

# Study on the impact of ESG performance on firm performance

Jiaxin Tao<sup>1,\*</sup>

<sup>1</sup> School of Economics, Wuhan University of Technology, Wuhan, Hubei 430070, China

**Abstract**-In order to accelerate the achievement of the carbon peaking and carbon neutrality goals and to comply with the trend that China's economic development is increasingly focused on quality, it is significant for enterprises to achieve sustainable development. Using a panel model, this paper empirically analyzes the relationship between firm performance and its ESG performance using listed companies in the Shanghai and Shenzhen A-share markets from 2012-2021 as a research sample, and discusses the differences according to the industries which the companies are in. The analysis results show that enterprise ESG performance has a significant positive impact on its firm performance, and the better the ESG performance of a company, the higher the firm performance. The heterogeneity analysis reveals that this significant positive relationship only exists in manufacturing firms, but not in non-manufacturing firms.

## 1. Introduction

With the rapid development of Chinese society and economy, China is paying more and more attention to the quality of development. In 2006, the concept of ESG (Environment, Social, Governance) was officially introduced by the United Nations Principles for Responsible Investment, to measure corporate sustainability and its impact on social value from three perspectives: environmental, social and corporate governance. Compared with foreign countries, ESG in China started late. In the current context, studying the impact of firm ESG performance on firm performance is beneficial to improving corporate sustainability and maintain benign and high-quality development, which is of great significance to China's high-quality economic development and improving China's ESG evaluation system. Therefore, this paper takes ESG performance and firm performance of listed enterprises as the research object, explores the relationship between firm ESG performance and firm performance on the basis of stakeholder theory and resource dependence theory, and analyzes whether the impact of ESG performance on firm performance differs between manufacturing and non-manufacturing industries through heterogeneity test, with a view to establishing a more complete ESG disclosure system and a more sound ESG disclosure standards.

## 2. Literature Review

ESG related studies have been discussed for almost three decades, but fewer studies have been conducted on the relationship between ESG performance and corporate performance, and no uniform conclusions have been drawn yet. Gunnaretal (2015) showed that there is a

non-negative relationship between all three single dimensions of ESG, i.e., environment, social responsibility and corporate governance, and corporate performance<sup>[1]</sup>; Chelawatetal (2016) used an Indian listed companies as a sample study found a positive relationship between ESG performance and corporate performance, i.e., good ESG performance is beneficial to improve corporate performance<sup>[2]</sup>. Li Jinglin et al. (2021), using a sample of all Shanghai and Shenzhen A-share main board listed companies, showed that corporate ESG performance and its three dimensions have a positive impact on corporate performance, and demonstrated that good ESG performance can promote higher levels of corporate innovation and thus improve corporate performance<sup>[3]</sup>. However, there are also opposite findings, Duque-Grisales et al (2021) showed that ESG performance has no effect on firm performance, and even has a negative effect, i.e., better ESG performance does not improve firm performance and even makes firm performance lower. Domestic research on ESG started late, and most of the existing domestic literature takes ESG as an overall concept, studying how to improve ESG disclosure system and the impact of ESG performance on enterprise value. Fewer studies have been conducted on the relationship between ESG performance and corporate performance. Linlin Wang et al. (2022) found that corporate ESG performance has a positive effect on corporate value using a sample of all A-share listed companies<sup>[4]</sup>, and Guanghua Xu (2022) reached the same conclusion using manufacturing industries among all A-share listed companies. Yu and Wu (2014), on the other hand, point out that CSR and corporate governance levels have a significant negative impact on corporate value in the current period, but promote corporate value in the long run<sup>[5]</sup>.

\*Email: lumos0205@163.com

### 3. Study Design

#### 3.1 Data sources

This paper selects the listed companies with ESG ratings in Shanghai and Shenzhen A-share markets from 2012-2021 as the research sample. In order to improve the representativeness of the sample, the initial data obtained were processed as follows: excluding financial listed companies, excluding companies with missing main financial data, excluding listed companies that were ST, \*ST during the sample period, and this paper obtains 17370 data. At the same time, Excel was used to organize the data and VLOOKUP function was applied to match the data. Other financial data were obtained from Guotai Junan database. The processing and econometric analysis of the research data in this paper were done by Excel and Stata17.0.

#### 3.2 Description of variables

##### 3.2.1 Explanatory variables

The explanatory variable of this paper is firm performance. There is no consensus on the measurement of firm performance in academia at present. Referring to the previous studies, EVA is the most suitable performance evaluation index from the perspective of shareholders' equity (Renjun Zhou, 2005); BSC is the most suitable from the perspective of stakeholder value maximization; based on this, some scholars suggest that combining BSC and EVA is more in line with the multivariate evaluation system<sup>[6]</sup>; some scholars also believe that the most commonly used index to measure corporate performance is corporate profitability indicators, including the two indicators of return on total assets ROA and return on net assets ROE, so the two indicators are used together to measure corporate performance (Ye, Chen-Gang, 2016)<sup>[7]</sup>; some other scholars believe that the capital market is highly speculative and a more objective accounting indicator should be chosen to measure corporate performance with return on total assets ROA (Wu, Kang-Min, 2022)<sup>[8]</sup>. Based on the study of existing literature, this paper selects ROA as an indicator to measure corporate performance<sup>[9]</sup>. Meanwhile, ROA is a positive indicator, i.e., the larger the ROA, the better the corporate performance.

##### 3.2.2 Explanatory variables

The explanatory variables in this paper are ESG performance (ESG), which assesses the sustainability of corporate operations and the impact on social values from three dimensions: environmental, social and corporate governance. Based on the core connotation and development characteristics of ESG, and within the internationally recognized ESG evaluation framework, and taking into account Chinese characteristics and specific practical experience, CSI ESG Rating builds a

four-level indicator system from top to bottom. The ESG rating of China Securities is divided into 9 grades from low to high, namely C, CC, CCC, B, BB, BBB, A, AA, AAA, and the ESG performance levels of the nine grades are assigned as 1, 2, 3, 4, 5, 6, 7, 8, 9.

##### 3.2.3 Control variables

With reference to the results of previous studies, the following indicators are selected as control variables in this paper: gearing ratio (LEV), asset size (SIZE), years of listing (Time), equity concentration as control variables (TOP10), cash ratio (CASH), fixed asset ratio (PPE), and intangible asset ratio (INTAN). The variables in this paper are defined as shown in the table below.<sup>[10]</sup>

**Table 1** Variable description table

Variable type	Variable name	Variable code	Variable definition
Explanatory Variable	Corporate Performance	ROA	Return on Total Assets, Annual Net Income / Annual Average Balance of Total Assets.
Explanatory Variable	ESG Performance	ESG	China Securities ESG Rating
Control variable	Enterprise size	SIZE	Natural logarithm of total assets
	Gearing ratio	LEV	Total liabilities / total assets
	Shareholding ratio of top 10 shareholders	TOP10	Shares held by top 10 shareholders / total shares
	Time	Time	ln(current year - year of listing + 1)
	Cash ratio	CASH	(net cash flow from operating activities)/(total assets) ending balance
	Fixed Assets Ratio	PPE	Net Fixed Assets/Total Assets
	Intangible assets ratio	INTAN	Net intangible assets/total assets

#### 3.3 Model construction

In order to test the impact of ESG performance on enterprise value, the following econometric model is developed in this paper:

$$ROA_{i,t} = \alpha_i + \beta ESG_{i,t} + \sum \gamma_k X_{k,i,t} + \lambda_i + \eta_t + \varepsilon_{i,t}$$

where i and t denote different individual listed companies and years, respectively, the explanatory variable ROA denotes corporate performance, and the explanatory variable ESG denotes corporate ESG performance. X represents the control variables, and according to the relevant literature, the following control variables are selected in this paper: SIZE denotes corporate size, LEV denotes corporate gearing, TOP10 denotes the shareholding ratio of the top ten shareholders of a company, representing equity concentration, Time denotes the age of firm going public, CASH denotes cash ratio, PPE denotes fixed asset ratio, and INTAN denotes intangible asset ratio,  $\lambda_i$  denotes firm fixed,  $\eta_t$

denotes year fixed, and  $\varepsilon_{it}$  is a random disturbance term that varies with individuals and years.

INTAN	17370	0.049	0.034	0.066	0	0.938
Time	17020	2.439	2.565	0.657	0	3.466

## 4. Empirical Results and Analysis

### 4.1 Descriptive statistical analysis

Table 2 shows the results of the descriptive statistical analysis, in which: the mean and median of the variables have a small difference, which shows that the sample is basically normally distributed. The mean value of ESG is 4.129, and the standard deviation is 1.139, which means that there is a big difference in ESG performance among different enterprises, and the overall level of ESG is low, and the enterprise ESG performance needs to be strengthened. ESG performance needs to be strengthened. The mean value of enterprise size is 9.775, and the standard deviation is 0.6, which shows that the size difference of sample enterprises is relatively small. The mean value of the shareholding ratio of the top ten shareholders is 41.787%, which means that the top ten shareholders in the sample enterprises occupy a very important position in the enterprises, which shows that the concentration of the enterprises' shareholding is relatively high.

**Table 2** Descriptive statistical analysis

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
ROA	17370	0.033	0.032	0.126	-4.782	7.446
ESG	17370	4.129	4	1.139	1	8
LEV	17370	0.447	0.441	0.228	0.008	8.256
SIZE	17370	9.775	9.697	0.6	6.489	12.437
TOP10	17361	41.787	41.956	20.569	0.465	101.16
CASH	17370	0.048	0.046	0.084	-4.27	2.222
PPE	17370	0.224	0.187	0.171	0	0.954

### 4.2 Baseline regression analysis

In order to analyze the impact of corporate ESG performance on corporate performance, the model is estimated by panel benchmark regression, and the test results are shown in Table 3. The results show that the ESG coefficient is positive and significant at the 1% level when analyzing the impact of ESG performance on corporate performance, which indicates that ESG performance is positively correlated with corporate performance, i.e., the improvement of ESG performance is beneficial to the improvement of corporate performance. Since the introduction of the dual carbon goal in recent years, the capital market has also placed more emphasis on factors such as corporate social responsibility, environmental protection and internal governance. Therefore, companies with better ESG performance are more likely to be favored by investors, thus increasing corporate value, and higher corporate value is more likely to lead to better corporate performance. In addition, among the control variables, the coefficient of Time is significantly negative, which indicates that most of the companies are in the growth stage at the beginning of their IPO, and there is still a lot of room for market development, so the earnings are more volatile, and thus present as better corporate performance. The coefficient of LEV is also significantly negative at the 1% level, indicating that the higher the gearing ratio, the lower the firm's performance. Firm size has a significant positive effect on firm performance at the 1% level, i.e., the larger the size of the firm, the more total assets the firm has, and the better the firm's performance.

**Table 3** Baseline regression results

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
ESG	0.583*** (0.154)	0.652*** (0.101)	0.67*** (0.099)	0.59*** (0.099)	0.571*** (0.099)	0.566*** (0.099)	0.265*** (0.102)	0.263*** (0.102)
Time		-3.376*** (0.352)	-3.442*** (0.336)	-3.828** (0.356)	-3.376** (0.359)	-3.305*** (0.358)	-0.649 (0.415)	-0.905** (0.419)
CASH			20.875*** (2.08)	21.011*** (2.065)	21.733*** (2.048)	21.815*** (2.045)	18.808*** (1.765)	18.835*** (1.762)
SIZE				3.159*** (0.53)	2.545*** (0.534)	2.516*** (0.536)	6.78*** (0.733)	6.861*** (0.744)
PPE					-10.06*** (1.061)	-10.098** *	-7.645*** (1.009)	-7.696*** (1.009)
INTAN						-9.145*** (2.735)	-10.19*** (2.966)	-10.165** * (2.966)
LEV							-23.156** * (2.241)	-23.258** * (2.252)
TOP10								0.016*** (0.006)
Individual fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
cons	1.961*** (.673)	8.043*** (.76)	7.088*** (.757)	-22.003*** (4.899)	-14.68*** (4.94)	-14.07*** (4.953)	-49.411** * (6.431)	-50.162** * (6.523)
N	17370	17020	17020	17020	17020	17020	17020	17018
F	13.240	26.528	37.050	34.097	35.759	33.527	37.169	35.755
R <sup>2</sup>	0.005	0.028	0.066	0.071	0.082	0.084	0.182	0.183

P.S.\*, \*\*, \*\*\* are 10%, 5%, 1% significance levels, respectively, and the values in parentheses indicate robust standard errors.

### 4.3 Industry heterogeneity analysis

Industry heterogeneity of enterprises has an important impact on ESG performance, and enterprises in different industries have different impacts on society and the environment. Environmental governance is an important part of ESG performance, and the impact on the environment and the practices of environmental governance vary greatly among companies in different industries. Therefore, in this paper, the regressions are divided into manufacturing and non-manufacturing industries, and the following results are obtained. As can be seen from Table 4, ESG performance of manufacturing firms has a significant positive effect on firm performance (significant at the 1% level), while ESG performance of non-manufacturing firms does not have a significant effect on firm performance. This may be due to the fact that the manufacturing industry has a much greater impact on the environment than the non-manufacturing industry, and at the same time, China is currently encouraging sustainable development and actively implementing the double carbon target, which leads to the manufacturing industry being more sensitive to the environment in the current context, and stakeholders and the public are more concerned about the social responsibility of manufacturing companies and more sensitive to the positive signals of manufacturing companies. Therefore, the ESG performance of enterprises will have a more significant effect on the enhancement of corporate value and performance, and good ESG performance will be more easily translated into economic benefits.

**Table 4** Industry heterogeneity regression results

Variables	Manufacturing		Non-manufacturing	
ESG	0.003*** (0.001)	0.007*** (0.001)	0.002 (.002)	0.002 (0.003)
Constants	-0.481*** (0.07)	0.016*** (0.004)	-0.531*** (0.129)	0.033** (0.014)
Control variables	Yes	No	Yes	No
N	10639	10644	6379	6726
F	32.649	13.491	16.405	11.004
R <sup>2</sup>	0.227	0.019	0.180	0.004

P.S.\*, \*\*, \*\*\*\* are 10%, 5%, 1% significance levels, respectively, and the values in parentheses indicate robust standard errors.

### 5. Conclusions and Suggestions

The results of the empirical analysis of this paper show that: (i) ESG performance is significantly and positively related to firm performance, i.e., the better the ESG performance of a firm, the higher the corporate performance. (ii) The moderating effect of industry heterogeneity on the relationship between ESG performance and corporate performance is found that ESG performance has a significant positive effect on corporate performance mainly in the manufacturing industry, but the effect is not significant among non-manufacturing companies.

Based on the findings of this paper, the following recommendations are made: (1) ESG performance should be emphasized in the process of enterprise development, especially in manufacturing enterprises, which must

adhere to sustainability. Research shows that good ESG performance will improve corporate performance, and corporate managers should be fully aware that paying attention to corporate environmental impact, actively taking social responsibility and improving corporate governance are not useless actions that increase corporate costs, but will actually translate into economic benefits and significantly improve corporate performance. (2) Investors should pay proper attention to corporate ESG performance, especially manufacturing companies. Companies with good ESG performance tend to have higher corporate performance, which means higher investment returns, especially institutional investors, who should play a demonstration effect. (3) The government should accelerate the improvement of ESG disclosure system, establish disclosure standards, and build a unified and reasonable evaluation system, as well as reward and punish enterprises accordingly according to their ESG performance. Improving the ESG performance of enterprises is not only consistent with the strategy of China's sustainable development, but also conducive to the realization of the dual carbon goal and the high-quality development of the economy. Therefore, the government should gradually force enterprises to make ESG disclosure and, according to the results, give tax incentives and lower loan interest rates to enterprises with good performance; while enterprises with poor performance can be fined appropriately. In this way, we can motivate our enterprises to improve their ESG performance and ultimately achieve high-quality economic development.

### References

- Gunnar F, BuschT, Bassen A. Journal of Sustainable Finance& Investmen . 5(4) 210 (2015).
- CHELAWAT H., TRIVEDI I V., Asian J. Bus. Ethics, 5(2) ,195(2016).
- Li J L, Yang Z, Chen J et al. Science and Technology Management. 42(09), 71(2021).
- Wang Linlin, Lian Yonghui, Dong Jie. Securities Market Herald. 358(05), 23(2022).
- Yu Xiaohong, Wu Wenjing. Contemporary Economic Research. 225(05), 74(2014).
- Liu Y G, Chen G F. Accounting Research. 239(09), 50(2007).
- Ye, Chen-Gang, Qiu-Li, Zhang-Li-Juan. Audit Research. 190(02), 104(2016).
- Wu Kangmin. Contemporary Manager, 275 (03),39 (2022).
- Ren Zixian, Gu Shuchang, Yang Yuzhu et al., Business and Management, 449(11) ,26(2021).
- Yuan Yehu, Xiong Xiaohan., Jiangxi Social Science, 41(10) ,68(2021).