

An Empirical Research on the Impact of Environmentally Sensitive Enterprises' ESG Performance on Corporate Value

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Keywords: ESG Performance, Corporate Value, Fixed-Effects Model.

Abstract: This paper selects the data of 58 A-share listed power and heat companies in my country from 2015 to 2020 as a sample, and uses a fixed effect model to empirically study the relationship between ESG performance and corporate value of environmentally sensitive companies. The results show that: ESG performance has a significant negative impact on corporate value. The research in this paper helps to clarify the economic impact of ESG performance of environmentally sensitive companies, and leads us to think more about how such companies can better implement social governance practices. At the same time, it has certain reference value for listed companies to attach importance to and improve ESG performance, and for regulatory authorities to strengthen ESG system construction and supervision.

1 INTRODUCTION

It is theoretically believed that high-quality information disclosure will help resolve the information asymmetry between company managers and external capital providers, and also help shareholders and creditors to make reasonable decisions, and strengthen the internal supervision of the company's "operating process". This reduces the uncertainty risk of the enterprise. With the progress of society, the scope of information required by investors is gradually expanding, and the quality of social responsibility indicators has also become a criterion for judging whether a company is worth investing in. ESG performance is a value evaluation concept that integrates the three dimensions of environment, society and governance. It is an extension and enrichment of the concept of green investment and responsible investment. It is also an important standard for the international community to measure the level of green and sustainable development of enterprises.

This paper takes the data of A-share electric and thermal listed companies from 2015 to 2020 as a sample, and empirically analyzes the impact mechanism of each listed company's ESG performance on its corporate value, so as to provide a certain reference for market investors to help investors make value investments and promote

companies to recognize the relationship between ESG and their corporate values, so as to pay attention to their business philosophy and their own sustainable development.

2 THEORETICAL ANALYSIS AND LITERATURE REVIEW

At present, some scholars have done some research on whether there is a correlation between ESG performance and corporate value, and they have reached different conclusions. The question of the relationship between ESG performance and corporate value remains open for further discussion.

Ghoul et al. (2017) found that in areas with imperfect market institutions, ESG performance has a significant positive correlation with firm value. Shi Yichen (2018) found that companies with better ESG performance usually have higher P/B and P/E ratios. Zhang Lin and Zhao Haitao (2019) believe that ESG performance has a significant positive impact on corporate value. He Linglan (2020) took my country's A-share financial industry listed companies from 2014 to 2018 as a research sample, and empirically tested the positive correlation between ESG and corporate value from the dynamic perspective of the enterprise life cycle stage. However, some scholars have put forward different conclusions. Brammer and

Pav-elin (2006) found that companies with better ESG performance have lower corporate value. Sassen et al. (2016) examined the impact of environmental, social and governance factors on corporate risk with a sample of European companies, and found that companies with better ESG performance had lower corporate value. In addition, some scholars have found that there is no significant relationship between ESG performance and corporate value through empirical research by taking listed companies in Malaysia as a sample (Atan et al., 2018).

Different research conclusions from existing studies may be due to differences in countries, policies, data sources, etc., as well as differences in ESG indicator evaluation systems adopted by different scholars. At present, most of the foreign studies take the developed country market as a sample, and there are few studies on China, and the domestic literature on the relationship between ESG comprehensive performance and enterprise value is relatively limited, and the peculiarities of environmentally sensitive companies like electricity and heat have also not been noted in previous research. Therefore, this paper integrates corporate environment, social responsibility and corporate governance, and uses ESG ratings to explore the impact of ESG performance of environmentally sensitive listed companies on their corporate value.

3 RESEARCH DESIGN

3.1 Research Hypothesis

An enterprise is an economic organization for the purpose of profit, and its financial status affects its own development plan. At the same time, in order to achieve their own long-term development, enterprises must also fulfill their social and environmental responsibilities. For this, enterprises in different industries have different practices. Chinese electric power and heat enterprises have their own industry specificity. Under the background of green development and sustainable development, in order to actively undertake social responsibilities, they need to invest more cost than ordinary industries, and it is difficult to predict that such efforts can be transformed into economic effects. Therefore, based on theoretical analysis and the current economic environment, this paper proposes the following hypothesis: The higher ESG performance of environmentally sensitive companies is not conducive to the improvement of corporate value.

3.2 Sample Selection and Data Sources

This paper uses the data of A-share listed electric power and heat companies from 2015 to 2020 as the analysis sample, and collects the data of 83 A-share listed electric power and heat companies for 6 consecutive years, and then excludes the listed companies that were listed by ST during the sample period and companies with missing financial data, and finally obtained the effective observation value of 58 listed companies of electric power and heat. The data of each listed company comes from the CSMAR database. After comprehensively considering the reference value, this paper selects the ESG rating data of China Securities to examine the three aspects of environmental performance (E), social responsibility (S) and corporate governance (G) of listed companies in the sample.

3.3 Model Setting and Variable Definition

3.3.1 Variable Definition

Explained Variable. Tobin's Q is the ratio of the market value of a firm's stock to the firm's total replacement assets. Tobin's Q = (market value of tradable shares at the end of the year + market value of non-tradable shares at the end of the year + market value of net liabilities at the end of the year) / total assets at the end of the year. Value of non-tradable shares = net assets per share × number of non-tradable shares. Net debt market value = total liabilities - employee compensation payable - taxes payable - dividends payable - other payables - deferred tax liabilities. This ratio reflects investors' expectations of the company's future profitability by estimating the company's comprehensive capabilities in terms of operation and profitability in the future, and is a measure of the company's market value.

In order to verify the robustness of the impact of ESG on corporate value, this paper selects the price-to-book ratio of listed companies as the second measure of corporate value (PB value = price per share/net assets per share), and conducts robustness tests on the regression results.

Table 1: Definition of Control Variables.

Variable name	Variable Code	Variable definition	Data Source
Cash to total assets ratio	cf	net cash flow from operating activities/total assets at the end of the year	CSMAR
Asset-liability ratio	lev	total liabilities/total assets	CSMAR
Company growth capability	growth	(total assets at the end of the year - total assets at the beginning of the year)/total assets at the beginning of the year	CSMAR
Equity concentration	top3	sum of shareholding ratios of the top three major shareholders	CSMAR
Return on equity	roe	net profit/average shareholders' equity	CSMAR
Market capitalization	cap	natural logarithm of market capitalization	CSMAR

Table 2: Descriptive Statistics of Variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
Intobinq	348	0.2419	0.4419	-0.2683	3.7565
lnesg	348	1.9546	0.1783	1.0986	2.1972
lncf	348	-2.8677	0.9681	-6.0696	-0.5944
lnlev	348	-0.6514	0.5635	-4.3380	-0.0093
lnTop3	348	-0.6877	0.4516	-5.1765	-0.1207
lncap	348	23.8507	1.2934	21.5219	27.1004
growth	348	0.0899	0.2526	-0.4628	2.7891
roe	348	0.0487	0.1763	-1.8293	0.9831

Explanatory Variable. The core explanatory variables are the ESG evaluation data of China Securities. Huazheng ESG evaluation system is based on the core connotation and development experience of ESG, combined with the actual situation of the domestic market, and builds a three-level indicator system from top to bottom, including 3 first-level indicators, 14 second-level indicators, and 26 third-level indicators. and more than 130 underlying data indicators. Compared with overseas markets, more indicators that are in line with the current domestic development stage have been incorporated.

Control Variables. In terms of control variables, factors such as the company's growth ability and the company's debt ratio will have an impact on the company's value. This paper introduces cash to total assets ratio (cf), asset-liability ratio (lev), company growth capability (growth), equity concentration (top3), return on equity (roe), and market capitalization (cap) as control variables. The main variable names, codes and calculation methods are shown in Table 1.

3.3.2 Model

In order to study the impact of the ESG performance of each listed company in the sample on the enterprise value, according to the variable settings above, the following measurement model is constructed as shown in formula (1).

This model is a static panel model. Among them, β_0 represents individual heterogeneity, and ε_{it} is the perturbation term that varies with individuals and time. In this paper, the panel regression method is used to study the influence of esg on tobinq. In the process of research, in order to exclude the influence of heteroscedasticity, this paper takes the logarithm of some data.

4 EMPIRICAL ANALYSIS

4.1 Descriptive Statistical Analysis of Variables

As shown in Table 2, from the descriptive statistics of the variables, the minimum value of *Intobinq* is -0.2683 and the maximum value is 3.7565, indicating that the value performance of listed companies varies greatly among the observed values, but the difference in the logarithm of the total market value is relatively small. The average ESG score of all samples is about 7.06 ($\ln 7.06 \approx 1.9546$), and the maximum value is 9 ($\ln 9 \approx 2.1972$), indicating that the ESG performance of the listed companies in the sample is generally better. The average logarithm of the enterprise market value is 23.8507, and the size of the sample enterprises is not very different; the logarithm of the enterprise's asset-liability ratio is -0.6514, and the logarithm of the ratio of cash to total assets is -2.8677. The maximum growth rate of enterprises is 278.91%, and the minimum value is -46.28%. The growth ability of different enterprises varies greatly.

$$\ln \text{tobinq}_{it} = \beta_0 + \beta_1 \ln \text{esg}_{it} + \beta_2 \ln \text{cf}_{2t} + \beta_3 \ln \text{lev}_{3t} + \beta_4 \ln \text{Top3}_{4t} + \beta_5 \ln \text{cap}_{5t} + \beta_6 \text{growth}_{6t} + \beta_7 \text{roe}_{7t} + \varepsilon_{it} \quad (1)$$

Table 3: Correlation Analysis.

	Intobinq	lnesg	lncf	lnlev	growth	lnTop3	lnacap
Intobinq	1						
lnesg	-0.266***	1					
lncf	0.283***	-0.047	1				
lnlev	-0.347***	0.208***	-0.241***	1			
growth	0.091*	0.018	0.296***	0.019	1		
lnTop3	-0.413***	0.354***	-0.051	0.328***	-0.033	1	
lnacap	-0.416***	0.408***	-0.342***	0.272***	-0.057	0.423***	1
roe	-0.071	0.157***	0.095*	-0.112**	0.139***	0.188***	0.175***

Table 4: Panel Regression.

VARIABLES	(1) Re	(2) Fe	(3) Robust_Test lnpb
lnesg	-0.2875** (-2.129)	-0.2855** (-2.135)	-0.5715** (-2.013)
lncf	0.1141*** (4.412)	0.0988*** (3.798)	0.1951*** (3.535)
lnlev	-0.2229*** (-4.046)	-0.3495*** (-4.910)	0.1648 (1.091)
lnTop3	-0.4250*** (-6.309)	-0.4815*** (-5.600)	-0.2300 (-1.260)

4.2 Correlation Analysis

In order to test the scientificity and rationality of variable selection, correlation analysis was carried out on the variables. From Table 3, it can be seen that there is a negative correlation between *Intobinq* and *lnesg*; the higher the asset-liability ratio, that is, the higher the financial risk faced by the enterprise, will significantly reduce the enterprise value. The results of correlation analysis between variables show that the variables selected in this paper are appropriate.

4.3 Regression Analysis

Using stata15 for panel regression, a random-effects model and a fixed-effects model were established, as shown in Table 4. The Hausman test was carried out, and the test results were as follows: the test statistic was 69.75, and the corresponding p value was 0.000, which was less than 0.05. Therefore, the fixed effect model was used for regression analysis in this paper.

It can be seen from the fixed effect model in Table 4 that *esg* is significant at the significance level of 0.05, indicating that *esg* has an impact on *tobinq*. Since the coefficient of *lnesg* is less than 0, *esg* has a negative impact on *tobinq*. It can be seen from the model that *esg* increases by 1%, and *tobinq* decreases by 0.2855%.

Incap	0.1043*** (3.261)	0.4878*** (9.121)	0.3507*** (3.089)
growth	-0.1040* (-1.718)	-0.1765*** (-3.167)	-0.0267 (-0.226)
roe	-0.1045 (-1.172)	-0.1617** (-1.974)	-0.9641*** (-5.544)
Constant	-1.7803** (-2.280)	-11.0859*** (-8.586)	-6.2133** (-2.267)
Observations	348	348	348
R-squared		0.333	0.161
Number of id1	58	58	58

*** p<0.01, ** p<0.05, * p<0.1

4.4 Robustness Test

In order to further verify the reliability of the research results and examine the stability of the model, this paper conducts the following robustness test: use the price-to-book ratio (PB value) instead of tobingq to test the model. The results of regression using the fixed effects model are shown in the last column Robust_Test (robustness test model) in Table 4. It can be seen from the test results that the original model is robust, and ESG still has a significant negative impact on enterprise value, indicating that the ESG performance of environmentally sensitive companies is different from other industries, and further attention needs to be paid.

5 CONCLUSIONS

We hope This paper takes 58 A-share listed electric and thermal power companies from 2015 to 2020 as a sample to empirically test the impact of ESG performance of environmentally sensitive listed companies on corporate value. The study found that ESG performance is negatively correlated with corporate value, which is different from the current mainstream views. The reason may be that as green development and sustainable development gradually become the mainstream of social development, the state has imposed stricter environmental regulations on high-polluting companies. In this context, such enterprises carry out business transformation and upgrading, and actively undertake social responsibilities. On the one hand, they have invested more costs than ordinary industries, and on the other hand, stakeholders such as the public and society are not sensitive to the positive signals of such industries, so it is difficult to convert ESG impact effects into economic effects. Based on the research conclusions, this paper puts forward the following suggestions: Enterprises should dialectically look at ESG

performance when carrying out social governance practices, especially environmentally sensitive enterprises should carefully analyze their ESG scores, think deeply about how to better assume social responsibilities and strive to improve themselves The government and other regulatory authorities should strengthen the supervision of the quality of ESG information disclosure, and it is necessary to build a complete ESG indicator system to regulate and guide. However, the research method of this paper cannot fully control other potential biases, and further research is needed on the relationship between corporate social governance practices and corporate value.

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