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Analysis of the Impact Effect of Corporate ESG Performance

-- Based on different stakeholder perspectives

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Abstract: ESG, as a projection of the concept of sustainable development in the corporate world, is a powerful tool for implementing the concept of high-quality development and realizing the goal of "double carbon". As the importance of stakeholders to enterprises is becoming more and more prominent, enterprises need to pay attention to the effects of ESG performance on different stakeholders in order to realize long-term sustainable development. This paper empirically analyzes the effects of corporate ESG performance based on different stakeholder perspectives using panel data of A-share listed companies in Shanghai and Shenzhen from 2011 to 2021. It is found that better ESG performance can significantly reduce the inefficient investment of enterprises; high ESG scores can significantly enhance the reputation of enterprises; and enterprises carrying out ESG practice activities are conducive to achieving better environmental performance. Therefore, firms should improve ESG governance and fully consider stakeholders' expectations and needs when making strategic and operational decisions to achieve long-term sustainable development; governments and regulatory agencies should strengthen the supervision and incentives for firms' ESG performance.

Keywords: ESG, Impact effects, Stakeholders.

1. Introduction

In September 2020, at the seventy-fifth session of the United Nations General Assembly, China formally made a "dual-carbon" commitment to the world. Achieving carbon peaking and carbon neutrality is an inevitable choice for solving the outstanding problems of resource and environmental constraints and realizing the sustainable development in China, as well as a solemn commitment to building a community of human destiny. The goal of "double carbon" is not a short-term plan, and its achievement will also trigger profound changes in political and economic life, which will require long-term efforts in various fields to realize. Realizing the "dual-carbon" goal requires enterprises to explore "carbon reduction" paths and contribute to corporate power.

ESG is a collective term for the acronyms of three English words, Environmental, Social and Governance, first proposed and promoted by the United Nations. Different from traditional financial indicators, ESG is an emerging way to examine the risks an enterprise should take in promoting sustainable economic development and its long-term development capability in fulfilling social responsibility, and to evaluate enterprises from the perspectives of environment, social performance and corporate governance. In implementing the concept of quality development and realizing the goal of "double carbon", ESG, as a projection of the concept of sustainable development in the corporate sector, opens up the market mechanism of "investor-company-permanence". More and more enterprises realize that ESG performance, the improvement of their own comprehensive competitiveness, long-term value investment and social recognition are mutually reinforcing. Under the impetus of policies, enterprises, investors and other market entities have been paying more attention to ESG, and the impact of ESG on enterprise development has been increasing. For enterprises, the ESG concept is a more advanced, more reasonable, more global and more comprehensive idea of corporate governance.

Stakeholders are groups or individuals, including governments, shareholders, suppliers, customers, local associations and trade unions, and company employees, who have an interest in the production and operation behaviors and consequences of the enterprise. In recent years, the importance of stakeholders to firms has become increasingly prominent as concerns about the social effects of firms' behavior have increased. Stakeholder theory has emerged, which requires that all types of stakeholders be taken into account in the corporate governance process. Corporate ESG performance will have different impacts on stakeholders' policies, investments, financing costs, corporate performance and other economic activities, which in turn will affect stakeholders' future economic choices for the enterprise. Therefore, enterprises need to pay attention to the effects of ESG performance on different stakeholders, so as to consider the needs and expectations of stakeholders in a more comprehensive and in-depth manner, and reasonably balance the interests of all parties, in order to realize the long-term sustainable development of enterprises.

Based on different stakeholder perspectives, this paper theoretically explains the effects of listed companies' ESG performance on corporate performance, social performance and environmental performance respectively, and empirically tests them using econometric methods. It aims to fill the gaps in the domestic related research field, help enterprises realize long-term sustainable development, and provide reference opinions for the formulation of corporate ESG strategies. Compared with previous studies, the main contributions of this paper are reflected in the following aspects: First, from

the research object, it is found that most of the existing literature studies the economic consequences of ESG performance from a single dimension, while there are relatively few multi-dimensional combinations, and this paper develops from different stakeholder perspectives to comprehensively explore the effects of ESG performance on the business performance, social performance, and environmental performance of the enterprise; Second, from the research angle, it is found that the existing literature stands in the stakeholder perspective of the ESG performance of the enterprise, and the ESG performance of the enterprise. literature stands for relatively few studies from the perspective of stakeholders, this paper is based on stakeholder theory and sustainable development theory, and fully considers the needs of different stakeholders.

2. Theoretical Analysis and Research Hypotheses

2.1. The Impact of ESG Performance on Firms' Inefficient Investment - Based on Investor Stakeholder Perspective

In the current business environment, most enterprises show a separation of ownership and operation. Agency theory states that there are inconsistencies and information asymmetry between the interests of the principal and the agent, which results in agency costs. The existence of agency costs makes the principal and the agent of a company differ in the risk judgment and treatment of investment projects, and then inefficient investment occurs [1]. Under the combined influence of performance evaluation, stock price volatility, public opinion and risk appetite, management may pay more attention to the company's short-term performance and tend to implement investment programs that seem better in the short term, while ignoring long-term investment programs that are potentially riskier but may be more beneficial in the long term, leading to underinvestment [2, 3]. This can lead to underinvestment. Overconfidence of managers can also lead to a decline in investment efficiency, which is manifested as overinvestment or underinvestment. In order to find ways to improve investment efficiency, many scholars have conducted research. For example, Zhong Ma and Xu Guanghua [4] concluded that enterprises that disclose social responsibility will invest more efficiently. According to stakeholder theory and resource dependence theory, good ESG performance can enable enterprises to get the support of various stakeholders in future development and obtain external resources needed for development to improve enterprise efficiency [5, 6]. The Gao Jieying et al. [7] concluded that good ESG performance can improve corporate investment efficiency by reducing agency costs. As the release of non-financial information, the specific performance of the enterprise in the field of ESG transmits the information of enterprise-specific attributes to financial institutions, such as banks, which helps to reduce the degree of information asymmetry and enables the enterprise to easily obtain external resources for financing [8]. When the free cash flow of the enterprise is sufficient, the management has an incentive to invest the free cash flow within the enterprise in some projects with negative NPV for private gain, thus the phenomenon of inefficient investment occurs [9] inefficient investment. The costs paid by enterprises in ESG are conducive to reducing the level of free cash flow, which in turn reduces the agency costs of enterprises, reduces inefficient investment, and improves the efficiency of investment [10]. The Li Zehao et al. also suggest that disclosure of ESG-related information can help promote the improvement of corporate investment efficiency [11]. Li Zehao et al.

Summarizing the research results of many scholars, we can draw a clear conclusion: those companies with outstanding ESG performance often need to face a more stringent external regulatory environment. This strict external regulation forces these companies to adopt a more rigorous and prudent attitude when making decisions and investing in projects. This rigorous attitude can largely inhibit management's short-sighted investment behavior, thus reducing agency costs and avoiding the occurrence of inefficient investments. At the same time, these companies that excel in the ESG field usually show more proactive behavior in terms of public disclosure of information. They tend to disclose information about their enterprises more transparently, which not only helps to improve the transparency of the enterprises' information, but also attracts the attention of more high-quality talents and institutional investors. High-quality talents and institutional investors tend to pay more attention to the long-term development and sustainability of enterprises, thus further reducing the level of inefficient investment. In summary, we can expect that good ESG performance of enterprises can not only inhibit inefficient investment, but also enhance the investment efficiency of enterprises to a large extent. Accordingly, this paper proposes hypothesis 1:

H1: Better ESG performance helps firms to reduce the level of inefficient investment and provide more accurate information to investors' decisions.

2.2. Impact of ESG Performance on Corporate Reputation - Based on Corporate Employee Stakeholder Perspective

Scholars have thoroughly analyzed the impact of ESG performance on firms' economic outcomes. Numerous studies in the literature have explored the role of ESG systems in improving firm value [7], risk control [12] green innovation [13] attracting investment and financing [14] etc. It is widely recognized that ESG performance is critical to the long-term development and survival of firms and is a key driver of sustained growth. Corporate ESG performance signals high-quality development to consumers and suppliers, increases sales revenue by enhancing consumer stickiness, and reduces costs by stabilizing cooperative relationships with suppliers, thereby increasing operating profit, thereby reducing information asymmetry between the enterprise and stakeholders, easing financing constraints, and reducing the cost of corporate finance, thereby increasing corporate profitability [15]. This can reduce the information asymmetry between the enterprise and the stakeholders, alleviate the financing constraints of the enterprise, reduce the cost of enterprise financing, and improve the financial performance of the enterprise [16] Theory of Signal Transmission According to the signaling theory, corporate managers signal the internal condition of the company to external investors by disclosing various information including ESG. Good ESG performance can be used as a signal for a company to convey its long-term value and sustainable development capability [17]. At the same time, ESG performance can significantly promote corporate technological innovation by reducing agency costs, optimizing internal controls, improving corporate short-sightedness [18] and improve product

competitiveness and supply chain stability, thus contributing to the high quality development of enterprises [19] and ultimately increase the value of the enterprise [14] However, some scholars have also found that enterprise technological innovation can be promoted by reducing agency costs, optimizing internal control and improving short-sighted behavior. However, some scholars have found that corporate ESG practices can have a negative impact on enterprises, and over-emphasis on ESG may lead to the dispersion of corporate resources, reduce the enterprise's main business and scientific and technological research and development investment, reduce the profitability of the enterprise, and increase the financial burden of the enterprise, resulting in increased corporate risk, thus affecting the operational efficiency of the core business, which in turn affects the operational efficiency of the core business. [20] thereby affecting the operational efficiency of the core business. In addition, the initial investment in ESG practices is often large, which may cause financial pressure for enterprises with a tight capital chain, thus harming shareholders' rights and interests and bringing risks to the enterprise [21]. Therefore, when promoting ESG practices, enterprises need to weigh the relationship between the long-term benefits it brings and the short-term costs, formulate a reasonable ESG strategy, and ensure that it is consistent with the core competitiveness and long-term development goals of the enterprise.

Fombrun summarizes reputation as "the result of all past actions of a firm that reflect its ability to deliver value to its stakeholders, corporate reputation can be used to measure the position of the firm among its stakeholders, as well as the competitive environment in which the firm operates, and is a good name for the firm" [22]. In today's highly developed information society, the construction and maintenance of corporate reputation has become particularly important. A good corporate reputation can bring many benefits to a company, such as enhancing customer loyalty, attracting talented people, increasing investor confidence, and gaining a competitive advantage in the marketplace. The practice of CSR enhances a company's social image and strengthens the trust of consumers and investors. The fulfillment of corporate social responsibility can indirectly enhance customer trust including cognitive trust and affective trust in corporate reputation and customer satisfaction which play the role of mediating variables. This means that by actively fulfilling social responsibility, companies can not only enhance their social image, but also further consolidate and improve their reputation by enhancing customer trust. The theory of CSR is highly inspirational to the CSR mindset that has shifted from shareholder supremacy to stakeholderism, laying a solid theoretical foundation for the popularization and development of the ESG concept. This further suggests that by emphasizing and practicing ESG concepts, companies can better meet the needs and expectations of their stakeholders and thus enhance their reputation. ESG performance has a significant facilitating and perpetuating effect on corporate reputation [23] ESG performance has a significant contributory and perpetuating effect on corporate reputation. Through positive ESG performance, companies can win lasting market recognition. A high level of ESG ratings helps attract more socially responsible investors who are inclined to invest in companies that comply with sustainability principles. Consumers are also increasingly concerned about corporate social responsibility and environmental performance, firmly choosing to support companies with excellent ESG. Good ESG ratings can also attract good employees to join the company, which can further enhance its competitiveness [24].

From the above literature, it is clear that ESG and reputation are crucial for sustainable and high-quality corporate development, and this paper attempts to explore the relationship between corporate ESG disclosure and reputation to enrich related research. Based on this, this paper proposes research hypothesis 2:

H2: Good ESG performance contributes to a company's reputation and signals positive corporate growth to good employees.

2.3. Impact of ESG Performance on Corporate Environmental Performance - Based on Government Stakeholder Perspective

Academics around corporate ESG performance have mainly analyzed the impact of ESG on corporate value [25] and institutional investor preferences [26] financial performance [27] risk-taking [28] etc., while the existing literature has not explored whether ESG performance plays a role in its environmental performance. However, regarding the relationship between environmental performance and environmental information disclosure, previous foreign literature has different research perspectives in theory, forming different views and research conclusions. Based on legitimacy theory and stakeholder theory, it is believed that environmental performance is negatively related to environmental information disclosure, and enterprises with poorer environmental performance are more motivated to disclose environmental information in order to improve legitimacy and change stakeholders' perception of their actual environmental performance, and there is a negative correlation between corporate environmental performance and environmental information disclosure. Based on the economic theory perspective, firms with good environmental performance are more motivated to improve the level of environmental information disclosure to distinguish themselves from firms with poor environmental performance, and there is a positive correlation between firms' environmental performance and environmental information disclosure. In conclusion, most studies support the idea that firms utilize the disclosure of environmental information as a tool for their legitimacy [29].

There is an implicit social contract between the enterprise and its stakeholders, and if the enterprise violates the requirements of the contract, the legitimacy of the enterprise's operation will be questioned, thus incurring the risk of litigation and public opinion pressure [30]. Therefore, enterprises should not emphasize their own financial performance, but should comprehensively balance the requirements of each stakeholder. The government, as an important stakeholder of enterprises, has been promoting the improvement of ESG performance by optimizing the allocation of resources as the ESG performance of enterprises has come into the public eye in recent years [31]. The government has also been promoting the improvement of ESG performance by optimizing resource allocation. On the one hand, it helps enterprises share the uncertainty risk through policy and environmental protection subsidies, and promotes the smooth implementation of ESG system construction; On the other hand, under government regulation, it helps enterprises share the uncertainty risk through policy and environmental protection subsidies, and promotes the smooth implementation of ESG system construction [32].

Besides, under government regulation, the greater the external environmental regulatory pressure on enterprises, the higher the degree of attention to corporate environmental information disclosure. In order to send the signal of good environmental performance to the government and other stakeholders, and to maintain corporate image and reputation, there will be a closer link between corporate ESG performance and environmental information disclosure. Among them, as ESG performance involves the disclosure of corporate environmental sustainability-related information, government environmental regulation and environmental protection subsidies are based on corporate environmental information disclosure to a certain extent. Moreover, since China's "dual-carbon" development goal was put forward, China's government policy on ESG performance has been significantly strengthened [33]. Since China's "dual carbon" development goal was proposed, the government has significantly strengthened its policy on ESG performance. Therefore, in order to deliver more effective corporate environmental information to the government and realize the positive interaction between the government and corporate development, it is of great practical significance to explore the impact of ESG performance on corporate environmental information disclosure. Based on this, this paper proposes research hypothesis 3:

H3: Good ESG performance promotes higher quality of corporate environmental information and conveys more effective environmental information to government decision-making.

3. Study Design

3.1. Sample Sources

This paper takes A-share listed companies from 2011 to 2021 as the initial research sample. Firstly, the paper further screens the sample as follows: firstly, financial samples are deleted; secondly, samples with ST/PT and negative net assets are deleted; thirdly, samples with missing values and data anomalies are deleted. Finally, 21,174 unbalanced panel data observations are obtained. Then, in order to mitigate the impact of extreme values on the empirical results, the paper shrinks all continuous variables by 1% up and down. The corporate ESG data used in this paper are from WIND database, while the corporate ESG performance data are from Bloomberg database, and other data such as inefficient investment, corporate reputation, and environmental disclosure quality are from CSMAR database.

3.2. Modeling

In order to test whether good ESG performance of enterprises can significantly improve their investment efficiency, Environmental Disclosure Quality and Corporate Reputation, this paper constructs the following empirical model:

$$\mathrm{Misinv}_{i,t} = \alpha_0 + \alpha_1 \mathrm{ESG}_{i,t} + \alpha_i \mathrm{Control}_{i,t} + \sum \mathrm{Year}_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$\mathrm{REP}_{i,t} = \alpha_0 + \alpha_1 \mathrm{ESG}_{i,t} + \alpha_i \mathrm{Control}_{i,t} + \sum \mathrm{Year}_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$\mathrm{Ediq}_{i,t} = \alpha_0 + \alpha_1 \mathrm{ESG}_{i,t} + \alpha_i \mathrm{Control}_{i,t} + \sum \mathrm{Year}_{i,t} + \varepsilon_{i,t} \quad (3)$$

Where i denotes a listed individual and t denotes a year; the unobservable random variable α_0 represents individual heterogeneity;$\mathrm{Control}_{it}$ is the set of control variables;Year_{it} represents the year;ε_{it} is the random error term.

3.3. Definition of Variables

(1) Explained variables: this paper selected three explanatory variables from the three levels of business performance, environmental performance and social performance respectively.

a. Inefficient investment (Misinv). The residuals obtained from the regression of model (4) by industry and by year measure the level of inefficient investment in enterprises:

$$\mathrm{Misinv}_{i,t} = \delta_0 + \delta_1 \mathrm{SalesGrowth}_{i,t} + \mathrm{v}_{i,t} \quad (4)$$

Misinv is the sum of cash paid for the purchase and construction of fixed assets, intangible assets and other long-lived assets, cash paid for the acquisition of subsidiaries and other business units, and cash paid for investments, less the net cash recovered from the disposal of fixed assets, intangible assets and other long-lived assets, the net cash received from the disposal of subsidiaries and other business units, and cash received from the recovery of investments, and the net amount obtained is divided by the beginning of period Total assets; SalesGrowth is the growth rate of operating income, which$\mathrm{v}_{i,t}$ is the residual obtained from the regression of model (4), and its absolute value Misinv is used to measure the level of inefficient investment in the company. The larger the absolute value of the residuals, the higher the level of inefficient investment in the company, the lower the investment efficiency; conversely, the smaller the absolute value of the residuals, the higher the investment efficiency of the company.

b. Environmental Disclosure Quality (Eidq). This paper draws on Kong Dongmin et al. [34], Wang Wei et al. [35] 's study, using the content analysis method to analyze the environmental research data in the CSMAR database, based on the principles of scientificity, objectivity and comprehensiveness, comparability, and operability, and taking the satisfaction of stakeholders' information needs as the fundamental starting point, and combining with the national policies and regulations on voluntary disclosure of information, the environmental information disclosed by the enterprises is divided into the following ten dimensions: the goals and policies of environmental protection; Compensation and fines resulting from environmental pollution incidents; reduction of pollutant emissions and consumption of resources; certification of ISO14000 and other environmental management systems; establishment and operation of environmental protection organizations and staffing of professional environmental protection personnel; disposal of "three wastes" in the production process; research and development of environmentally-friendly products and the construction and operation of green production equipment; government subsidies, tax exemptions, grants and other environmental incentives; projected revenues from emission reduction and consumption reduction; and other related environmental expenditures. Based on the above ten dimensions, the total score is scored and the natural logarithm is taken to obtain the quality of the enterprise's environmental information disclosure.

c. Corporate Reputation (REP). This paper refers to Guan Kaolai et al. [36] 's research, comprehensively consider the evaluation of corporate reputation by various stakeholders, and measure corporate reputation through the method of constructing a reputation evaluation system. These include the assessment of corporate assets, revenues, net profits and value rankings within the industry from the consumer and

social perspectives, the attention to gearing ratio, current ratio, and long-term debt ratio from the creditor perspective, the importance of earnings per share, dividends per share, and whether or not they are audited by the Big Four international accounting firms from the shareholder perspective, as well as sustainable growth rate and the proportion of independent directors from the corporate perspective. Then, factor analysis was used to calculate these 12 indicators in order to derive the corporate reputation score. Finally, firms were categorized into ten groups based on their corporate reputation scores from lowest to highest, and used to assign values from 1 to 10 to each group of REP.

(2) Explanatory variables: corporate ESG performance (ESG). In this paper, CSI ESG rating data is selected to measure the ESG performance of listed companies. The rating results are categorized into AAA, AA, A, BBB, BB, B, CCC, CC, C, and the ESG performance is assigned as 1-9 in order from low to high.

(3) Control variables: reference to existing literature [37, 38], gearing ratio (Lev), return on total assets (ROA), total asset turnover (ATO), accounts receivable ratio (REC), inventory ratio (INV), fixed asset ratio (FIXED), growth rate of operating income (Growth), and enterprise value (TobinQ) are added as control variables in the model. The specific descriptions of the main variables involved are detailed in Table 1.

Table 1. List of variable definitions

Variable type	variable name	variable symbol	Variable Definition
construed variant	inefficient investment	Misinv	Value of the level of inefficient investment using the Biddle model
	Quality of environmental disclosure	Eidq	ln (environmental management disclosure + environmental liability disclosure + environmental certification disclosure + environmental performance and governance disclosure + environmental information disclosure vehicle +1)
	Corporate reputation	REP	Factor analysis was used to calculate 12 corporate reputation-related indicators, and the resulting scores were used to measure
Core explanatory variables	ESG performance	ESG	CSI Total Score Assignment
sue regulate become different measure word	gearing	Lev	Total liabilities at year-end to total assets at year-end
	total assets compensation rate	ROA	Ratio of net profit to average balance of total assets
	total assets turnover rate	ATO	Ratio of operating income to average total assets
	accounts receivable percentage	REC	Ratio of net accounts receivable to total assets
	Inventory as a percentage	INV	Ratio of net inventory to total assets
	fixed assets percentage	FIXED	Net fixed assets to total assets
	revenues growth rate (esp. in economics)	Growth	Current year's operating income/previous year's operating income - 1
	enterprise value	TobinQ	(Market value of outstanding shares + number of non-outstanding shares × net assets per share + book value of liabilities)/Total assets

4. Empirical Analysis

4.1. Descriptive Statistics

Table 2 demonstrates the results of descriptive statistical analysis of the main variables of the sample firms. The analysis shows that the mean value of the explanatory variable ESG is 4.143 with a standard deviation of 0.925, and the maximum, median, and minimum values are 8, 4, and 1 respectively indicating that the average ESG ratings of the sample firms are in the range of B to BB, and that there are some variations in the ESG performance of the firms. The mean value of the explanatory variable inefficient investment (Misinv) is 0.052, the standard deviation is 0.057, and the minimum, median, and maximum values are 0, 0.037, and 0.433, respectively, indicating that there is a large difference in the investment efficiency of the sample firms, and that the firms are closer between the actual investment level and the desirable (or expected) investment level. The mean value of corporate reputation (Score) is 0.070, the standard deviation is 0.963, and the maximum, median, and minimum values are -1.269, -0.191, and 5.784, respectively, indicating that its distribution shows significant asymmetry, and the majority of corporate reputation scores are concentrated in the lower range. A large standard deviation implies that there are significant differences in reputation among firms, and some firms may enjoy very high market recognition and customer trust, while others may face greater reputational risk. The mean value of environmental disclosure quality (Eidq) is 1.952, the standard deviation is 0.982, and the minimum, median, and maximum values are 0.000,1.946, and 3.638, respectively, which reveal significant differences in firms' performance in environmental protection. Overall, the quality of environmental information disclosed by enterprises is at a medium level, but the standard deviation value of 0.982 reflects the large difference in the quality of disclosure among different enterprises.

Table 2. Results of descriptive statistics for the main variables

variant	sample size	average value	(statistics) standard deviation	minimum value	upper quartile	maximum values
Misinv	21174	0.052	0.057	0.000	0.037	0.433
Score	21174	0.070	0.963	-1.269	-0.191	5.784
Eidq	21174	1.952	0.982	0.000	1.946	3.638
ESG	21174	4.143	0.925	1.000	4.000	8.000
Lev	21174	0.414	0.199	0.032	0.407	0.927
ROA	21174	0.055	0.044	-0.017	0.044	0.255
ATO	21174	0.660	0.434	0.055	0.563	2.891
REC	21174	0.122	0.103	0.000	0.101	0.507
INV	21174	0.144	0.132	0.000	0.113	0.778
FIXED	21174	0.208	0.157	0.002	0.176	0.725
Growth	21174	0.200	0.398	-0.654	0.127	3.894
TobinQ	21174	2.039	1.357	0.802	1.611	16.647

4.2. Correlation Analysis

This paper conducted correlation analysis of the main variables, the results are shown in the table, the correlation coefficients between inefficient investment, corporate reputation, environmental disclosure quality and ESG are -0.075,0.191,0.205, respectively, and are significant at 1% level, which indicates that with the improvement of ESG performance, the enterprise's investment efficiency, its own reputation, and environmental performance will be improved, which preliminarily verifies the hypothesis of this paper. That is, there is a positive correlation between ESG and investment efficiency, corporate reputation, and environmental performance. Most of the correlation coefficients between other variables are below 0.5, which indicates that more reasonable variables are selected and basically excludes the problem of multicollinearity between variables in the regression model.

Table 3. Correlation analysis

	INVEFF	Score	Eidq	ESG	Lev	ROA	ATO	REC	INV	FIXED	Growth	TobinQ
INVEFF	1											
Score	0.00600	1										
Eidq	-0.044***	0.227***	1									
ESG	-0.075***	0.191***	0.205***	1								
Lev	-0.021***	0.131***	0.116***	-0.050***	1							
ROA	0.075***	0.303***	0.045***	0.150***	-0.388***	1						
ATO	-0.021***	0.127***	0.054***	0.0110	0.175***	0.147***	1					
REC	-0.039***	0.116***	-0.076***	-0.028***	0.014**	-0.015**	0.169***	1				
INV	-0.137***	-0.024***	-0.043***	0.060***	0.327***	-0.139***	0.041***	-0.092***	1			
FIXED	0.045***	-0.104***	0.216***	-0.091***	0.065***	-0.091***	0.00600	-0.279***	-0.305***	1		
Growth	0.245***	0.118***	-0.038***	-0.040***	0.057***	0.184***	0.100***	0.052***	0.033***	-0.070***	1	
TobinQ	0.057***	0.046***	-0.117***	-0.071***	-0.285***	0.326***	-0.027***	0.053***	-0.077***	-0.111***	0.058***	1

4.3. Regression Analysis

After shrinkage treatment of 1% at the top and bottom, the two-way fixed effects model is regressed and the significance of the coefficients is judged using robust criteria, and the regression results are shown in the table. First, regressions are conducted to analyze the direct relationship between ESG performance and firms' inefficient investments, as shown in columns (1) and (2) of Table 3. Specifically, columns (1) and (2) represent the regression models without the inclusion of control variables and with the inclusion of year dummy variables, respectively. The results of the analysis show that the regression coefficient of ESG performance (ESG) is -0.000892 without considering other control variables (Column 1), implying that firms' ESG ratings are negatively related to inefficient investments, while in the model with the

inclusion of year dummy variables (Column 2), the regression coefficient of ESG performance is -0.00115, which is significantly negative at the 5% level, and It indicates that better ESG performance reduces firms' inefficient investment. Hypothesis H1 is further verified, which represents that investors also pay more attention to the ESG performance of enterprises, and good ESG performance will give investors' confidence to invest. In addition, investors' focus on ESG also encourages firms to pay more attention to their performance in these areas. This trend not only drives companies to improve their ESG practices, but also promotes the development of relevant assessment and rating systems, enabling investors to have a more transparent understanding of a company's ESG performance. As the global focus on sustainability continues to grow, companies must make proactive efforts in ESG to meet the expectations of investors and the market.

Second, the direct relationship between ESG performance and corporate reputation is analyzed by regression analysis and the results are shown in column (3) and column (4) of Table 3. From the regression results, it can be seen that the relationship between corporate reputation and corporate ESG is a significant positive correlation, and the results in column (3) indicate that the higher the ESG score, the higher the corporate reputation. Column (4) shows that the same conclusion is still obtained after adding all the control variables. the regression coefficient of ESG performance is 0.071 and significant at 1% confidence level, which indicates that the higher the ESG of the firm, the higher the corporate reputation, and one level higher ESG increases corporate reputation by 0.071%, and the hypothesis H2 is further verified. In addition, all control variables are also significant at the 1% significance level, which indicates that corporate ESG performance is closely related to corporate reputation, and that high ESG scores enhance corporate attractiveness and reflect its leadership in sustainability and social responsibility. This enhances confidence in the long-term value of the enterprise and leads to a rise in corporate reputation. For enterprises, focusing on social responsibility performance can enhance employees' sense of mission and happiness; strengthening corporate governance can reinforce the stakeholder consensus of the enterprise, pay more attention to the perceptions and concerns of internal and external stakeholders in corporate decision-making, and attenuate the moral hazard and adverse selection due to principal-agent problems, Strengthening the level of internal control and brand image building. Both of these are in line with the long-term interests and development strategy of the enterprise, which makes the enterprise show a better corporate reputation externally. The direction of each control variable is basically in line with economic intuition and relevant theories, and it can be considered that the model setting has some rationality.

Finally, the effect of ESG performance on firms' environmental performance is tested and the regression results are shown in column (5) and column (6) of Table 3. Column (5) represents a fixed-effects regression without adding control variables, controlling for year and industry, and the results show that the coefficient of Eidq is 0.0401, which is positive and significant at 1% level, which indicates that the quality of corporate environmental disclosure (Eidq) is positively correlated with its ESG performance, i.e., corporate ESG practices are conducive to the realization of better environmental performance, and hypothesis H3 is preliminarily verified. After adding the control variables, the results are shown in column (6) of Table 3, and the coefficient of Eidq is 0.0696, which is still significant and positive, and hypothesis H3 is further tested.

From the above, the coefficient of Eidq is significantly positive at the 1% level regardless of whether control variables are added or not. The larger the value of Eidq, the higher the quality of environmental information disclosure of the company. Therefore, it indicates that improving ESG performance can effectively improve the quality of corporate environmental information disclosure and prompt companies to deliver more complete and effective environmental information to the market. From the stakeholder theory, it can be seen that the government can better formulate targeted environmental policies based on the quality of corporate environmental information disclosure and regulate accordingly. In addition, good disclosure of environmental information by enterprises can also indicate their green development decisions and a high degree of social responsibility, so that enterprises can be positively evaluated, enhance their competitive advantages, and facilitate the use of public facilities and various preferential policies. Moreover, due to the promotion of the "dual-carbon" goal, more and more listed companies have publicly disclosed true and reliable ESG-related information, and compared with financial information, this non-financial information is more likely to gain the attention and understanding of external stakeholders, enhance the sense of identity, and gradually form a competitive advantage and bring returns to the enterprise.

Table 4. Test results of the impact of firms' ESG performance on firm performance

	(1)	(2)	(3)	(4)	(5)	(6)
	Misinv	Misinv	REP	REP	Eidq	Eidq
ESG_grade	-0.000892* (-1.79)	-0.00115** (-2.39)	0.025* (1.930)	0.071*** (7.196)	0.0401*** (7.28)	0.0696*** (14.10)
Lev		0.0450*** -11.96		4.146*** (50.791)		0.268*** (6.92)
ROA		0.0602*** -7.91		18.955*** (72.613)		0.351*** (4.46)
ATO		-0.0129*** (-6.81)		0.131*** (3.240)		-0.0458* (-2.36)
REC		-0.0708*** (-8.82)		-0.221 (-1.295)		-0.0107 (-0.13)
INV		-0.0719*** (-11.61)		0.103 (0.781)		0.194** (3.06)
FIXED		-0.0809*** (-15.71)		-0.687*** (-6.384)		0.207*** (3.99)
Growth		0.0263*** -28.22		0.223*** (11.498)		-0.0313** (-3.21)
TobinQ		-0.000421 (-1.10)		-0.028*** (-3.488)		-0.00587 (-1.52)
_cons	0.0546*** -26.4	0.0915*** -26.09	5.540*** (100.737)	1.518*** (21.080)	1.750*** (76.53)	0.808*** (22.60)
N	23709	23709	27873	27596	31515	30650
R^2	0	0.095	0.000	0.454	0.002	0.252
F	3.197	109.7	3.726	1017.982	53.01	466.4
P						
*p<0.10, ** p<0.05, *** p<0.01						

5. Robustness Tests

5.1. Stepwise Regression

In order to verify the robustness of the conclusions presented in this paper, this paper adopts the method of stepwise regression analysis, in which the ESG scores are analyzed with the three variables of inefficient investment, corporate reputation, and the quality of environmental disclosure, respectively. The results of the stepwise regression analysis show that the conclusions of this paper are supported to a large extent, indicating that the conclusions are somewhat robust. This analytical process helps to ensure that the results of the study do not change significantly as a result of the introduction of a single variable, thus enhancing the credibility of the findings.

5.2. Instrumental Variables Approach

Good ESG performance may have positive resource effects and governance effects, thus contributing to the investment efficiency of firms. On the other hand, however, firms with higher investment efficiency, good corporate reputation, and outstanding environmental performance are more likely to perform well in terms of ESG, and thus the main findings of this paper may suffer from the endogeneity problem of mutual causality. In order to overcome this endogeneity problem, this paper uses the mean ESG performance of other sample firms in the same industry in the same year as an instrumental variable for regression analysis, replaces the original explanatory variables with the ESG mean, and conducts regression analyses with inefficient investment, corporate reputation, and quality of environmental disclosure, respectively. The regression results are consistent with the conclusions of this paper, which indicates that the conclusions of this paper have good robustness.

6. Heterogeneity Tests

In order to further analyze whether there is any difference between state-owned enterprisess and non-state-owned enterprisess in terms of the impact that ESG performance has on firms' investment efficiency, corporate reputation, and environmental performance, we firstly classified firms into two categories, state-owned enterprisess and non-state-owned enterprisess, based on the nature of firms' ownership, and then conducted group regression analyses respectively. The relevant regression results are displayed in detail in Table 5.

Table 5. Results of heterogeneity analysis

	(1)	(2)	(3)	(4)	(5)	(6)
	INVEFF_abs	INVEFF_abs	Score	Score	Eidq	Eidq
	government owned	non-municipal	government owned	non-municipal	government owned	non-municipal
ESG_grade	-0.00273*** (-4.18)	-0.0000969 (-0.15)	0.0436*** (7.56)	0.0489*** (11.01)	0.0513*** (7.48)	0.0391*** (7.90)
control variable	be	be	be	be	be	be
individual fixed effect	be	be	be	be	be	be
time fixed effect	be	be	be	be	be	be
Adjustment R^2	-0.093	-0.097	0.305	0.394	0.056	0.021
sample size	8330	15379	9128	18468	9272	18227

First, state-owned enterprises tend to bear more social responsibilities and policy-oriented tasks due to their special ownership nature. Therefore, when ESG performance is poor, they may receive more attention and pressure from the government and society, which may affect their investment decisions and efficiency. For example, environmental issues may lead to production disruptions or fines, social issues may trigger public discontent and boycotts, and governance issues may lead to management instability and poor decision-making. In contrast, while non-state-owned enterprises are also subject to a certain degree of market and social pressure in the face of poor ESG performance, their decision-making mechanisms are relatively flexible and they are able to adjust their strategies more quickly to meet the challenges. In addition, non-state-owned enterprises may pay more attention to economic efficiency in resource allocation and project selection, so even if ESG performance is poor, investment efficiency may still be maintained at a high level as long as their investment projects can bring higher economic returns. Based on the above analysis, this paper concludes that the differences in corporate property rights systems lead to significant differences in the impact on investment efficiency between state-owned enterprises and non-state-owned enterprises when they face poor ESG performance.

It can be clearly seen from Table 5 that in the group of state-owned enterprises represented by column (1), the coefficient of ESG performance is significantly negative, which indicates that in state-owned enterprises, the investment efficiency of enterprises with poor ESG performance is relatively low. While in the group of non-state-owned enterprises represented by column (2), the coefficient of ESG performance is negative but not significant, which means that there is no significant negative correlation between ESG performance and investment efficiency in non-state-owned enterprises. With this regression result, we verify the previous conjecture of this paper that the impact of firms' ESG performance on their investment efficiency indeed varies depending on the firm's property rights system. Specifically, among state-owned firms, poorer ESG performance may lead to lower investment efficiency, while in non-state-owned firms, this effect is less significant.

Second, in general, larger firms tend to have higher reputations due to their market reach and resourcefulness. However, this does not mean that smaller firms cannot enhance their reputation in other ways. In fact, smaller firms may have advantages in terms of flexibility and innovative capabilities, which can be equally translated into a good corporate reputation. Accordingly, this paper argues that ESG performance is one of the important, but not the only, factor in enhancing corporate reputation.

It can be clearly seen from Table 5 that the coefficients of ESG performance are significantly positive in both the group of state-owned enterprises represented by Column (3) and the group of non-state-owned enterprises represented by Column (4), which suggests that those enterprises that have good performance in ESG are also more excellent in terms of corporate reputation, both among state-owned enterprises and among non-state-owned enterprises. With the results of this regression analysis, we can conclude that there is no significant difference between different corporate ownership systems in terms of the impact of a firm's ESG performance on its corporate reputation. In other words, good ESG performance is effective in enhancing corporate reputation for both state-owned and non-state-owned enterprises. This finding further emphasizes the importance of ESG performance on corporate reputation and suggests that this effect is universal across firms with different ownership systems.

Finally, the improvement of ESG performance is not a quick fix; it requires long-term investment and continuous efforts from enterprises. Enterprises need to set clear policies and objectives in environmental protection, social responsibility and corporate governance, and integrate them into their daily operations and strategic planning. Only in this way can enterprises make substantial progress in ESG, which will ultimately translate into improved environmental performance. Meanwhile, in state-owned enterprises, the positive impact of ESG performance on corporate environmental performance is more significant. This may be due to the fact that state-owned enterprises have certain advantages in policy guidance and resource allocation, and are better able to integrate ESG concepts into their daily operations. In contrast, although non-state-owned enterprises also have a positive impact on environmental performance in terms of ESG performance, the extent of their impact is relatively small, probably due to resource constraints, market competition and other factors. Accordingly, this paper argues that for enterprises in the state-owned sector, good ESG performance is more likely to improve their environmental performance.

It can be clearly seen from the table that the coefficients of ESG performance are significantly positive in both the group of state-owned enterprises represented by column (5) and the group of non-state-owned enterprises represented by column (6), which suggests that both in state-owned enterprises and in non-state-owned enterprises, those enterprises that perform well in terms of ESG are also more prominent in their environmental performance. Further comparison of columns (5) and (6) reveals that the coefficient of ESG performance in column (5) is higher than the coefficient of ESG performance in column (6), which indicates that in state-owned enterprises, the positive impact of ESG performance on corporate environmental performance is more significant. The result of this regression analysis verifies the above conjecture of this paper: for state-owned enterprises, good ESG performance is more likely to improve their environmental performance.

7. Conclusions and Implications

Based on stakeholder theory, this paper empirically examines the effects of ESG performance on inefficient investment, corporate reputation, and environmental disclosure quality using empirical data from A-share main board listed companies in China's Shanghai and Shenzhen cities from 2011 to 2021. It is found that better ESG performance significantly reduces inefficient investment; high ESG scores significantly enhance corporate reputation; and corporate ESG practice activities are conducive to achieving better environmental performance. The above results still hold after performing stepwise regression analysis and replacing the original explanatory variables. Further heterogeneity analysis reveals that in state-owned enterprises, poorer ESG performance may lead to lower investment efficiency, while in non-state-owned enterprises, this effect is less significant; good ESG performance can effectively enhance corporate reputation in both state-owned enterprises and non-state-owned enterprises; and good ESG performance is more likely to improve the environmental performance of state-owned enterprises than that of non-state-owned

enterprises. This study is of great practical significance for a comprehensive and in-depth understanding of the effects of corporate ESG performance on different stakeholders.

Based on the above findings, this paper offers the following insights:

First, enterprises should actively practice ESG concepts and improve ESG performance. The research in this paper shows that ESG performance has a positive impact on corporate investment efficiency, corporate reputation, and the quality of environmental information disclosure. Therefore, enterprises should take ESG factors into account when making strategic and operational decisions, and improve their overall ESG scores by improving corporate governance, raising social responsibility standards and enhancing environmental protection measures. The study found that among state-owned enterprises, poorer ESG performance may lead to lower investment efficiency. Therefore, state-owned enterprises should pay more attention to ESG factors in the process of promoting reform and enhancing competitiveness, and optimize resource allocation and improve investment efficiency by improving ESG performance.

Second, all types of stakeholders influence the ESG performance of an enterprise to varying degrees and are also affected by the enterprise's ESG activities. Therefore, when making strategic and operational decisions, enterprises should comprehensively consider and respond to the expectations and needs of these stakeholders in order to achieve long-term sustainable development, better balance the interests of stakeholders, improve employee satisfaction, attract outstanding talent and investors, etc.

Third, governments and regulatory agencies should strengthen the supervision and incentives for corporate ESG performance. By formulating relevant policies and standards, they should encourage enterprises to disclose ESG information, and at the same time reward enterprises with excellent performance and penalize those with poor performance, so as to promote the sustainable development of the whole society.

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