Dean&Francis

ISSN 2959-6130

The impact of ESG performance on cost of equity capital

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Abstract:

This paper analyzes the relationship between ESG performance and the cost of equity financing from the perspective of the three dimensions of ESG. On the basis of MSCI ESG, this paper makes an innovative selection of 50 U. S. companies based on past research. On the basis of the theory of asymmetric information, stakeholder, signaling and corporate risk management, this paper builds a correlative model and makes an analysis of the relationship between ESG performance and equity funding. The results show that there is a negative relationship between ESG performance and equity funding. These results not only add value to ESG studies, but also offer a valuable perspective to companies that wish to optimise their funding costs by enhancing their ESG results, thus underlining the real importance of CSR in the current economy.

Keywords: ESG; Cost of equity capital; Chinese company; US listed

1. Introduction

More and more investors in the current financial markets have integrated environmental, social, and corporate (ESG) considerations in their investment choices. This trend arises from the desire for a more comprehensive and long-term assessment of corporate performance and risks, as well as a focus on sustainable development goals. Investors pay special attention to ESG ratings from international institutions such as FTSE Russell and MSCI. Those ratings play a major role in reducing the risk of a fall in share prices. Corporate performance is reflected through ESG score indicators, which help reduce information asymmetry among stakeholders, providing investors with more informed decision-making power. In return, this will redirect social capital to higher-value businesses, encourage a sound capital market to develop environmentally friendly investments, and help optimize state resources (Guo, 2023).

The environmental impact is a key element in an ESG assessment scheme. The firms that publish ESG data and the ones that perform well in ESG in the pilot towns of the green financial sector have a greater added value. Heterogeneous tests show that as the number of pilot cities for green policy grows,

ESG risk premiums become more significant, and the volatility adjustment speed of ESG risk premiums improves, reducing market overreactions (Jin Man,2024). Therefore, In investing decision making, investors pay attention to the environment of a firm to make sure that its portfolio is sustainable and stable, with ESG ratings as a benchmark for long term investments.

ESG scores are more representative of the long term sustainability and CSR than the short term finance index. The investor will be able to reach the long term investment target and make contribution to the sustainability of the enterprise by selecting the excellent ESG enterprise. Factors of ESG should be taken into account in the decision making of an investment, together with other financial parameters. By staying updated with market dynamics and trends, investors can better adjust their portfolios, reduce risks, and achieve long-term returns. Through comprehensive evaluation of corporate performance and risks, investors will be able to make more informed and comprehensive investment choices in order to reach their long-term objectives.

At present, the majority of studies about ESG have been carried out by ESG for Chinese listed companies, while ESG scores for ESG are mainly derived from China's rating agencies. Based on MSCI ESG rating, this research is an innovative selection of 50 United States Chinese firms, so that we can investigate how ESG affects the cost of capital in various markets, so that we can get a better picture of ESG's relation to funding costs. It is valuable to enrich the theory study of ESG in the world.

Compared with China, the United States, as a developed economy, has formed a more mature ESG information disclosure framework in terms of comprehensiveness, compulsion, quality requirements and policy supervision. At this stage, the information disclosure is showing a transition trend from voluntary to mandatory, from single to comprehensive, from large enterprises to all enterprises, and from independent to unified disclosure content format. For example, The U.S. Securities and Exchange Commission (SEC) has published a Climate Information Act, which requires publicly traded corporations to publish climate-sensitive information about their commercial policies in their annual and filing reports. The impact on results of operations and financial condition.

The main reason for many Chinese companies to list in the United States is that the United States and China have different securities listing and trading systems. In fact, China has administrative approval, while the United States is relatively market-oriented. It is also caused by the fact that the former will be able to carry out a substantial reinspection on all sides of the business, whereas the latter can only satisfy the post control on the basis of the disclosure principle. Compare between Chinese and American listed companies, due to the multi-layered securities market in the United States, the OTCB counter-listing has no demands or limits to the business, so it can satisfy the demand of various companies, and it is no doubt that the amount of capital that the firms collect is far greater. Moreover, the characteristics of American investors, such as the pursuit of risk-taking investment consciousness, are more attractive to Chinese enterprises. However, if listed in China, the listed company is highly valued by the local government, and the local government will give priority to the listed company's resources. In addition, the public's trust in listed companies is high, and its visibility will be enhanced, which will serve as a propaganda and promotional tool for the public. Meanwhile, China's huge population base is also a good thing for companies.

Chinese companies listed in the United States are typically concentrated in the technology, internet, and financial services sectors, such as internet giants like Alibaba, JD.com, and Baidu, as well as financial firms like Lufax. Such firms are often highly innovative in the marketplace and are more sensitive to the changes in the marketplace, but they are short of conventional heavy-industrial or manufacturing firms. In contrast, companies listed in China cover a wider range of traditional industries, including energy, manufacturing, and heavy industry. The composition of industries among domestically listed companies is more diverse and traditional.

Chinese companies listed in the United States usually need to comply with stricter ESG information disclosure requirements imposed by the U.S. capital markets. These companies are regulated by the U.S. Securities and Exchange Commission (SEC) and other regulatory bodies, which generally have more stringent disclosure and management requirements for ESG. Although companies listed in China have also been influenced by the ESG trend in recent years, their disclosure requirements are relatively lenient, particularly in terms of mandatory ESG disclosure, which is still in its early stages. While China's three major stock exchanges have issued trial guidelines for sustainable development reports, these guidelines are voluntary and not enforced as strictly as U.S. laws and regulations.

This article reviews the United States of China's enterprises from three angles of environment, social responsibility, and corporate governance. This paper analyses the present situation of those firms and their ESG's influence on the company's financial results, and draws a conclusion that the improvement of ESG's performance may lead to a certain degree of improvement in financial performance. Based on the conclusions, it proposes suggestions for strengthening ESG information disclosure management,

ISSN 2959-6130

including raising awareness of ESG performance, actively responding to national development policies, and focusing on internal governance (Yang and Deng, 2023).

Generally speaking, United States firms like Alibaba. com and JD.com tend to be more active in meeting ESG's demand, by publishing more information about their work on protecting the environment, CSR activities, and corporate governance. Not only does this increase the credibility of the companies, but it also decreases the information asymmetry, and decreases the cost of capital raising. U.S.-listed new energy vehicle companies, like Xpeng Motors, must comply with stringent environmental regulations and disclosure requirements. In contrast, similar companies listed in China may not face the same level of pressure for environmental disclosure or green transition. The U.S. market places a high emphasis on ESG, with clearer regulatory standards that set higher expectations for companies' ESG performance. As a result, studying Chinese companies listed in the U.S. provides a clearer analysis of how ESG performance affects corporate financing costs, as these companies must navigate a more complex regulatory environment. Moreover, the legal and market environment faced by Chinese companies listed in the U.S. is more intricate, making improvements in ESG performance more challenging and representative. Therefore, these companies serve as valuable cases and provide more meaningful data for research in the field of ESG.

For industry-leading companies, they already hold significant competitive advantages in the market through comprehensive ESG requirements and business models, gaining business growth and profitability opportunities from sustainable development and green transformation. However, for companies just starting ESG management, the requirements may increase costs and reduce operational efficiency. For example, traditional manufacturing companies implementing ESG management need to invest in environmental protection equipment and technology, purchase low-emission production equipment, etc., with potentially high initial investments. Therefore, when formulating ESG strategies, firm must strike a balance between the short run and the long term. While ESG policies can cut the cost of capital and thus reduce the total cost of capital, firms might have an incentive to enhance their ESG processes and thus help in making strategic decisions.

Regulators and policymakers use some ESG related information to design incentives and frameworks to promote sustainable business development, thereby driving broader economic and social effects. For example, China's three major stock exchanges have officially released the tentative guidelines for the sustainable development reports of listed companies, which will take effect as of May 1, 2024. The guidelines require certain companies to publish ESG reports and encourage other listed companies to publish ESG reports voluntarily. If choosing voluntary disclosure, listed companies also need to comply with the technical requirements of the guidelines, marking a milestone in China's ESG development.

The Corporate Sustainability Due Diligence Directive (CSDDD) was adopted by the European Parliament on 24 April 2024 as a model for CSR worldwide. This legislation is in line with CSRD, which aims at making companies transparent, reflect risk situations, and formulate better risk management policies. This helps understand how ESG performance affects equity costs, aiding risk assessment and providing some protection for investors. This law, once effective, will affect some Chinese companies in the next 3-5 years. From the perspective of corporate sustainable development, it is inevitable and positive to proactively plan and respond, establishing responsible supply chain management systems.

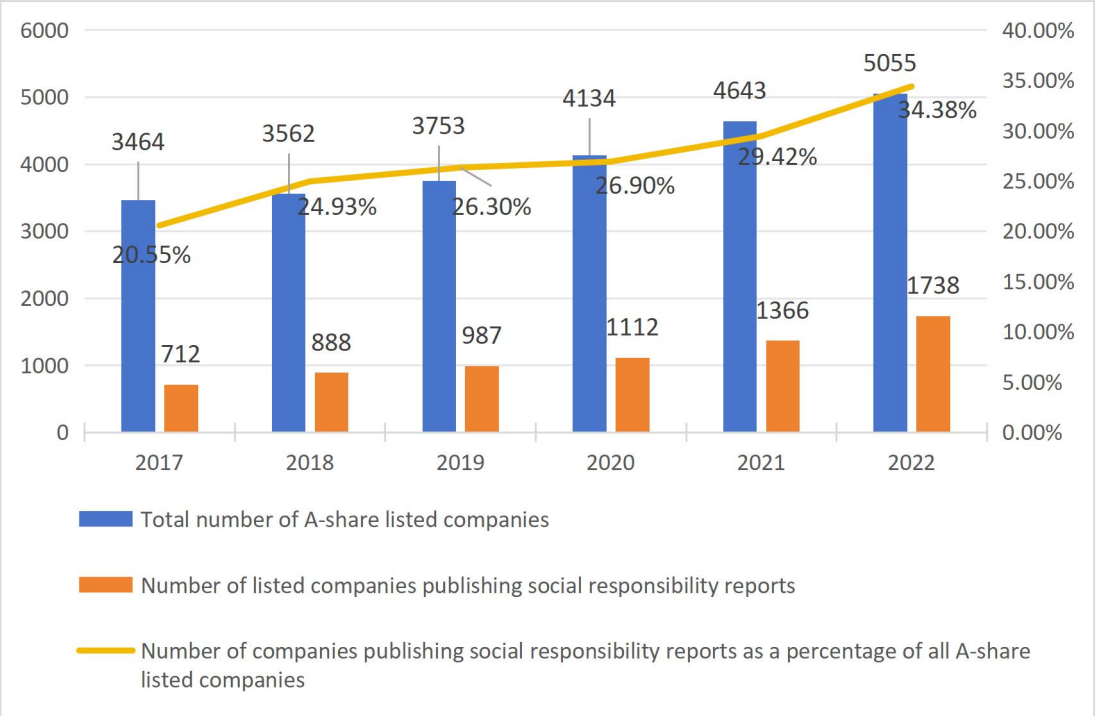

Fig 1. The number of ESG reports disclosed by A-share listed companies from 2017 to 2022.

Data Source: Nankai University Green Governance Database

The figure shows that the proportion of companies disclosing ESG information each year among A-share companies remains relatively stable, indicating that the national promotion of ESG concepts and related policies has achieved initial results. Some companies have recognized the importance of sustainable development and ESG concepts and have taken relevant measures, such as formulating environmentally friendly policies and optimizing supply chains. However, many companies and investors are still hesitant. It can be assumed that there is a lack of clarity about the link between the performance of an enterprise's ESG and its financial results, or that the short-term financial results could deteriorate as a result of publication, which would result in an unwillingness to publish the related data. In terms of funding modalities, stock investors, who are exposed to higher volatility than lenders, tend to be more inclined to invest in firms that perform well in ESG and have a higher degree of disclosure at a lower yield, thus decreasing the cost of capital funding.

Overall, Chinese companies listed in the U.S. perform better in ESG information disclosure and overall ESG performance. This is mainly due to the stricter regulatory environment in the U.S. market and the higher standards expected by investors.

Despite an increase in the number of A-listed companies publishing ESG data, their overall disclosure rate remains relatively low, at only 34.38% (as of 2022). In contrast, Chinese companies listed in the U.S., subject to higher regulatory standards and market expectations, generally have a higher average level and quality of ESG information disclosure. Therefore, the ESG performance and disclosure quality of Chinese companies listed in the U.S. are, on average, superior to those of companies listed in China.

Studying the relation of ESG's information disclosure and equity financing costs is helpful to policy making. Knowing how ESG affects the cost of capital can help the government make proper policies and measures to promote ESG's active disclosure. For instance, the government can offer fiscal incentives and other advantages to firms that excel at ESG performance, thereby encouraging more firms to strengthen ESG results. At the same time, ESG disclosure rules can be improved so as to guarantee the truthfulness and validity of corporate disclosures. Thus, the research on the influence of ESG's performance on the cost of capital could offer a new approach for firms to lower their funding costs and be an important foundation for governmental policy making, which would be beneficial to all stakeholders in society.

In summary, this article discusses the necessary and reasonable relation between ESG's performance and stock capital cost. This paper aims at making an overall analysis of the effect of ESG's performance on the equity funding

ISSN 2959-6130

cost by taking a wide range of sectors from China's United States stock market. This research is missing a large sample analysis.

2. Literature Review

Since ESG comes from the Western world, ESG study abroad started before Chinese. Most of the studies abroad have been devoted to the relationship of ESG to business performance, finance results and company value. The majority of current research shows that ESG is positively correlated with the company's value, which shows that improved ESG results in improved financial results. Gunnar Friede et al. (2015) analysed 2, 200 empirical studies on the relationship between ESG and business performance, and found that firms with a higher ESG exposure had a greater impact on their financial results, while ESG had a more stable relationship with their financial results. Ghoul et al. (2017) looked at areas with less-developed market systems, and found that firms with a weaker ESG score generally had a lower matching value. However, a small number of studies have shown that ESG is negatively correlated with the company's value. For instance, Sassen et al. (2016) examined the influence of environmental, social, and administrative factors on enterprise value, and found that ESG was negatively correlated with enterprise value. Atan et al. (2018) looked at Malaysian listed companies and discovered that there is no relevant correlation between the ESG performance of a firm and the firm's value.

ESG is an emerging concept after Green Finance and CSR, and there are still a lot of enterprises that are not sufficiently aware of ESG's disclosure. Relevant rating agencies are also in the process of exploration and improvement, which has led to research in these areas by foreign scholars. The majority of academics think that the firms with a higher ESG score are more likely to reveal more complete information. Lopez-De-Silanes F. (2020) carried out a study on ESG disclosure and suggested that firms with a higher ESG rating would have greater disclosure and ESG's performance. ESG performance is usually reflected in data from relevant rating agencies. Ilze and Natalja (2021) explored the evaluation methods of different rating agencies and used Central and Eastern European companies as research samples, concluding that companies without ESG ratings have significantly lower trading volumes than those with ESG ratings, suggesting that ESG ratings may be beneficial for firms and important for investors as well.

The "E" in ESG stands for Environment. In this respect, studies abroad concerning the relevance of CSR and financing costs began many years ago, with numerous research findings and ongoing debates. These findings can be categorized into three types: negative correlation, positive correlation, and no correlation, with the majority indicating a negative correlation. Regarding equity financing costs, Freedman and Patten (2004) used 112 companies as research samples and found that companies that disclose more environmental accounting information receive higher market returns and can moderately reduce their equity financing costs. Musa Mangena et al. (2016) studied 125 listed food companies and concluded that a company's equity financing costs decrease as the quality of environmental accounting information disclosure improves. A small number of scholars, however, have found positive or no correlations. For instance, Richardson et al. (2001) have done some empirical studies and found that there is a positive relationship between the cost of equity funding and the degree of information disclosure. Murray et al. (2006) took the UK's top 100 firms by size as a study sample, and did not see any relationship between the cost of equity funding and the quality of the information disclosed.

On the issue of debt financing, the public corporations usually discuss with their lenders to obtain the necessary capital for their turnover and output. Along with the popularity of "Green Financial" and "Double Carbon Target", people are concerned about the position of enterprise environment information disclosure. Many researchers have hypothesized that there might be a certain relationship between the disclosure quality and the cost of debt financing. Based on the research results, the majority of researchers think that there is a negative effect on the cost of enterprise's debt financing. Sahar (2014), for instance, analysed the environment reports published by highly polluting firms, and found that firms with a high level of environmental consciousness had a lower level of foreign funding than people who did not. Moreover, banks' credit ratings increase as the adequacy of disclosure improves, and as financial institutions' trust in a company increases, the terms of agreements between the parties become more lenient during transactions.

The "S" in ESG stands for Social Responsibility. Corporate Social Responsibility (CSR) is a concept introduced by the European Union in 2001, emphasizing that companies should not only focus on maximizing their own profits but also take into account their various responsibilities towards surrounding consumers, the environment, and the community. In recent years, overseas researchers have done a wide range of studies on CSR's relation to the cost of equity funding. The prevailing opinion is that firms that perform better in CSR tend to have a greater degree of outside confidence and a lower capital cost. Xu et al. (2015) developed a CSR index system and found that

the greater a firm's CSR rating, the less its equity funding costs would be, with a significantly negative correlation. From the point of view of CRM, Chen and Zhang (2021) come to the conclusion that there is an obvious reverse effect between CSR performance and stock price. But there are some scholars who have different opinions. For instance, Guidry and Patten (2010) conducted empirical research on data from some U.S. companies and proposed that the market does not respond significantly to the publication of sustainability reports by companies, and there is no correlation between the two. Little research has been done on the relation of CSR to the cost of borrowing. The results are as follows: Najah et al. (2013) found that CRAs rank firms according to their comprehensive CSR information, with firms with better ratings getting less debt funding, suggesting a negative relationship.

The "G" in ESG stands for Governance. Corporate Governance is the separation of rights and benefits in a corporation, with the aim of improving internal communication and governance efficiency through reasonable allocation, thereby making corporate decision-making more efficient and fairer, and minimizing the risk of stakeholder interests being compromised. Many researches abroad have examined the relationship of corporate governance to the cost of equity funding, with the majority of them finding a negative correlation. For example, Ashbaugh et al. (2004) looked at U. S. management data between 2001 and 2002, and discovered that improving the management of the company, including the independence of the board, and the transparency of the financial information, could reduce the cost of equity funding. Cheng et al. (2006) carried out research and found a significant negative correlation between the level of corporate governance and equity financing costs. Furthermore, the relationship of corporation management with the cost of borrowing is also a hotspot in international studies, with the following findings: Ashbaugh-Skaife et al. (2006) indicated that the degree of corporate governance could decrease the asymmetric information of the outside parties and enhance the value of the firm, which would result in the perception of less credit risk by foreign lenders. Eugenia Andreasen and others. (2019) used companies in Kazakhstan as samples and found a significant negative correlation between audit quality, earnings management, and debt costs. The documents show that good corporate governance is a reflection of a firm's operating and operating condition, influences its future growth and development, and contributes to building an honest and responsible reputation, thus improving the chances of outside funding.

Looking at the Relationship Between Overall ESG Performance and Funding Cost, current foreign research findings are relatively consistent, with most indicating a negative correlation. In terms of debt financing, Cooper et al. (2015) noted that as ESG performance increases, bank lending costs are reduced and there is a strong correlation. Alain et al. (2017) discovered that the more Italian and Spanish ESG performed, the greater their credit ratings would be, and recommended that ESG elements be included in lending policies in order to encourage the green growth of lending firms. Yasser et al. (2021) looked at non-financial quoted firms in the EU15 and observed that the cost of borrowing is declining with the improvement of ESG ratings, suggesting that credit institutions should take into account ESG ratings when making decisions.

3. Related Concepts and Theoretical Foundation

3.1 Concepts

3.1.1 ESG

ESG means environment, social and management. The ESG. Provides a framework for assessing a firm's performance in three critical areas: environment, social responsibility, and management. It encompasses practices and policies related to addressing climate change, resource management, employee welfare, community engagement, information disclosure, and governance structure, aiming to assess a company's sustainability and long-term value creation potential. Using ESG results and ratings, investors will be able to evaluate the performance of a firm in those fields, which will enable them to make more science-based investment choices.

3.1.2 ESG Performance

ESG Performance is defined as the publication of related information within the ESG's ESG Reporting Guidelines and Standards. There are two types of disclosures: mandatory and voluntary. Mandatory disclosure can enhance ESG management and corporate social responsibility, while voluntary disclosure helps showcase corporate responsibility and sustainability, enhancing market reputation and brand image. Although there are no unified mandatory ESG disclosure regulations in mainland China currently, as ESG develops rapidly in China, systemic performance of ESG could be achieved very quickly.

3.2 Research on The Cost of Equity Financing

Share financing cost is the remuneration which a corporation gives to stock investors in order to offset the risk they take in the investment. At present, there are many kinds of factors that affect equity financing raising cost. They are classified as macro- and micro--:

ISSN 2959-6130

Regarding the macro factors influencing the cost of equity financing, research is primarily divided into two aspects: the institutional environment and the economic environment.

First, in terms of the institutional environment, factors such as corporate governance, securities market regulation, and legal systems are considered. Hail et al. (2006) found that companies in countries with stricter securities market regulations tend to have lower equity costs, possibly because strict regulatory mechanisms enhance investor confidence and protection, thereby reducing their required risk premium and, consequently, lowering the equity cost for companies. Conversely, in countries with more lenient securities market regulations, investors face higher risks and so they require a larger risk premium, which means that the firms' capital costs are increased. Wang et al. (2008) found that there is a significant negative correlation between investor protection and the cost of equity funding. The reason for this is that the greater the level of investor protection, the smaller the risk premium that would be demanded, which would lead to a reduction in the capital cost for firms. Additionally, Li et al. (2010) found that the obligation to disclose ESG data is enshrined in the legislation in those countries where ESG approaches are more developed. In the European Union, for example, firms which are obliged to apply the International Financial Reporting Standards (IFRS) have significantly reduced the cost of capital funding as IFRS improves the transparency and comparability of the financial statements, thus improving investor trust.

Secondly, from the perspective of the economy, we take into account the macro economy, the competitive structure of the industry, the needs of the market, and the level of interest. Hardouvelis et al. (2007) looked at the variations in capital costs over the course of EMU and observed that capital costs fell as EMU advanced, whereas the three Member States which opted out of the euro area had no such decline. Holger (2008) demonstrated that certain macroeconomic factors, such as GDP, CPI, and inflation, can affect corporate financing costs. Fluctuations in these factors can lead to changes in equity costs. Zou et al. (2014) found that economic conditions also impact equity costs. When the economy is performing well, corporate financing costs are relatively high. This is because, in an improving economic environment, increased investor demand tightens the supply-demand relationship in the financing market, leading to higher financing costs.

With respect to the factors affecting the cost of equity financing, from a micro perspective, many factors can affect its variation. These factors include systemic risk, stock liquidity, corporate financial risk, book-to-market ratio, manipulative accruals and earnings smoothness, and company size. Firstly, in accordance with the classical CAPM, the price of capital funding is mainly affected by the system risk of a share. What this means is that when the whole market is affected, there can be significant fluctuations in share prices, which can result in a rise in the cost of equity funding. Furthermore, Ye and Lu (2004) found that the liquidity, growth, and book to market rate were also influential factors in the capital raising cost. The reason for this is that when equity markets are not as fluid as they are, investors might ask for more money to offset the risk they are taking. Growth and book to market rates can also have an impact on the cost of raising capital, because they can affect how much investors expect a firm to make a profit in the future. Moreover, Zeng and Lu (2006) have found that manipulation accrued, profit smooth, and share financing cost are correlated. Perhaps this is due to the fact that firms trying to manipulate their accounts to mislead their customers into questioning the firm's finances, which in turn forces them to ask for a higher rate of return in order to offset the risk. Finally, Dong et al. (2010) found that company size is related to the cost of equity financing. That's due to the fact that smaller firms have a comparatively lower ability to withstand more capital funding.

3.3 The Relationship between Corporate ESG Performance and Equity Financing Cost

On the basis of ESG, this paper studies the relation of ESG performance with stock capital cost in terms of environment, CSR and company management.

Existing research, for example El Ghoul (2018), has shown that there is a negative correlation between the investment in environment and the cost of equity funding. Chava S. (2014) has found that investors want more returns from firms with environmental concerns, implying that concern for the environment contributes to reducing the cost of capital. Rosa Chun (2005) found that companies focusing on environmental protection often enjoy a good social reputation, reducing the likelihood of negative publicity. Li Hong (2016) found that there is a threshold in environmental performance investments; below this threshold, the relationship is positive, but beyond it, the relationship becomes negative.

The majority of academic research has confirmed that CSR is negatively correlated with the equity financing cost. Firms that perform better in CSR tend to have less capital funding. Carmelo Reverte (2011) has discovered that Spain's publicly traded firms with a better CSR profile have reduced capital funding costs. Godfrey (2005) found that improving social responsibility performance helps accumulate moral capital, reducing the impact of

negative news on companies and lowering financing costs. Li Liu (2018) found that firms with better CSR disclosures had a lower share of capital funding, particularly in environmental sensitive sectors. Wang et al. (2021) found that the CSR performance of East Asian firms is positively correlated with the cost of equity funding, which is attributable to the high level of agency disputes in East Asian economies.

Most of the research supports the negative relationship between the management of companies and the cost of equity funding. Improved management of companies lowers the cost of capital funding. Kartick Gupta et al. (2018) found that the negative correlation is primarily observed in countries with well-developed financial markets. Anderson (2004) found that companies with larger boards and higher audit committee independence have lower equity capital costs. Skaife et al. (2004) found that firms with higher corporate governance levels have lower agent risks, thus decreasing funding costs.

3.4 Theoretical Foundation

Corporate external financing mainly includes the stock market and the debt financing. As the Chinese finance market develops and the stock market improves, a lot of SMEs get the chance to get public, which causes the quantity of Chinese stock market to rise. Thus, it is anticipated that the share of capital in foreign funding will rise.

From the perspective of efficient market theory, if a listed company's stock price reflects useful market information, the market is considered efficient. Fama (1970) divided the markets into weak, semi powerful, and powerful effective markets according to the level of efficiency. In a strong efficient market, all investors cannot obtain excess returns, but this market model is highly idealized and far from reality. In weak and semi-strong efficient markets, excess returns can be obtained, indicating that that the quality of public disclosure is related to equity funding costs. ESG results, which are assessed and published by rating agencies, provide information to investors and affect the cost of equity funding.

The study of the relation of ESG's performance to stock price is mainly concerned with the theory of asymmetric information, stakeholder theory, signaling theory, and enterprise risk management theory.

Modigliani and Miller (1958) proposed the MM theorem, stating that a company's value is not affected by its financing method in a perfect capital market. But it relies on some hypotheses, for example, the reasonable behaviour of the investors, the time to reflect all the relevant information, and the equilibrium between the supply and the demand of the reasonable investors. In reality, capital markets rarely meet these conditions, leading to information asymmetry and financing cost differences. The Pecking Order Theory was put forward by Myers and Majluf (1984), which showed that there was a positive correlation between financial restrictions and asymmetric information. Efficient disclosure system can ease the asymmetric information and lower the cost of funding. As a quantitative measure for protecting the environment, CSR and the management of companies, ESG ratings play a key role in reducing asymmetric information and reducing funding costs.

The company's management meets not only the profit maximization of the stockholders, but also the benefit of all the parties involved, including the vendor and the lender. In the long run, shortcomings in protecting the environment, CSR, and business management are damaging to society's interests and the image of companies. ESG, as a comprehensive evaluation system encompassing social, environmental, and corporate governance aspects, aligns with stakeholder theory. Improving ESG performance enhances the company's image among stakeholders, builds good relationships, and ultimately reduces financing costs. This theory, developed from information asymmetry theory, posits that all corporate actions convey signals about the company's operations. Companies improving ESG performance signal responsible environmental and social practices, demonstrating sound management. Via third party rating agencies, investors will be able to learn about ESG's performance, which will help them to attract outside investors and cut down on their search for eligible investors.

By addressing these theories, the relationship between corporate ESG performance and equity capital costs can be better understood and utilized in investment and corporate governance practices.

4. Empirical study

4.1 Sample selection and data source

As for the sample choice, the research concentrates on the ESG in the various sectors, the markets and the performance levels of the companies. A number of environmental, social and governance (ESG) representatives were selected, including, but not limited to, HAO Media (HAO), Canaan Company (CAN), Chevron (NYSE: CVX), ZTO Express (ZTO), Tianyan Pharmaceutical (ADAG), Xpeng Automobile (XPEV), Lufax Holdings (LU) and GDS, etc. These companies cover technology, finance, logistics, pharmaceuticals, new energy vehicles and other fields, and are listed in domestic and foreign markets. To enhance the diversity of the sample, we also included Internet giants

ISSN 2959-6130

such as Alibaba (BABA), JD.com (JD) and Baidu (BIDU), as well as e-commerce companies such as NAAS and PDD, and service companies such as ExxonMobil (NASDAQ:NTES) and Ctrip (CTRP). These companies not only have large scale and strong market influence, but also have rich practical experience in ESG performance.

In terms of data sources, the MSCI score will become the benchmark for the ESG performance measurement. You can get your information from MSCI's official web site or related data suppliers, and relevant data such as cost of equity capital will be obtained from reliable financial databases (such as Bloomberg, Wind, etc.), stock exchange announcements and company annual reports. Strictly follow scientific research methods to ensure reasonable sample selection and reliable data sources, so as to draw accurate and valuable research conclusions.

4.2 Variable design and model construction

To verify the relationship of ESG with share capital cost, we have made the following changes in design and model. The COST of Equity Capital (COST) is specifically defined in this study as an explanatory variable to measure the price that firms must pay in order to raise equity. The explanatory variable is ESG information disclosure level (ESG), which reflects the degree of information disclosure in environmental, social and governance aspects. For control variables, this study selected several indicators to comprehensively consider the characteristics and financial status of enterprises. Enterprise SIZE is generally represented by the company's overall capital and business revenue, which is taken as an index. Return on equity (ROA) is a proportion between Net Earnings and Average Gross Assets, which represents Firm's profitability.

Table 1 - Variables

Category	Abbreviation	Name	Explanation
Explained variable	COST	Cost of equity capital	A measure of the cost a business pays to obtain equity capital
Explanatory variable	ESG	ESG Performance	Reflect the extent of corporate information disclosure in environmental, social and governance areas
Control variable	SIZE	Company scale	Usually expressed by the total assets of the enterprise, operating income and other indicators
	ROA	Profitability	The ratio of net profit to the average total assets reflects the profit level of the enterprise

Based on the above variables, this study builds a regression model, which is in the following form:

$$COST = \beta_0 + \beta_1 ESG + \beta_2 SIZE + \beta_3 ROA + \epsilon$$

Where, β0 is the intercept term, β1-β3 is the regression coefficient of each variable, and ε is the random error term.

The model is used to analyze the impact of ESG information disclosure level and other control variables on the cost of equity capital, and the model is estimated and tested by using relevant statistical methods to ensure the accuracy and reliability of the results.

Table 2 - Descriptive statistical analysis

Variable	Sample size	Mean	Standard deviation	Minimum	Maximum
COST	50	7.327	1.469	4.218	10.879
ESG	50	6.945	1.328	3.789	9.876
SIZE	50	123.456	45.678	67.891	201.234
ROA	50	0.087	0.032	0.034	0.165

Table 2 illustrates the statistic properties of the 50 samples. The average COST of equity capital (COST) was 7.327, and the ESGwas 6.945, which showed that their ESG performed better than the average. The average SIZE of enterprises is 123.456, indicating that the study covers enterprises of different sizes. Profitability (ROA) is generally low, reflecting the overall profitability of the sample enterprises to be improved.

4.3 Correlation analysis

Table 3 - Correlation analysis

	COST	ESG	SIZE	ROA
COST	1.000			
ESG	-0.327	1.000		
SIZE	0.246	0.153	1.000	
ROA	0.189	0.124	0.432	1.000

The relationship between COST and ESG was significantly negatively correlated (-0.327), which initially confirmed the assumption that ESG could contribute to lowering the cost of capital. Furthermore, SIZE (0 432) is positively correlated with the ROA, which suggests that the bigger companies are usually more profitable.

4.4 Regression analysis

Table 4 - Regression analysis

VARIABLES	Before control variable	After control variable
	COST	COST
ESG	-0.249*	-0.367**
SIZE	0.083*	0.125**
ROA	0.317*	0.486**
Industry	Yes	
Year	Yes	
N	50	
R2	0.872	
adj.R2	0.841	

As can be seen from Table 4, ESG has a significant negative correlation with the COST of equity capital (COST). Before controlling variables, the regression coefficient of ESG is -0.249*, which indicates that the higher the level of ESG information disclosure, the lower the cost of equity capital, further confirming the positive effect of ESG disclosure and better ESG performance can bring on reducing the cost of equity capital. The sample size N is 50, R2 is 0.872, adj.R2 is 0.841. The higher values of R2 and adj.R2 indicate that the model fits the data well and can explain the change of the cost of equity capital well.

5. Conclusion

This thesis takes 50 U. S. listed enterprises as the study subjects. Then, according to the new information, we set up a related model and analyzed with the help of statistical software for correlation analysis, based on the asymmetric information theory, the benefit theory, the signal theory and the corporate risk management theory, etc. Research indicates that ESG has a negative correlation with share capital cost, namely, ESG has a negative correlation with share capital cost. When an enterprise's ESG results are better, its share capital costs are reduced. The reason for this is that companies that have more ESG disclosures are more valuable to outsiders, and then they can gain a greater say in the negotiation of financing costs and thus pay lower financing costs. If a company reveals too little information, investors will take more factors into account when lending money, and believe that they are taking on more unknown risks. At this time, investors in order to make their own funds have more protection will often ask for a higher interest rate, the enterprise needs to pay more compensation accordingly.

Previous studies have shown that the current Chinese ESG performance rules need to be further standardized and improved. On the one hand, there is no compulsory disclosure of ESG-related data by the public in China, which results in the inconsistent quality of the disclosure. In contrast, even though ESG's international rankings began sooner, it is difficult to combine with the Chinese national conditions when used in China, which leads to the evaluation of some enterprises in China that have done a lot of practical things in ESG to be lower than the actual situation.

ISSN 2959-6130

Notably, there are a lot of problems for Chinese listed firms in the United States. exchanges due to the significant legal differences between China and the U.S. in terms of environmental, governance, labor and disclosure rules, as well as institutional differences. Among them, generally low ESG ratings have become a problem that these companies have to face. In the face of such a situation, Chinese-listed companies must save for a rainy day and make preparations as early as possible. Not only do they need to deeply understand and comply with U.S. laws and regulations, but they also need to strengthen their own ESG construction and enhance their corporate social responsibility and sustainable development capabilities. Only in this way will they be able to gain a foothold in the highly competitive international capital market and realize long-term sound development.

In this paper, we take a sample of 50 U. S. firms that are listed in China to investigate the influence of ESG's performance on funding costs, although there are innovations in the content of the study, there are still many shortcomings, which need to be further improved in the future. Firstly, there are some limitations in the paper when selecting the research sample, the number of companies is more limited, and secondly, there are some limitations because the evaluation method may be too simple and the selection of indicators may not be sufficient. It is hoped that the research results can continue to be improved in the future to enrich the research in the area of ESG.

Acknowledgement

Chuhan Wang, Ding Li, Yifan Bai, and Zeyuan Dang contributed equally to this work and should be considered co-first authors.

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