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AN EMPIRICAL STUDY OF ESG PERFORMANCE AND COMPANY VALUE IN CHINA'S LISTED COMPANIES - THE MEDIATING EFFECT OF INSTITUTIONAL INVESTORS' SHAREHOLDINGS

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Abstract

The objective of this study was to identify the relationship on ESG performance and company value, and the mediating mechanism of institutional investors' shareholdings, and propose recommendations.The relationship between ESG and institutional investors is studied from various perspectives, with some suggesting ESG has a value-creation function. However, ESG practices are resource-consuming, requiring companies to make reasonable trade-offs between socially beneficial and financial benefits (Luo et al., 2023). However, there is still much to investigate and learn about ESG because it is a recent development in China, mainly studied in developed countries.We analyzed data of 3,100 China-listed companies from 2015 to 2022, using institutional investors' shareholding as a mediating variable. Regarding the research results in SSCI and Scopus, selecting the authoritative metrics to collate ESG data via Python and using STATA to analyze the results. Based on collaboration with Malaysian academics, also exploring the cooperation between countries.A positive correlation existed between the company value and ESG performance of listed companies, indicating ESG has a value-creating effect. Investor shareholdings have a mediating effect, and good ESG performance helps increase investor shareholdings, enhancing the company's value. Investors have ESG investment preferences, but place more emphasis on the intrinsic company value, prefer secondary and tertiary industries and non-state listed companies.We suggest future directions and highlight the contributions to the mediating effect of investors' shareholdings on ESG and company value.

Keywords: Listed companies; ESG; Company value; Institutional investors; Mediating effect; Empirical study

1.Introduction

In the development of business operations, companies must assume legal and economic responsibilities and moral and social responsibilities. With the optimization and improvement of the social structure in recent years, the idea of company social responsibility has gradually gained popularity. Analyzing the company's ability to develop and respond to risks from the perspective of ESG is an excellent way to evaluate companies. For companies, ESG is a company governance concept that is more comprehensive and comprehensive[8]. In recent years, whether ESG practice could achieve more value-creating effects has become a hot topic among scholars. Under the particular condition of China, the government market and the public, ESG achieved rapid development, especially for China's previous resource-consuming development mode, which has

extensively promoted the practice and management of ESG performance. It has enhanced the initiative of companies to undertake social responsibility. However, ESG practice is resource-consuming, thus requiring a further balance between and social benefits.

Some scholars have already focused on the relationship between ESG and institutional investors from multiple perspectives [6]. Hermawan's research showed the corporate social responsibility has a positive impact on corporate value and a moderating effect on profitability[5]. Some scholars believe that the performance of a company's ESG is mainly determined by the level of institutional investors' shareholding, showing U-shaped characteristics. Some scholars have also analyzed the impact of investor shareholding on the ESG practice of China's listed companies, stressing that the ESG practice may respond to the required needs and also point out the negative impact of adverse events. To achieve the goal of long-term and sustainable development, many scholars focused on China's securities market[4]. Empirical research has shown a positive correlation between the institutional investor ownership ratio and ESG performance. Institutional investors remain split. The results show that ESG performance is related to stable and independent institutional investors' shareholdings. This proportion positively correlates, suggesting that institutional investors have ESG investment preferences.

2. Theoretical Framework

2.1 ESG and Company Value

Over the past few years, the impact of the company's ESG performance on development and performance has become more and more apparent. The continued increased focus of ESG performance of listed companies by financial institutions, governments, investment bodies and regulators made the ESG performance a key index for information communication and comparison and an effective way to enhance company value. Researches showed the good corporate governance does not directly affect the value of a company, but there is a positive relationship between the two[7]. Usually, the company's ESG performance has an effect of creating value and is approached from two dimensions: (1) Financial dimension. ESG practices help solve the adverse selection problem of companies, which requires managers to have superb management and strategic decision-making abilities, and help companies select excellent managers and form economic effects in ESG practice management [13,15]. ESG practices can save companies' operating costs and actively assume social responsibility, which helps companies gain value recognition from the public and capital market and helps them to implement low-cost financing, and save financial costs. (2) Non-financial dimension: ESG practices can enhance the social reputation of companies, which is an essential resource for companies to create business value, and the active fulfillment of social responsibility by companies can help enhance their effectiveness in dealing with adverse events and realize the improvement of company management resilience. It is highly beneficial for building company brand effect. Through the above analysis, hypothesis 1 is proposed: The ESG performance helps enhance the company value; that is, ESG has a value creation function.

2.2 ESG, Institutional Investor Preference and Company Value

Good ESG performance indicates that the company has a hospital with stable, long-term development, which helps improve the overall value of the company. Moreover, good ESG performance can attract more institutional investors who focus on stable capital operations and asset security, and increase institutional investor participation. Thus, ESG performances act as a market weathervane for investors, transmit positive signals to the outside world, and help companies build good reputations. Based on the above analysis, hypothesis 2 is proposed: Good ESG performance can increase investors' shareholdings and convey positive signals to the market, which positively affects the value of the company. That is, the shareholding ratio of institutional investors has a mediating effect [10].

Companies with high ESG performance generally disclose more comprehensive information and are more transparent. These businesses have great development potential in the long term. They can effectively avoid government policy risks, ineffective investments and excessive investments, which is consistent with the investment preferences of institutional investors. Based on the above analysis, hypothesis 3 is proposed: institutional investors have ESG investing preferences and tolerate short-term performance declines. This means that investors are willing to increase their shares even though the listed company's business performance is temporarily poor under good ESG performance.

3. Mechanism Analysis

3.1 Baseline Model and Mediating Effects Model

A primary model has been established to test the impact of ESG performance on the value of listed companies:

$$InValue_{i,t} = a_1 + \beta_1 \ln ESG_{i,t} + \delta_1 C_{i,t} + \eta_i + \sigma_t + \varepsilon_{i,t}$$

The above equation, $InValue_{i,t}$ indicates the natural logarithm of the company's value, $\ln ESG_{i,t}$ indicates the natural logarithm of the ESG performance of listed companies and $C_{i,t}$ is the whole control variables. This paper controls for differences in the level of indebtedness, management characteristics, and performance of companies through gearing (LEV), company age (Age), return on assets (ROA), company size (Size), sustainable growth rate, equity multiplier (EM) and the number of directors and supervisors (EX) [16].

The primary goal of creating the reference model is to examine the impact of the ESG performance of listed companies on their value. A mediation effect model was also developed to examine the function of institutional investor shareholding in the impact of ESG on company value. Firstly, a linear regression model of the explanatory variables on the mediating variable of investor shareholding was constructed to examine the mechanism by which listed companies' ESG performance affects investor shareholding[2]; secondly, mediating variables of β_2、β_3、γ_3 were added to the benchmark model to determine whether there is a mediating effect with the help of coefficients, and the mediating effect model was set as follows:

$$Hold_{i,t} = a_2 + \beta_2 \ln ESG_{i,t} + \delta_2 C_{i,t} + \eta_i + \sigma_t + \varepsilon_{i,t} \quad (2)$$

$$InValue_{i,t} = a_3 + \beta_3 \ln ESG_{i,t} + \gamma_3 Hold_{i,t} + \delta_3 C_{i,t} + \eta_i + \sigma_t + \varepsilon_{i,t} \quad (3)$$

The above formula, $Hold_{i,t}$ is the percentage of shares held by institutional investors.

3.2 Institutional Investors' Preference Test

First, to determine the business performance of companies, the current return on assets ($ROA_{i,t}$) minus the previous period's value ($ROA_{i,t\text{-}1}$), to obtain the change in return on assets ($CH\_ROA_{i,t}$). $CH\_ROA_{i,t} > 0$, indicating that the business performance of companies is good; second, the proportion of investor shareholding in the period ($Hold_{i,t}$) minus the previous period's value ($Hold_{i,t\text{-}1}$), to obtain the change in the shareholding percentage of investors ($CH\_Hold_{i,t}$). $CH\_Hold_{i,t} > 0$, indicating that investors increase their holdings [17]. The above analysis was tested through a panel logit model, which was set up as follows:

$$I^*_{i,t} = a_4 + \beta_4 \ln ESG_{i,t} + \delta_4 X_{i,t} + \eta_i + \sigma_t + \varepsilon_{i,t} \quad (4)$$

$I_{i,t}$ *=1, An indication of unusual investment behaviour*

$I_{i,t}$ *=0, An indication of normal investment behaviour*

The above equation, $I_{i,t}$ denotes binary logistic variables, $I^*_{i,t}$ variables obtained from $I_{i,t}$ transformation, and $X_{i,t}$ is the quantitative explanatory variables. In the above model, if the ESG performance is optimistic, it indicates that institutional investors have the ESG preferences.

3.3 Data Sources and Descriptive Statistics

Companies listed on the Shanghai Stock Exchange from 2015 to 2022 were selected, with the deletion of the missing data, 3100 companies listed were the sample of the study. ESG data was derived from social responsibility scores released by Hexun and crawled by Python. Binary logical variables of investors' investment behaviour were obtained by calculating the financial data of listed companies. Table 1 provides descriptive statistics on each variable.

Table 1 Descriptive Statistics by Variable

Variables	Sample Size	Mean	Standard deviation	Max	Min
Company Value (InValue)	25495	22.344	1.0743	28.456	19.542
ESG Performance	24543	2.986	0.7523	4.568	-4.345

（lnESG)					
Institutional shareholdings（Hold）	24346	42.344	24.586	101.154	0.001
Company year（lnAge）	24753	2.874	0.3457	1	0
Investment（I）	24794	0.354	0.4752	4.346	1.024
Gearing ratio（LEV）	25021	0.447	1.2345	28.532	14.336
Equity multiplier（EM）	26673	2.336	11.7456	178.53	-0.195
Return on assets（ROA）	24567	0.346	0.1854	10.235	-16.346
Property Ownership（OS）	27632	0.352	0.4765	1557.533	-339.352
Grow（Growth）	26753	0.032	3.4322	1	0
Number of Directors and Supervisors（InEx）	24574	2.754	0.2145	98.4343	-495.432

4. Methodology

4.1 Baseline Model and Mediating Effects Model

The regression results of the benchmark model and the mediating effect model are shown in Table 2. Model (1) is the regression result of the benchmark model, the estimated coefficient of the variable ESG is 0.0234, which is more significant at the 1% level. Indicating that the ESG performance of listed companies, for every 1% rise, the company value will increase by 0.0234%, further proving the good ESG performance of listed companies increases the company value. The ESG has a value creation function, so hypothesis 1 holds [14].

Model (2) is a linear regression model of listed companies' ESG performance on investors' shareholding ratio. The estimation results show that the estimated coefficient of variable ESG is 0.8234 and is significant at the 1% level. Indicating that the rating of listed companies, for each 1% increase, will increase the investor ownership ratio by 0.8243%. Through the addition of mediating variables into the baseline equation model (3), the results show that the estimated coefficient of institutional investor shareholding at the 1% level is positive, and the variable InESG is also positive, indicating that investor shareholding has a mediating effect, so hypothesis 2 holds.

Table 2 Mediating effects and baseline model estimation results

Variables	Model (1)	Model (1) Instrumental Variables Approach	Model (2)	Model (3)
Hold				0.0095
				(0.0006)
InESG	0.0238	0.0148	0.8239	0.0159
	(0.0064)	(0.0038)	(0.1252)	(0.0058)
InAge	-0.0479	-0.1635	-11.7823	0.0626
	(0.0632)	(0.0519)	(2.3008)	(0.0608)
InSize	0.6488	0.6583	5.2463	0.5988
	(0.0165)	(0.0065)	(0.4146)	(0.0157)
LEV	0.0272	0.0345	0.3462	0.0239
	(0.063)	(0.0024)	(0.0788)	(0.0058)
ROA	0.2588	0.4518	2.2318	0.2375
	(0.1104)	(0.0283)	(1.0887)	(0.1028)
InEx	0.0719	0.0761	2.5639	0.0494
	(0.0339)	(0.0238)	(1.0372)	(0.0324)
EM	-0.0004	-0.0005	-0.0094	-0.0003
	(0.0003)	(0.0003)	(0.0047)	(0.0002)
Growth	-0.0037	-0.0019	-0.0461	-0.0033
	(0.0019)	(0.0016)	(0.0473)	(0.0018)
Year fixed effects	Controlled	Controlled	Controlled	Controlled
Individual fixed effects	Controlled	Controlled	Controlled	Controlled
Sample Size	22796	19763	22804	22769
Adj_R^2	62.7%	-	8.52%	65.15%

4.2 Testing the Preference of Institutional Investors

The test of institutional investors' ESG investment preference is shown in Table 3. Analysis of the panel logit model assessment results reveals that the coefficient of the variable InESG assessment is positive at the 1% significance level, indicating that good ESG performance of listed companies increases the probability of abnormal investment behavior by investors. Analysis of the estimation results found that institutional investors have ESG investment preferences and a higher tolerance for companies with better ESG performance.

Table 3 Test of the ESG Investment Preferences of Institutional Investors

Variable	Model （4）	Model （4） Robust
InAge	1.2508	1.2508
	（0.3751）	（0.3633）
InESG	0.1035	0.1034
	（0.0275）	（0.0335）
InSize	-0.0404	-0.0406
	（0.0426）	（0.0427）
LEV	-0.0254	-0.0248
	（0.0615）	（0.0768）
EM	-0.0001	-0.0001
	（0.0011）	（0.0058）
ROA	0.3432	0.3431
	（0.2364）	（0.4796）
InEx	-0.3375	-0.3375
	（0.1678）	（0.1662）
Growth	0.0102	0.0102
	（0.0115）	（0.0119）
Pseudo_R^2	13.85%	13.85%

4.3 Robustness tests

4.3.1 Robust testing of reference and mediator models

Firstly, the explanatory variables have been altered. To prevent the results of the study from being subjectively caused by the explanatory variables, robustness tests were conducted by changing the company value proxies and selecting two alternative indicators: (1) indicators of company value in the database, including the company value indicators described in this paper and the company value excluding cash funds to conduct robustness tests; (2) Tobin Q as a proxy for an company value to conduct robustness tests[11]. This regression analysis is presented in Table 4. From the results, the coefficients of the mediating variables and the main explanatory variables are positive, regardless of whether it is Tobin's Q or the company value with cash capital removed, indicating that the ESG performance of listed companies is good and contributes to enhancing company value.

Table 4 Variation of explanatory variables

Variables	TobinQ		Company Value after Cash Funding Exclusion	
	Model (1)	Model (3)	Model (1)	Model (3)
Hold		0.0096		0.0089
		(0.0006)		(0.0006)
InESG	0.0214	0.0135	0.0258	0.0195
	(0.0068)	(0.0063)	(0.0078)	(0.0075)
Control Variables	Controlled	Controlled	Controlled	Controlled
Sample Size	22796	22769	22259	22234
Adj_R^2	60.62%	63.05%	50.33%	53.38%

Second, the test method has been altered. In order to prevent the results of the random evaluation due to the subjectivity of the test, the Sobel method consists of testing the mediation effect in a robust manner. The results found that the coefficients of the variables ESG of model (1) and model (2) on the variables of investor shareholding and company value were positive at the 1% level. Indicate that the ESG performance of listed companies can positively impact the shareholding ratio of institutional investors and the company's value. This result shows that the proportion of the ESG performance of listed companies relative to the value of the company is 65.89%, whereas the proportion of the effect through investor participation is 34.13%.

4.3.2 Institutional investor preference: excluding alternative hypotheses

To ensure the above robustness results, the model was designed to exclude alternative assumptions [1]. While institutional investors have investment preferences, the coefficient of the ESG variable is positive irrespective of the company's performance. Indicate that institutional investor participation and ESG performance are favourable. This is consistent with the previous hypothesis and results, indicating that the conclusions are sound.

5. Results and Discussion

Based on the nature of the ownership and the sample classification, heterogeneity is also examined in the ESG preferences of institutional investors and ESG value creation function among various listed companies.

5.1 Heterogeneity in the ESG value-creating function

The results show that the ESG value creation function does not show heterogeneity in terms of the nature of ownership, and ESG performance can enhance the value of listed companies to a large extent. The empirical results show that the difference in ESG value creation function between state-owned and non-state-owned companies is insignificant. At this stage of rapid socio-economic

development, the public pays more attention to whether companies can take the initiative to assume social responsibility. ESG scores can quantify the company ESG value and reflect it in the economic value level[12]. By examining the heterogeneity of ESG value creation among different types of listed companies, it was found that the ESG value creation function could be more heterogeneous at the industry level, with the ESG performance of primary industry companies failing to achieve an increase in their company value. However, the difference between companies listed in secondary and tertiary industries is insignificant. Because there are differences in public expectations of listed companies, and China's primary industry is agriculture, forestry, animal husbandry, and fishery, the ESG performance of listed companies in the secondary and tertiary industries affects the company value to a more significant extent than listed companies in the primary industry, which have higher operational risk, more significant environmental impact, and greater profitability.

5.2 Heterogeneous ESG preferences among institutional investors

After substituting the classified samples in the Logit model to carry out the test, the test of institutional investors' preference for ESG investment in listed companies is shown in Table 5. Analysis in Table 5 shows that investor ESG preferences are most pronounced in both secondary and tertiary listed companies and non-state listed companies. This is because institutional investors prefer both stable operations, capital security and company earnings, and secondary and tertiary listed companies have more robust profitability and are more popular with investors, thus showing heterogeneity.

Table 5 Heterogeneity Test of Investors' ESG Preferences

Variables	Property ownership		Ownership		
	State-owned	Non-State-owned	Primary Industries	Secondary Industries	Third Industries
InESG	0.0878 （0.0602）	0.1165 （0.0423）	-0.2024 （0.3203）	0.0826 （0.0386）	0.1592 （0.0668 ）
Sample	24346	24346	24346	24346	24346
Control variables	8623	13532	239	15.754	5946
Individual fixed effects	Controlled	Controlled	Controlled	Controlled	Controlled
Year fixed effects	Controlled	Controlled	Controlled	Controlled	Controlled
Pseudo_R^2	15.665	12.93%	25.84%	13.66%	14.63%

6. Conclusion

This study uses the shareholding ratio of institutional investors as a mediating variable and analyses the data of 3,100 listed companies to study the impact of ESG performance of listed companies on their company value, and also analyses the heterogeneity between ESG value creation and ESG preferences of investment subjects, and draws the following conclusions: (1) Company value of listed companies and ESG performance are positively correlated, indicating that good ESG performance of listed companies can effectively enhance its company value, i.e. ESG has a value-creating effect; (2) There is a mediating effect of investor shareholding, and good ESG performance helps increase investor shareholding, which in turn leads to the enhancement of company value; (3) Investors have ESG investment preferences, pay less attention to target company-level operating performance and pay more attention to intrinsic company value; (4) Regardless of whether the listed companies are non-state-owned or state-owned, the ESG performance has enhanced value for company value, but investors prefer secondary and tertiary industries with non-state listed companies.

As for recommendations, it is essential to develop well-designed and comprehensive ESG frameworks and establish information disclosure and regulatory standards that are suitable for China's domestic conditions. Many ESG information standards abroad are outside China's domestic conditions and are difficult to meet China's requirements for ESG practices. The development of the ESG system is premised on information disclosure standards; unlike the international ESG system, China's ESG system is mainly government-led, and although the state has also issued a series of regulations and rules, however, it is still too general in terms of information disclosure requirements[3]. This requires the government to create high-quality and comparable value information disclosure standards based on the consistency of information disclosure impact and prominence to improve the information disclosure level of listed companies [9].

Secondly, strengthening the information disclosure of listed companies and deepening the ESG value creation potential of listed companies require listed companies to participate in ESG practices on the one hand actively, actively manage ESG performance and disclose relevant information promptly on the other. Make full use of digital technology to create an ESG information disclosure platform, strengthen the dynamics of ESG practice information dissemination, and realize the full exploitation of companies' ESG value creation potential.

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