

# *ESG Rating and Cost of Capital*

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**Abstract:** The idea of ESG intrigues many Chinese's firms nowadays, people start to initiate the concept of sustainable development. This essay utilizes Shanghai and Shenzhen A-share listed enterprises from 2009 to 2020 as research examples, integrating and comparing the given data from the CSMAR database and Huazheng ESG ratings. This study will investigate the impact of ESG on cost of capital and the hidden connection between them that can enrich the pervious study and provide more testified analysis. As a result, the research has found that ESG could greatly reduce the cost of capital. ESG ratings increase the company's information disclosure and companies are forced to build standard group structure, as a result, it lowers the company's information risk and default risk, which gives the reduction of cost of capital. Besides from information risk and default risk, higher ESG ratings can also gain company's reputation and win the trust of the stakeholders. By revealing this relation between ESG and the cost of capital, it enriches the literature on the consequences of ESG. Furthermore, it demonstrates the importance of ESG in company's practical operation, which is no longer an abstract concept that can be ignored. Thus, this research will help build and improve the ESG development ecosystem in China and promote high-quality development.

**Keywords:** ESG, cost of capital

## **1 Introduction**

The term of ESG is in short of Environmental, Social and Governance. Although the development of ESG in China started comparatively late, the practice and performance of ESG in China have attracted wide attention due to the promotion of carbon peaking. The ESG investment concept of China's capital market is also in the early development, listed companies have begun to pay attention to their own ESG performance, domestic rating agencies have also tried to get involved in ESG rating market, and regulators are gradually improving the relevant information disclosure rules system.

Fundraising is an effective way to keep the company functioning properly, however, there will be cost of capital during the fundraising actions. To better get command of capital outflow, the company's cost of capital management is one of the valid controls of various costs in financing activities.

In the earlier research, ESG could influence bank default risk through both direct and indirect channels[2]. And also, ESG performance could tend to lower business risks and material misstatement risks, which leads to a positive impact toward the audit opinions[4]. From a stakeholder theory perspective, high ESG commitment could be demonstration of improvements in bank transparency and greater support for stakeholders, whereas low ESG performance could regard as a lack of commitment to minority stakeholders, including bondholders[3]. To sum up, only a few studies have

shown the connection between ESG ratings and cost of capital that cannot give enough solid evidence on the thesis statement. Our results hold after a series of robustness check, including alternative measure of main variables. We therefore analyzed ESG ratings of Chinese firms and investigated whether their cost of capital has connection with it.

The marginal contribution of this paper is mainly found in the following cases: First of all, this paper explicitly exposes the ESG ratings' negative impact to firm's cost of capital, enriches the literature on the economic consequences of ESG ratings, expands the research perspective of factors of influence of cost of capital. Secondly, this paper further discusses the mechanism that affects the cost of capital before and after the implementation of ESG ratings, including information risk, operation risk, reputation theory and stakeholder theory, which provides a new research orientation and perspective for the follow-up related research. Thirdly, the paper not only gives firms to regard as a reference when considering whether if take ESG as one of the strategies in the company development, but also it gives the bank consultants as a powerful backup as the firm is apply for capital. Better ESG ratings can build up reputation and stakeholders will react positively to these firms. In this paper, we innovated from the perspectives of debtholders.

The paper can be organized as follow. Section 2 is literature review and hypothesis development. In this part we mainly summarize the pervious literatures, them provide a steady foundation for this article. Section 3 is research design. Section 4 is the empirical results. Finally, section 5 concludes.

## 2 Literature Review and Hypothesis Development

The basic idea of ESG is firstly from the beginning of 2006, UN-PRI initially and formally come up with the concept of ESG.

With the completion of the annual report disclosure of listed companies in 2021, the environmental, social and corporate governance (ESG) information disclosure of listed companies also surfaced [12].

Better ESG ratings can build up greater preferable reputation for which stakeholders will react positively to these firms. Several strands of literature are related to our study. With the ESG ratings are available, in order to increase the valuation of firms' own scores, they are more willingly to pay attention to the promotion of their abilities of their sustainable developments, which is conducive to reducing the company's operation risk and achieving higher financial performance[7]. The process of ESG ratings is needed to have the company's information disclosure completely, therefore the higher the ESG rating, the higher the level of corporate governance and information disclosure, which means that the company's agency problems can be effectively controlled, the degree of information asymmetry is reduced, and the company faces less information risk[8]. In addition, ESG performance can effect the probability of credit default, induce lower credit ratings [10]. Research shows that the ratio of ESG rating availability is significantly higher when measured by market capitalization, implying that there is a tendency for companies with larger market capitalization to receive ESG scores, further diverging from the investment landscape and away from smaller peers with fewer resources to devote to sustainability implementation and reporting [12].

Moreover, The higher the investment proportion of institutional investors, the stronger the independence of the board of directors, the larger the board size, the better the corporate governance, the more stable the accounting information, the higher the quality of information disclosure and the higher the shareholding proportion of the largest shareholder, the lower the cost of debt capital[9]. The cost of capital can lessen by improving the quality of information disclosure, especially voluntary information disclosure[11]. Nevertheless, The higher the information asymmetry, the higher the cost of debt capital. ESG ratings can reduce information asymmetry between listed firms and market participates. Moreover, in order to get a higher ESG ratings, managers have incentives to im-prove corporate governance and information transparency, which reduces the default risk. What's more, the lack of guarantees means lenders are more cautious, with higher spreads and shorter maturities to

ensure the safety of loans[14].Thus, we organized above theories and then base on the previous conclusions, we now propose the following hypothesis:

H1: ESG rating lowers the cost of capital.

### 3 Research Design

#### 3.1 Sample and Data

To construct our sample, we begin with Chinese A-share companies listed on the shanghai and Shenzhen stock exchanges. The whole experiment contains 30300 data from 2009 to 2020. The specific sample selection process is as follows: First, financial firms and other listed companies are excluded; Second, excluding (\*)ST listed companies, such listed companies have great differences from other companies in terms of financial indicators and information disclosure; Third, the companies listed in the current year are excluded, because the companies listed in the current year have a shorter listing time and a shorter duration of historical information, and there are great differences with other companies in information disclosure. Fourth, the missing samples such as audit fees and control variables are removed.

#### 3.2 Empirical Model

Following Luo and Wu (2022), this paper adopts the following model to examine the hypothesis.

$$Y=\beta_0+\beta_1ESG+\beta_2Size+\beta_3Lev+\beta_4Indep+\beta_5PPE+\beta_6CFO+\beta_9Board+IND\ FE+ YEAR\ FE+\varepsilon\ (1)$$

where,  $\beta_0$  is the constant term,  $\beta_i$  is the coefficient of each variable, and  $\varepsilon_i$  is the perturbation term. Table 1 presents the detailed variable definitions.

In this research the independent variable is ESG. Based on the availability and authority of the data, this paper takes Huazheng ESG rating as reference. We assume each of the nine grades (C, CC, CCC, B, BB, BBB, A, AA, AAA) is assigned a score of 1-9, which we can easily to quantize the result.

Table 1: Variable definitions.

Type of variable	Name	Definition and measurement
Dependent	Tobin Q	Market cap + total liabilities, divided by total assets
	PE	Price per share divided by earnings per share
	PB	Stock price divided by book price
	PS	Total market cap divided by sales
Independent	ESG	Huazheng ESG rating
Control	SIZE	Natural logarithm of firm size
	LEV	Natural logarithm of leverage ratio

Table 1:(continued).

Indep	Independent director ratio
PPE	The proportion of fixed Assets to total assets
CFO	Cash flow of operating
ROA	Net profit divided total assets
HHI	Herfindahl-Hirschman Index, a composite index measuring industry concentration
Board	Natural logarithm of board of directors

## 4 Empirical Results

### 4.1 Descriptive Statistics

Table 2 is the descriptive statistics which shows the main variables to our research. The average cost of debt capital for the sample is 0.007(0.3%), the lower quantile is below 1% level and the upper quantile is 0.027 or 2.7%, which means there is a significant difference with each firm. ESGRank is equally to ESG ratings. In this re-search according to the assumption above, we transform ESG rating to solid numbers from 1-9. ESGRank in this table the average number is 6.470 and lower quantile is 6 , upper quantile is 7. As for the control variables, the average number of Size is 22.104, and the standard deviation of Size is 1.308, there is a huge scale gap between each firm. The average number of returns of total assets(Roa) is 0.039. The mean value of the proportion of independent directors is 0.38, and the maximum and minimum values are 0.429 and 0.333. The natural logarithm average number of Lev is the 0.426, and the medium number is 0.417, the median is similar to the mean, and the profit level and capital structure of the issuers are normal, and they are not faced with great debt repayment risk. The average number and standard deviation of the cash flow of a firm's are 0.047 and 0.071, which means the net cash flow of the operating activities of the sample firms show small, relatively low differences.

Table 2: Descriptive statistics.

Variable	N	Mean	SD	p25	p50	p75
DebtCost	30300	0.007	0.038	-0.002	0.013	0.027
ESGRank	30300	6.470	1.092	6.000	6.000	7.000
Size	30300	22.104	1.308	21.159	21.92	22.849
Roa	30300	0.039	0.062	0.015	0.038	0.068
Board	30300	2.279	0.250	2.197	2.197	2.398
Indep	30300	0.38	0.071	0.333	0.364	0.429
PPE	30300	0.216	0.164	0.088	0.182	0.308
Lev	30300	0.426	0.213	0.254	0.417	0.584
Cfo	30300	0.047	0.071	0.008	0.046	0.088

## 4.2 Baseline Results

Firstly, in order to examine the impact of ESGRank on the cost of debt capital, we perform a regression on the cost of debt capital, after controlling for factors at the firm, year, and industry levels(table.3). From the columns(1) and (2) in Table.3, it shows that the coefficient of ESGRank and DebtCost is -0.001, which it is also significant at the 1% level, indicating that the debt cost of enterprises has a significant negative correlation with the ESG rating score, H1is verified. Size, Roa, PPE, Lev and Cfo coefficients of correlation are -0.001, -0.012, 0.049, 0.086 and -0.012, all of them are significant at the 1% level. The data indicates that firms' size, return of total assets and firms net capital cash flow is negative related to the cost of debt capital, as for the ability to repayment of debt and the proportion of fixed assets to total assets are relatively a positive relation to the cost of debt capital. In a conclusion, the larger scale of the enterprise, the higher profit level and the stronger the independence, the lower the cost of capital. Lev is significantly positively correlated with DebtCost at 1%, indicating that the cost of capital of enterprises with greater debt repayment risk is higher.

Table 3: Baseline results.

	DebtCost	DebtCost
ESGRank	-0.001*** (-5.41)	-0.001*** (-5.06)
Size		-0.001*** (-6.64)
Roa		-0.012*** (-3.58)
Board		0 (-0.41)
Indep		0 0.07
PPE		0.049*** 39.79
Lev		0.086*** 58.07
Cfo		-0.012*** (-4.37)
Constant	0.032*** -17.76	-0.001 (-0.34)
Industry	YES	YES
Year	YES	YES
N	30300	30300
Adj R2	0.06	0.321

a The t-statistics in parentheses are calculated based on standard errors. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

## 4.3 Robustness Check

For further verify reliability of the results, following robustness test (Table 4) is conducted in this paper. According to the two groups of regression results in Table 4, it shows that the regression coefficients of variables ESG are -0.002 and -0.001, both of which are significant at the 1% level. The results of other variables are also roughly consistent with those mentioned above, which proves

the reliability of the results of the Table 3 regression analysis. In summary, the regression results are basically consistent with the conclusions of this paper, indicating the results of this paper are robust.

Table 4: Robustness check.

	DebtCost	DebtCost
ESGRank	-0.002*** (-7.19)	-0.001*** (-4.41)
Size		0.001*** -3.4
Roa		-0.011*** (-3.28)
Board		-0.000 (-0.56)
Indep		0.005** (2.05)
PPE		0.057*** (28.05)
Lev		0.075*** (49.00)
Cfo		-0.012*** -4.40
constant	0.016*** -10.55	-0.061*** (-7.90)
Industry	YES	YES
Year	YES	YES
N	30300	30300
Adj R2	-0.089	0.064

<sup>a</sup> The t-statistics in parentheses are calculated based on standard errors. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

## 5 Conclusion

This paper examines the effect of ESG on cost of debt capital from the perspective of debtholders and find that ESG rating can lower the firm's cost of capital. The larger scale of the enterprise, the higher profit level and the stronger the independence, the lower the cost of capital, the cost of capital of enterprises with greater debt repayment risk is higher. what's more, this paper enriches the literatures on the consequences of ESG from the perspective of cost of capital. Moreover, it provides implications for investors, listed firms, and regulators. Given reference to the existing firms to decrease their cost of capital by increasing their ESG rating, and to the potential Chinese firms given solid beneficial evidence to accept the concept of ESG, furthermore, the concept of sustain-able development.

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