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The Impact of ESG on Financial Performance: An Empirical Analysis of Listed Companies in China

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Abstract: Environmental, social, and governance (ESG) is gradually playing an increasingly vital role in financial markets. With the support of the Chinese government, most managers have placed a high priority on ESG. This paper, therefore, looks at whether ESG can reflect on the financial performance (ROA). The sample is selected from A-share listed companies in China between 2018-2022, which is used to test the mechanism. This paper also explores the link between ESG and financial performance by conducting robustness tests on another indicator, Tobin's Q, which helps to confirm the robustness of the model. The results of this paper show that overall ESG score, financial profitability, and firm value are significantly and positively related. The findings suggest that higher ESG scores can generate more financial returns and inform the formulation of relevant policies by companies and government agencies. Furthermore, it underscores the importance of integrating ESG considerations into investment strategies and corporate decision-making processes for sustainable economic growth.

Keywords: Environmental, Social, and Governance (ESG), Firm Performance, Return on Assets, Tobin's Q

1. Introduction

There is a growing investor focus on non-financial factors, who are getting more focused on environmental, social, and governance (ESG). Companies are under huge pressure to respond to this trend by prioritizing and taking action on non-financial aspects. However, from a corporate perspective, acting involves changes in funding structures and requires consideration of whether investments make financial sense. To check the relationship, this paper uses ESG to explore the company's financial performance.

Freeman's stakeholder theory emphasizes that exceptional companies consider and align all stakeholders instead of merely focusing on maximizing profits [1]. The argument is that firms should not only take into account and meet the requirements of stakeholders to ensure that their business activities maximize benefits for all parties but also strive for profits while maintaining positive relationships with society, the environment, and other relevant parties. Companies and investors increasingly consider ESG factors in their decision-making, particularly in the face of adverse conditions such as environmental degradation, global health crises, and social issues [2]. Investors with a long-term investment horizon believe non-financial information on ESG issues is essential for building a sustainable global economy [3].

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ESG refers to a philosophy theory that prioritizes socially responsible practices over financial performance. It is centered on sustainable development [4]. Currently, ESG and sustainable development are widely accepted as global priorities. ESG concepts align with traditional Chinese ethics, promoting a balanced relationship between companies, nature, and society [5]. The Governance Code in China, issued in June 2018, mandates the disclosure of ESG information by listed companies. As ESG information disclosure develops, listed companies increasingly focus on clarifying ESG objectives in their business strategies. However, CSR reports provided by companies themselves exhibit a disclosure bias [6]. This paper will use third-party organizations' rating results to obtain more objective conclusions.

ESG rating is an important evaluation of a company or financial product's sustainability and social responsibility. The global ESG industry is rapidly developing, so the link of ESG ratings to financial performance has been a mature theme for academic papers. There is so much research that aims to explore the relationship between these two parts. Most researchers have used return on assets as measures of financial performance. Others have used Tobin's Q to check the link. After researching over 2,000 papers, Fried et al. concluded that almost 90% of the research demonstrated a favorable link between ESG and financial outcomes [7]. Although the initial results suggest a favourable link between ESG factors and financial outcomes, there is still no unanimous agreement on this matter.

Regulated by numerous green finance policies, China's 'dual-carbon' strategic goal has enabled it to become increasingly important and unique in the world's sustainable development process and the construction of Chinese-style modernization. As a result, an increasing amount of research is being conducted on how ESG factors correlate with the financial results of companies listed in China. [5]. Zhao et al. discovered that improved ESG performance somewhat positively influences the profitability of companies listed in China [8]. Similarly, Yu et al. found the link between ESG and Tobin's Q is relatively positive, suggesting that elevated ESG ratings are conducive to the enduring viability of a company [9]. Therefore, the company's shift from profit maximization to corporate social responsibility (CSR) helps to improve its social impact, reduce resource waste and environmental risks, and lay the foundation for achieving a competitive strength in the financial market and long-term healthy development [10].

Research examining the link between ESG and financial performance has centered on developed nations, while China has received comparatively less scrutiny. This paper is based on the existing literature by conducting extensive data collection to check the link. This paper used A-share listed companies in China as a sample, which aims to investigate the link of ESG to the financial performance of companies. Due to the different levels of ESG ratings, this paper will screen companies of each different level for the study. It is hypothesized that higher ESG may have a favorable effect.

Hypothesis 1 (H1): A substantial link exists between ESG's three elements and financial performance (specifically, the profitability or value).

2. Methodology

This section provides a brief description of data collection, described by a definition of the variables used. The research employs models to check the link between ESG components and financial indicators: One is the return on assets, and the other is Tobin's Q.

2.1. Data Selection

This paper used A-share listed companies in China between 2018-2022 as sample data, which resulted in a total of 2,030-panel data points from 406 listed companies. ESG data is obtained from CSI's ESG ratings (also called Huazheng ESG Rating), while all other financial data is obtained from Oriental

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Wealth and the National Statistics Office. The following variables are manually calculated from the selected companies' financial information: return on assets, Tobin's Q, debt level, firm size, and firm age. Data processing and model estimation were conducted using Excel and Stata17.

2.2. Variable Construction

2.2.1. Indicators of Financial Performance

For an accurate assessment and presentation of financial performance, the selection of appropriate financial indicators is of crucial importance. Return on assets (ROA) serves as a crucial metric of financial performance, gauging a company's profitability and indicating the effectiveness with which company management deploys and employs its resources. [11]. In general, a high ROA is an indication of the effective use of assets by a company's management to generate more revenue. Additionally, another indicator, Tobin's Q measures, calculates the proportion of a company's market valuation to its assets' replacement cost. Assessing the value of a specific company's assets is commonly used to be measured nowadays [12]. Therefore, this paper selected ROA and Tobin's Q as the primary variables indicators to gauge the financial performance of a company. These indicators offer a holistic point of whether the financial health of a company is good so that the company can facilitate the examination of ESG's effects.

2.2.2. Indicators of ESG

This paper employs the ESG rating framework created by CSI to assess ESG performance. The system includes an overall rating for ESG and separate ratings for environmental, social, and regulatory aspects. For statistical convenience, this paper divides the ratings into nine grades. The ESG ratings are ranged from AAA to C, while AAA is the highest and C is the lowest. For statistical convenience, this paper divides the ratings into nine grades. For example, an ESG rating of AAA corresponds to an ESG score of 9; an AA rating equates to an ESG score of 8; an A rating translates to a score of 7, continuing down to a C rating, which aligns with an ESG score of 1. Regarding ESG assessments, higher ESG scores denote superior ESG practices, whereas lower scores reflect subpar ESG performance. This study utilizes the annual average ESG scores to evaluate corporate ESG performance, thereby reinforcing the reliability of the findings.

2.2.3. Control Variables

Considering the additional factors that may influence the empirical outcomes, this study selects three indicators to serve as control variables: company size, debt level, and company age. These are vital for a company's performance because they are necessary for the financial process. Table 1 lists the type, variables, symbol, and definition.

Table 1: The definition of variables.

Type	Variable	Symbol	Variable Definition
Dependent	Return on Assets	ROA	Net profits over total assets
	Tobin's Q	TQ	Total market value of the company over the replacement cost of assets
Independent	ESG	ESG	According to ESG rating 'AAA -C', 9-grade rating are assigned to 9 – 1.
	Environment Score	ENV	According to ESG rating 'AAA -C', 9-grade rating are assigned to 9 – 1.

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Table 1: (continued).

	Social Score	SOC	According to ESG rating 'AAA -C', 9-grade rating are assigned to 9 – 1.
	Governance Score	GOV	According to ESG rating 'AAA -C', 9-grade rating are assigned to 9 – 1.
Control	Company size	SIZE	Log of total assets
	Debt level	DEBT	Total assets divided by total liabilities
	Company age	AGE	Current Year – Established Year + 1

2.3. Modeling

The impact of ESG on financial outcomes of a company was evaluated using distinct models because the independent variables of ESG components are relative. Thus, equations were derived as follows:

$$ROA_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 DEBT_{i,t} + \alpha_5 AGE_{i,t} + \varepsilon \quad (1)$$

$$ROA_{i,t} = \alpha_0 + \alpha_1 EVN_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 DEBT_{i,t} + \alpha_5 AGE_{i,t} + \varepsilon \quad (2)$$

$$ROA_{i,t} = \alpha_0 + \alpha_1 SOC_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 DEBT_{i,t} + \alpha_5 AGE_{i,t} + \varepsilon \quad (3)$$

$$ROA_{i,t} = \alpha_0 + \alpha_1 GOV_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 DEBT_{i,t} + \alpha_5 AGE_{i,t} + \varepsilon \quad (4)$$

Where $ROA_{i,t}$ is the dependent variable, $ESG_{i,t}$, $EVN_{i,t}$, $SOC_{i,t}$ and $GOV_{i,t}$ are the independent variables, $SIZE_{i,t}$, $DEBT_{i,t}$ and $AGE_{i,t}$ are the control variables, ε is the residual factor.

2.4. Robustness Check

For the robustness test, Tobin's Q (TQ) was selected as another indicator as original dependent variable, instead of ROA, and the following equation was constructed.

$$TQ_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 DEBT_{i,t} + \alpha_5 AGE_{i,t} + \varepsilon \quad (5)$$

$$TQ_{i,t} = \alpha_0 + \alpha_1 EVN_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 DEBT_{i,t} + \alpha_5 AGE_{i,t} + \varepsilon \quad (6)$$

$$TQ_{i,t} = \alpha_0 + \alpha_1 SOC_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 DEBT_{i,t} + \alpha_5 AGE_{i,t} + \varepsilon \quad (7)$$

$$TQ_{i,t} = \alpha_0 + \alpha_1 GOV_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 DEBT_{i,t} + \alpha_5 AGE_{i,t} + \varepsilon \quad (8)$$

Where $TQ_{i,t}$ is the dependent variable, $ESG_{i,t}$, $EVN_{i,t}$, $SOC_{i,t}$ and $GOV_{i,t}$ are the independent variables, $SIZE_{i,t}$, $DEBT_{i,t}$ and $AGE_{i,t}$ are the control variables, and ε is the residual factor.

3. Empirical Results

3.1. Descriptive Statistics

The descriptive statistics in Table 2 for dependent variables concerning financial performance (ROA and TQ), alongside the independent variables such as ESG, environment, social, and governance, and the control variables of company size, debt level, and company age.

The mean value of ROA is 5.305, ranging from -12.784 to 22.592. The standard deviation of ROA is 6.547, indicating significant variation in return on assets across companies. Generally, a higher

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return on assets indicates greater efficiency in generating profits. An ROA of 5% or more is typically considered ideal. Based on this dataset, it appears that most companies can generate profits, as the mean value ROA is 5.305%. The mean value of TQ is 0.346, ranging from 0.000 to 3.978. And the standard deviation of TQ is 0.307. A TQ value greater than 1 indicates that investors believe a company's investment projects can create more value than their costs, making the company a profitable investment opportunity and the stock overvalued. This study suggests that a few companies may be overestimated, as most TQs are below 1.

The ESG performance of listed companies varies greatly, with a mean of 4.786 and a median of 4. In contrast, their environmental responsibility and performance have more significant differences, with a mean of 3.643 and a median of 3.5. The mean for the social is 5.964, with a median of 4.5, ranging from 1 to 8. The dataset indicates that the majority of companies' social performance scores are fundamental, lying between 3 and 8, as suggested by the median of 4.5. For GOV, the mean and median are 5.857 and 5.5, respectively, with the scores spanning from a low of 4 to a high of 8. This suggests that the governance of listed companies is generally better and that the difference in governance performance between companies is less pronounced than in the other two dimensions. Regarding the control variables, the mean values for size, debt grade, and firm age are 2.447, 2.531, and 22.643, respectively. Notably, the debt grade appears to be reasonable for most companies in the dataset.

Table 2: Summary statistics.

Variable	N	Mean	Median	S.D.	Min.	Max.
ROA	2030	5.305	4.537	6.547	-12.784	22.592
TQ	2030	0.346	0.331	0.307	0.000	3.978
ESG	2030	4.786	4.000	1.515	2	8
EVN	2030	3.643	3.500	2.118	1	8
SOC	2030	5.964	4.500	1.154	3	8
GOV	2030	5.857	5.500	1.192	4	8
SIZE	2030	2.447	2.301	1.143	0.246	4.997
DEBT	2030	2.531	2.624	0.250	0.045	4.922
AGE	2030	22.643	21.000	6.337	10	36

Table 3 explains the correlation matrix outcomes for all selected variables among the research process. It was observed that the ESG scores have a high degree of correlation, which aligns with expectations since the study utilizes distinct ESG, ENV, SOC, and GOV scores from the CSI. To tackle the correlation problem, the research implements distinct models for each component of ESG. Furthermore, the correlation matrix reveals a notable relationship between ROA and TQ. There's also a mild connection between all ESG scores and company size. Importantly, there is a positive correlation ($\beta = 0.1460$, $p < 0.01$) between ROA and ESG. Conversely, a notable negative correlation ($\beta = -0.1641$, $p < 0.01$) is observed between TQ and ESG. The above correlation findings also fully support the condition that TQ can be adopted as a robustness test in this paper. Meanwhile, it supports the preliminary judgment of this paper that both ROA and TQ are correlated with ESG.

Table 3: Correlation matrix.

Var.	ROA	TQ	ESG	EVN	SOC	GOV	SIZE	DEBT	AGE
ROA	1.000								
TQ	0.338***	1.000							
ESG	0.146***	-0.164***	1.000						

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Table 3: (continued).

EVN	0.032	-0.104***	0.056***	1.000					
SOC	0.166	-0.087	0.069***	0.055***	1.000				
GOV	0.048***	-0.090	0.086***	0.050***	0.005***	1.000			
SIZE	-0.221***	-0.020***	0.040***	0.071	0.045***	0.029	1.000		
DEBT	-0.005***	-0.050***	-0.168	0.033	0.086	-0.002	0.004***	1.000	
AGE	-0.116***	0.322***	-0.007	0.190	0.006	-0.040	0.002***	0.038***	1.000

3.2. Regression Results

In Table 4, the regression outcomes show the link of independent variables, control variables, and the dependent variable ROA. Hypothesis H1 posits that enhanced ESG contributes to strengthening the financial performance of the company. The findings corroborate H1, revealing that ESG performance exerts a favorable impact on ROA ($\alpha = 0.684$, $p < 0.01$). This suggests superior ESG is associated with improved financial performance. The influence of ESG on profitability stands at 0.684, approximately 1.3 times greater than the effects of the individual scores for ENV, SOC, and GOV. Furthermore, the research finds that ESG demonstrates a strongly positive and statistically significant relationship with ROA.

Table 4: Regression results.

	(1)	(2)	(3)	(4)
ESG	0.684***			
	(0.036)			
ENV		0.438***		
		(0.054)		
SOC			0.532***	
			(0.039)	
GOV				0.637***
				(0.025)
SIZE	1.704***	2.031***	1.076***	0.065***
	(0.048)	(0.051)	(0.231)	(0.187)
DEBT	-3.977***	-2.081***	-3.785***	1.962***
	(0.100)	(0.114)	(0.106)	(0.097)
AGE	-0.483***	-0.381	0.076	0.374
	(0.276)	(0.341)	(0.726)	(0.428)
Cons.	21.24***	18.67***	19.49***	21.34***
	(1.334)	(2.387)	(1.990)	(1.149)
N	2030	2030	2030	2030
R^2	0.4708	0.3591	0.3489	0.4108

Note: *p<0.1, **p<0.05, ***p<0.01.

3.3. Robustness Check

Table 5 details the outcomes from the robustness check analysis, focusing on the link between independent variables, control variables, and the dependent variable TQ. The data shows that ESG performance significantly and positively influences TQ ($\alpha = 0.014$, $p < 0.01$), showing that higher ESG correlates with enhanced firm value. This finding aligns with the primary regression results, reinforcing the robustness and consistency of the outcomes.

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Table 5: Robustness check.

	(1)	(2)	(3)	(4)
ESG	0.014***			
	(0.026)			
ENV		0.028		
		(0.026)		
SOC			0.037***	
			(0.026)	
GOV				0.187***
				(0.026)
SIZE	-0.574***	-0.638***	-0.576***	-0.395***
	(0.068)	(0.071)	(0.067)	(0.087)
DEBT	-1.942***	-1.481***	-1.715***	-1.960***
	(0.228)	(0.114)	(0.126)	(0.217)
AGE	-3.183***	-2.583	-3.016	3.078
	(2.176)	(1.817)	(1.950)	(2.092)
Cons.	18.24***	19.61***	15.99***	19.64***
	(1.731)	(2.302)	(2.491)	(3.004)
N	2030	2030	2030	2030
R^2	0.2781	0.2521	0.1482	0.3172

Note: *p<0.1, **p<0.05, ***p<0.01.

4. Conclusion

ESG is a pivotal element in corporate sustainability and a crucial measure of corporate social responsibility. This paper checks the link between ESG and the financial performance of corporations, utilizing data from 406 listed companies in China between 2018-2022. The key finding of this research is that a higher level of ESG positively impacts financial performance. The paper finds that the correlation is significantly positive by conducting the models. The individual components of ESG, environment, society, and governance, demonstrated positive correlations with financial performance. The research suggests that the absence of a significant link between environmental factors and value might stem from the lower responsiveness of environmental indicators to firm value creation. This study provides insights for corporate managers on the importance of ESG for corporate development and for the government on the practical implications of supporting ESG development. Therefore, companies should actively participate in ESG practices to enhance their sustainability. The government should also vigorously develop the implementation of ESG policies to improve overall social sustainability.

The research in this paper has limitations and requires more in-depth study in the future. For example, the impact of ESG indicators can be analyzed for specific industries in the future. Meanwhile, the data set collected in this paper is a selection of A-share listed companies in China. In the future, unlisted companies and SMEs can be used as research objects to explore the influence of the three components of ESG on companies.

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