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Original Paper

The Impact of ESG on the Financial Performance of Listed Companies: Empirical Analysis Based on A-share Listed Companies

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Abstract

As China's ecological civilization advances, ESG (Environmental, Social, and Governance) has emerged as a focal point for market participants and investors. Based on the data of Shanghai and Shenzhen A-share listed companies from 2014 to 2022 and Bloomberg ESG score, this paper explores the impact of ESG performance on corporate value and its mechanism through multiple regression analysis. The results indicate that an enhancement in ESG performance significantly boosts the financial performance of listed companies, particularly in non-polluting industries, enterprises with low information transparency, and foreign-controlled enterprises. In response to these conclusions, the article makes recommendations for policy formulation and business management aimed at promoting sustainable development of enterprises, enhancing market competitiveness, and responding to the growing concern of investors about ESG.

Keywords

ESG ratings, financial performance, firm heterogeneity, firm innovation

1. Introduction

With the increasing public attention to environmental protection, social responsibility and corporate governance, ESG investment concepts are gradually becoming the first choice of the market and investors. The concept of ESG encompasses not only the assessment of an enterprise's non-financial performance, but also its significant impact on financial indicators. As global climate change, environmental pollution, and social inequality worsen, investors and stakeholders are increasingly focusing on a company's ESG performance. Government and international initiatives, such as the "14th Five-Year Plan for Circular Economy Development" issued by China's National Development and Reform Commission, along with the strategic goals of "carbon peak and carbon neutrality", provide opportunities for ESG development and further reinforce its importance in corporate performance.

The aim of this study is to investigate the influence of ESG on the financial performance of A-share listed companies, which holds significant theoretical and practical implications. Theoretically, the research can improve the financial performance evaluation model, promote the financial management theory innovation, and enrich the research achievements in the field of ESG in China. Practically, it

guides investment decisions, promotes sustainable business development, and provides the basis for government policies. By analyzing the role of ESG performance on corporate financial performance, this paper will provide references for understanding and implementing ESG strategies to help enterprises achieve high-quality and sustainable development.

2. Literature Review

When discussing the impact of ESG performance on the financial performance of listed companies, the academic circle has conducted extensive research on the impact of environment (E), social responsibility (S) and corporate governance (G), but the conclusions are not consistent.

There are positive and negative views on the impact of environmental performance on financial performance. Haninun et al. (2018) utilized a multiple linear regression model to find that environmental performance and disclosure positively impact financial performance. The meta-analysis conducted by Klingeberg et al. (2019) indicates that, in the long term, enhanced environmental performance can yield financial benefits. Conversely, other studies, including those by Horvathova (2010) and Ye (2013), have observed that an increase in environmental costs is associated with a decline in corporate performance.

The impact of social responsibility performance on financial performance is also controversial. The studies by Cochran et al. (1984) and Okafor et al. (2021) support the positive correlation between social responsibility and financial performance. However, Wang and Bansal (2012) and Crisostomo et al. (2011) argue that social responsibility behavior may negatively impact financial performance due to resource dispersion. The study of Guo and Hu (2016) did not find a significant correlation between social responsibility and financial performance.

The positive correlation between corporate governance performance and financial performance has been supported by many studies. Nwafor and Boateng (2021) found that gender diversity on the board of directors is positively correlated with corporate performance. The research conducted by Wei and Xiao (2007) and Wang and Zhao (2006) further demonstrates that the background and number of independent directors positively influence corporate performance.

In terms of ESG comprehensive performance, Velte (2017) and Chen et al. (2022) exhibited a positive correlation between ESG performance and financial performance, whereas Duque et al. (2021) identified a negative correlation between ESG score and financial performance. Atan et al. (2016) and Zhang et al. (2020) did not find a significant relationship between ESG disclosure and financial performance.

Overall, the existing literature is divided on the relationship between ESG performance and financial performance, which may be related to research methods, sample selection, time span and regional differences. Nevertheless, these studies provide a theoretical basis and empirical evidence for understanding the relationship between ESG and financial performance. This paper aims to further explore this relationship, especially in the context of A-share listed companies, in order to provide a reference for sustainable development of enterprises and provide a basis for policy formulation.

3. Hypothesis

According to literature review, the influence of ESG on corporate financial performance is mostly non-negative, and with the advancement of sustainability theory, this non-negative influence tends to be stable and gradually enhanced. Enterprises with good ESG performance may improve their financial performance by improving competitiveness, establishing a good image, reducing production costs, and reducing environmental fines and litigation risks. Therefore, the hypothesis is proposed:

H1: ESG performance can improve the financial performance of listed companies, that is, the higher the ESG rating, the better the company's financial performance.

Regarding industry characteristics, enterprises operating in non-high-polluting industries may have a greater propensity to enhance their financial performance through ESG performance, owing to their reduced environmental protection investments and compliance costs, coupled with a superior brand image and social recognition. Therefore, the hypothesis is proposed:

H2: The effect of ESG rating on promoting financial performance of enterprises in non-high-polluting industries is significantly greater than that of enterprises in high-polluting industries.

Regarding information transparency, enterprises characterized by low transparency may more effectively communicate positive signals to investors through an upgrade in their ESG ratings, thereby enhancing their market value and business performance. Therefore, the hypothesis is proposed:

H3: The positive effect of ESG rating on promoting financial performance of enterprises with low information transparency is significantly greater than that of enterprises with high information transparency.

Variations in shareholder composition may result in differing impacts of ESG ratings on corporate financing and financial performance. Foreign-owned companies may be more prone to benefiting from an upgrade in their ESG rating, attributed to their extensive international investor network and profound comprehension of ESG principles. Therefore, the hypothesis is proposed:

H4: The improvement of ESG rating of foreign-controlled enterprises has a more significant positive impact on their financial performance than that of non-foreign-controlled enterprises.

Finally, we analyze the impact of ESG rating on financial performance from two aspects: total factor productivity and agency cost. The improvement of total factor productivity reduces costs through technological progress and resource optimization, enhances management efficiency, and enables enterprises to better cope with market fluctuations. Elevated agency costs signify a misalignment between management and ownership, which may encourage opportunistic behavior, diminish operational efficiency, and adversely affect financial performance. The following hypothesis is proposed:

H5: Enterprise ESG rating can promote the increase of enterprise financial performance by improving enterprise productivity.

H6: Enterprise ESG rating can promote the increase of corporate financial performance by reducing corporate agency costs.

4. Methodology

4.1 Data and Sample

The research sample is China's A-share listed companies from 2014 to 2022, and the data is cleaned and matched with Bloomberg ESG data, and the unmatched data is eliminated, and a total of 2252 observations are obtained. The data mainly come from China Listed Companies Database, Bloomberg ESG Disclosure Score and company annual reports, which ensures the universality and reliability of the data and provides a solid data foundation for the research.

4.2 Model

In order to verify the accuracy of the theoretical derivation, this study selects the ESG rating level of enterprises and the financial performance of enterprises during 2014-2022 to construct the regression equation. In this section, a double fixed-effects model that controls for both individual and time effects of enterprises is used for regression analysis. The constructed panel data model is as shown in Equation (1):

$$q_{it} = \alpha_0 + \alpha_1 esg_{it} + \alpha_2 \overrightarrow{X_{it}} + \phi_i + \phi_t + \varepsilon_{it} \quad (1)$$

The subscript i represents the enterprise, and t represents the year; q_{it} is the dependent variable, representing the financial performance level of firm i in year t; esg_{it} is the core independent variable, representing the ESG rating level of firm i in year t; $\underset{X_{it}}{\rightarrow}$ represents the control variables at the firm level; ϕ_i and ϕ_t denote the fixed effects for the firm and the year, respectively; ε_{it} is the random disturbance term.

4.3 Variable Definitions

Explained variables: Corporate financial performance (q) measurement strategies include a single indicator such as Tobin's Q value and ROA or ROE based on accounting data. Tobin's Q is a comprehensive consideration of financial performance, growth potential and market expectations, which is suitable for evaluating the long-term benefits of ESG investment. Therefore, Tobin's Q is selected as the consideration of financial performance in this study.

Explanatory variable: Corporate ESG rating levels (esg) are assessed by several institutions, and Bloomberg ratings are used in this study for their comprehensiveness and reliability.

Control variables include total asset turnover (turn), company size (size), years of operation (age), financial leverage ratio (lev), and position dual (dual: whether the same person holds both chairman and general manager positions, if yes, the value is 1, if not, the value is 0). And the proportion of independent directors (indep: the ratio of the number of independent directors of an enterprise to the number of all board members), referring to the research of Li et al. (2021) and Wang (2022).

5. Result Analysis

5.1 Descriptive Statistic and Benchmark Regression Analysis

Table 1 shows large differences among control variables, which helps distinguish enterprises's heterogeneity. Benchmark regression analysis in Table 2 shows that ESG rating is positively correlated with financial performance, and the coefficient is stable at 0.013. The significance test passes, confirming that ESG development promotes the growth of financial performance, which conforms to hypothesis H1. Among the control variables, the asset turnover, the proportion of independent directors and the number of operating years are significantly positive, and the enterprise scale is significantly negative, while the leverage ratio and the concurrent position have no significant effect.

Table 1. Descriptive Statistic

VARIABLES	OBSERVATIONS	MEAN	SD	MINIMUM	MAXIMUM
q	2,252	2.1706	1.3581	0.7488	15.0649
esg	2,252	29.5183	10.8562	0.0000	72.5883
e	2,252	13.7613	15.3990	0.0000	75.2341
s	2,252	14.0179	7.7592	0.0000	61.0339
g	2,252	66.2691	16.5148	0.0000	89.8555
turn	2,252	0.6825	0.5690	0.0000	7.6092
size	2,252	22.6125	1.0921	19.8465	28.1176
lev	2,252	0.4215	0.1897	0.0080	0.9801
dual	2,252	0.2775	0.4479	0.0000	1.0000
indep	2,252	0.2776	0.1706	0.0000	0.6667
age	2,252	16.2442	5.7293	5.0000	54.0000

Table 2. Benchmark Regression Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
esg	0.008***	0.008**	0.014***	0.014***	0.014***	0.013***	0.013***
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
turn		0.395***	0.280**	0.272**	0.272**	0.271**	0.271**
		(0.151)	(0.134)	(0.130)	(0.130)	(0.132)	(0.132)
size			-0.373***	-0.387***	-0.387***	-0.375***	-0.375***
			(0.098)	(0.113)	(0.114)	(0.112)	(0.112)
lev				0.221	0.221	0.236	0.236
				(0.444)	(0.445)	(0.444)	(0.444)
dual					0.004	-0.056	-0.055

					(0.094)	(0.092)	(0.092)
indep						1.115**	1.115**
						(0.434)	(0.434)
age							0.117***
							(0.024)
_cons	1.655***	1.370***	9.518***	9.740***	9.741***	9.187***	7.757***
	(0.106)	(0.170)	(2.123)	(2.361)	(2.364)	(2.322)	(2.192)
company	YES	YES	YES	YES	YES	YES	YES
year	YES	YES	YES	YES	YES	YES	YES
N	2252	2252	2252	2252	2252	2252	2252

5.2 Robustness Test

5.2.1 Replace the Explained Variable

To assess the reliability of the benchmark regression results, this study employs the return on total assets (ROA) as a substitute for the original financial performance index in the robustness test. The results in column (1) (2) of Table 3 show that the positive correlation between ESG rating and financial performance is still significant after replacement, which verifies the robustness of the benchmark regression results.

5.2.2 Replace the Explanatory Variable

To further validate the baseline regression results, this study refers to Fang and Hu (2023) and assigns proxy variables by ranking the Huazheng ESG ratings from 1 to 9. The results in column (3) and (4) of Table 3 show that the improvement of ESG rating significantly promotes financial performance, once again verifying the robustness of benchmark regression.

Table 3. Robustness Test

	(1)	(2)	（3）	（4）
esg	0.001***	0.001**		
	(0.000)	(0.000)		
esg2			0.106***	0.112***
			(0.027)	(0.035)
turn		0.025**		0.279**
		(0.010)		(0.135)
size		0.022***		-0.346***

		(0.004)		(0.107)
lev		-0.137***		0.283
		(0.019)		(0.447)
dual		-0.001		-0.042
		(0.005)		(0.091)
indep		0.0329*		1.119**
		(0.019)		(0.433)
age		-0.005***		0.138***
		(0.001)		(0.025)
_cons	0.048***	-0.351***	1.364***	6.635***
	(0.005)	(0.087)	(0.143)	(2.115)
company	YES	YES	YES	YES
year	YES	YES	YES	YES
N	2252	2252	2252	2252
R^2	0.089	0.146	0.185	0.212

5.2.3 Endogeneity Test

In order to deal with the endogenous problem that the improvement of corporate financial performance may promote the improvement of ESG rating, this study adopts instrumental variable regression method. Drawing on Gao et al. (2021), the ESG rating average (esg_mean) of listed companies in the province where the enterprise is registered is chosen as the instrumental variable. Table 4 shows that this instrumental variable is significantly correlated with ESG input and has a positive impact on financial performance at the 1% level, which enhances the persuasiveness of the benchmark regression results.

Table 4. Endogeneity Test

	(1)	(2)	(3)	(4)
	esg	esg	q	q
esg_mean	0.838***	0.666***		
	(0.055)	(0.097)		
esg			0.009*	0.038***
			(0.005)	(0.011)
turn		2.213***		0.021
		(0.661)		(0.066)
size		2.824***		-0.483***
		(0.443)		(0.055)
lev		-3.455*		-0.486**
		(2.031)		(0.201)

dual		0.283		0.010
		(0.565)		(0.069)
indep		4.953**		0.352
		(2.238)		(0.238)
age		0.029		0.001
		(0.269)		(0.009)
_cons	3.794***	-54.640***	1.919***	11.630***
	(1.247)	(9.014)	(0.138)	(1.070)
company	YES	YES	YES	YES
year	YES	YES	YES	YES
N	2252	2252	2252	2252
R^2	0.092	0.167	0.243	0.284

5.3 Heterogeneity Analysis

5.3.1 Heterogeneity Analysis: By Industry

Adopting the methodology utilized by Zhang et al. (2019), this study categorizes the sample into high-pollution and non-high-pollution industry enterprises, based on the "Guidelines for Environmental Information Disclosure of Listed Companies" and the "Catalogue of Industry Classification Management for Environmental Protection Verification of Listed Companies", for the purpose of regression analysis. Table 5 shows that in non-high-polluting industries, ESG rating is significantly positively correlated with financial performance, while in high-polluting industries, this relationship is not obvious. H2 hypothesis is valid. Enterprises in non-high-pollution industries attract environmental investors due to their market image and brand value, face lower environmental regulatory pressure, and can invest more in innovation. Good ESG performance contributes to risk management, thereby improving financial performance.

Table 5. Heterogeneity Analysis: By Industry

	high-pollution industry		non-high-pollution industry	
	(1)	(2)	(3)	(4)
esg	-0.005	0.005	0.011**	0.015***
	(0.008)	(0.006)	(0.005)	(0.005)
turn		-0.287		0.306**
		(0.496)		(0.142)
size		-0.263		-0.390***
		(0.260)		(0.119)
lev		-1.160**		0.450
		(0.486)		(0.476)
dual		-0.368*		-0.032

		(0.188)		(0.098)
indep		0.630		1.103**
		(1.211)		(0.456)
age		0.087		0.116***
		(0.088)		(0.023)
_cons	1.890***	7.256	1.603***	7.930***
	(0.221)	(5.186)	(0.133)	(2.361)
company	YES	YES	YES	YES
year	YES	YES	YES	YES
N	226	226	2026	2026
R^2	0.152	0.196	0.186	0.222

5.3.2 Heterogeneity Analysis: By Corporate Information Transparency

Referring to the studies of Huang et al. (2019) and Jiang et al. (2021), this study considers the companies that employ the Big four international accounting firms as enterprises with high information transparency, and the others as enterprises with low information transparency, and conducts a grouping regression analysis. Table 6 shows that the ESG rating of enterprises with low information transparency has a significant positive impact on financial performance, while that of enterprises with high information transparency has no significant relationship, supporting H3. Enterprises with low information transparency may attempt to conceal financial issues by obtaining high ESG ratings and attracting external investment. Conversely, enterprises with high information transparency face greater external scrutiny due to their high disclosure levels, making it challenging to achieve significant financial incentives.

Table 6. Heterogeneity Analysis: By Corporate Information Transparency

	high information transparency		low information transparency	
	(1)	(2)	(3)	(4)
esg	0.019	0.011	0.008**	0.012***
	(0.013)	(0.012)	(0.004)	(0.004)
turn		1.323		0.245*
		(0.865)		(0.128)
size		0.378		-0.386***
		(0.529)		(0.115)
lev		-2.843		0.232
		(1.831)		(0.428)
dual		-1.108***		-0.076
		(0.271)		(0.094)
indep		1.603		1.032**
		(0.940)		(0.458)

age		0.044		0.121***
		(0.066)		(0.026)
_cons	1.154***	-7.837	1.663***	7.999***
	(0.369)	(12.120)	(0.123)	(2.242)
company	YES	YES	YES	YES
year	YES	YES	YES	YES
N	115	115	2137	2137
R^2	0.107	0.241	0.185	0.217

5.3.3 Heterogeneity Analysis: By the Nature of

The study categorizes enterprises into four groups based on the nature of their controlling ownership: state-owned, private, foreign-controlled, and mixed ownership enterprises, and subsequently conducts regression analysis. Table 7 shows that the improvement of ESG ratings of state-owned, private and foreign-controlled enterprises can significantly promote the improvement of financial performance, and foreign-funded enterprises have the largest and most obvious promotion effect, supporting H4. Foreign-funded enterprises are scrutinized by international investors, possess a mature ESG management system, enjoy numerous opportunities in the international market, and are compelled by high standards to enhance profitability, ultimately improving their financial performance.

Table 7. Heterogeneity Analysis: By the Nature of Control

	state-owned control		private enterprise control		foreign enterprise control		mixed ownership control	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
esg	0.007	0.014*	0.001	0.007*	0.062**	0.045***	0.009	0.013
	(0.009)	(0.007)	(0.003)	(0.004)	(0.026)	(0.017)	(0.027)	(0.027)
turn		-0.021		0.284*		0.911		1.059
		(0.203)		(0.154)		(0.804)		(0.741)
size		-0.302***		-0.508***		0.131		-0.706
		(0.092)		(0.125)		(0.267)		(0.580)
lev		-0.998*		0.574		-2.565*		2.322
		(0.512)		(0.443)		(1.491)		(2.901)
dual		-0.526		0.079		-1.463**		-0.344

		(0.638)		(0.085)		(0.673)		(0.360)
		0.292		1.071		2.086		0.961
indep		(0.865)		(0.946)		(1.581)		(1.886)
		0.004		0.177***		0.011		0.033
age		(0.013)		(0.038)		(0.104)		(0.117)
	1.528***	8.944***	1.825***	9.822***	-0.141	-2.202	2.270***	15.68
_cons	(0.259)	(1.911)	(0.116)	(2.470)	(0.707)	(5.635)	(0.644)	(11.90)
company	YES	YES	YES	YES	YES	YES	YES	YES
year	YES	YES	YES	YES	YES	YES	YES	YES
N	384	384	1536	1536	67	67	265	265
R^2	0.154	0.213	0.248	0.304	0.385	0.397	0.209	0.321

5.4 Mechanism Test

Following the research framework of Jiang (2022), this section conducts a mediation effect analysis to explore the mechanism by which the ESG rating level of enterprises affects financial performance. Drawing on the methodology of Yang (2015), total factor productivity is chosen as an indicator to measure the production efficiency of enterprises, while the management expense ratio is utilized to represent the agency costs of enterprises. The mediation effect analysis is structured into two steps: Firstly, a regression analysis is conducted between the ESG rating and financial performance; secondly, a regression analysis is performed between the ESG rating and the mediating variables (total factor productivity and overhead rate). As illustrated in Equation 1, the second step of the mediation effect regression test model is presented, where M denotes the two mediating variables. A benchmarking regression analysis has confirmed a positive correlation between ESG ratings and financial performance, and Table 8 presents the regression results of the second step.

$$M_{it} = \beta_0 + \beta_1 esg_{it} + \beta_2 \overrightarrow{X_{it}} + \phi_i + \phi_t + \varepsilon_{it} \quad (2)$$

The regression analysis in Table 8 shows that the level of ESG rating significantly improves the total factor productivity and reduces the overhead rate. Combining hypotheses H5 and H6, it can be inferred that ESG rating can enhance the financial performance of enterprises through both improving productivity and reducing agency costs. The findings indicate that ESG ratings not only directly enhance financial performance but also indirectly contribute to it through improved operational efficiency and cost reduction, thereby supporting hypotheses H5 and H6.

Table 8. Mechanism Test

	(1)	(2)	(3)	(4)
	Tfp	Tfp	Gov	Gov
esg	0.035***	0.013**	-0.010***	-0.010***
	(0.006)	(0.005)	(0.000)	(0.000)
turn		0.302**		-0.060***
		(0.140)		(0.005)
size		1.558***		-0.004
		(0.081)		(0.003)
lev		-3.052***		0.037***
		(0.371)		(0.014)
dual		-0.037		-0.001
		(0.118)		(0.004)
indep		1.057**		-0.014
		(0.481)		(0.018)
old		-0.092***		-0.004***
		(0.026)		(0.001)
_cons	6.879***	-25.05***	0.102***	0.267***
	(0.176)	(1.689)	(0.006)	(0.064)
company	YES	YES	YES	YES
year	YES	YES	YES	YES
N	2252	2252	2252	2252
R^2	0.124	0.270	0.726	0.743

6. Conclusions

6.1 Conclusions

Based on the data of A-share listed companies from 2014 to 2022 and Bloomberg ESG scores, this study uses multiple regression analysis to explore the impact of different regions, industries, information transparency and holding methods on the financial performance of listed companies. The study revealed that the enhancement of ESG performance significantly boosted the financial performance of listed companies, particularly in the eastern region, non-high-polluting industries, enterprises with low information transparency, and foreign-controlled enterprises. The effect of environmental and social factors is more significant than that of governance factors, possibly because of the long-term and indirect nature of governance effects. In addition, improving ESG ratings can positively impact financial performance by improving production efficiency and reducing agency costs.

6.2 Implications

At the policy-making level, it is recommended to strengthen the oversight of ESG information disclosure, establish a unified rating framework, ensure balanced regional development, implement differentiated industry management, elevate information disclosure standards, and attract foreign investment to facilitate the sharing of ESG expertise. At the corporate governance level, enterprises should establish a comprehensive ESG management system, enhance risk control related to environmental and social responsibilities, improve information disclosure and transparency, collaborate with foreign enterprises for knowledge sharing, and continuously monitor and enhance ESG performance. These measures are designed to promote corporate sustainability, enhance market competitiveness and respond to growing investor interest in ESG. Through these conclusions and recommendations, this study provides an empirical basis for policy makers and business managers to promote the continuous improvement of ESG and the enhancement of financial performance.

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