results are reported in Columns (1) and (2) of Table 7. For asset-intensive firms, the coefficient is not significant, whereas for non-asset-intensive firms, ESG is significantly negative at the 1% level.

The mechanism is that asset-intensive firms typically have larger scale, high capital input, long investment cycles, and focus on asset utilization, process optimization, and cost control. Investors in these firms pay more attention to asset quality and capacity utilization; ESG, while part of the firm's overall strength, has a relatively weaker impact on equity financing costs.

5.4. Heterogeneity by executive financial background

Based on executives' professional experience and educational background, the sample was divided into firms with executives having a financial background and those without. Results are shown in Columns (3) and (4) of Table 7. For firms with financially trained executives, ESG is significantly negative at the 1% level. Conversely, for firms whose executives lack a financial background, ESG is not statistically significant.

The mechanism is that firms with financially trained executives possess substantial financial knowledge and experience, understanding that strong ESG performance enhances corporate image, strengthens investor confidence, reduces risk, and supports long-term development. These executives are thus motivated and capable of leveraging ESG to attract investment and reduce financing costs. Firms without financial expertise primarily focus on daily operations and lack deep understanding of financial markets and investor interests, making it difficult to convert ESG advantages into financing benefits.

Table 7. Heterogeneity tests (asset intensity & executive background)

	(1)	(2)	(3)	(4)
	Capital-Intensive	Non-Capital-Intensive	Executives with Financial Background	Executives without Financial Background
VARIABLES	oj_cost	oj_cost	oj_cost	oj_cost
esg	0.0002 (1.0237)	-0.0143*** (-2.7302)	-0.0168*** (-2.6969)	0.0002 (1.5222)
Controls	Yes	Yes	Yes	Yes
Constant	-0.0602 (-0.8214)	1.6971 (1.0676)	1.7854 (0.9467)	0.0944* (1.6980)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
R-squared	0.355	0.195	0.196	0.502

6. Conclusion

Regulators should further refine ESG disclosure rules, specify industry-level disclosure standards, and prioritize improving ESG performance in firms with high pollution emissions and resource consumption. At the same time, policy support and professional guidance for non-Eastern region firms should be strengthened, and regional financial market information channels should be improved. Firms should be guided to build management teams that integrate both financial and ESG perspectives, enhancing executives' understanding of ESG value. Furthermore, capital markets should actively promote ESG-oriented investment, encouraging investors to focus on corporate ESG performance. This will facilitate a virtuous cycle in which ESG development contributes to sustainable cost reduction and efficiency gains.

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