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Impact of ESG performance and disclosure on firm value

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Abstract: *This paper uses Sino ESG performance measure and Bloomberg ESG disclosure measure to analyze Chinese listed firms in order to investigate the relationship between ESG and firm value. Tobin's Q is used as a dependent variable and ESG score, Environmental score, Social score and Governance score are used as independent variables in our model. The analysis implies that ESG performance scores have a negative and significant impact on firm value and ESG disclosure scores have a positive and significant impact on firm value. These findings suggest that the disclosure is more beneficial than the performance of firms' ESG activities to enhance firm value.*

Keywords: *ESG, performance, disclosure, firm value, Tobin's Q.*

I. INTRODUCTION

With multiple problems such as COVID-19, climate change and economic recession occurring frequently in the last decade, sustainability and low-carbon economy have become the mainstream trend of economic development (Pan, Zhuang, Zheng, Zhu, & Xie, 2022). The growing attention paid to "Environmental, Social and Governance (ESG)" issues has aroused a hit in both practical and academic fields. As early as 1992, relevant United Nations organizations recommended that financial institutions consider ESG performance in their decision-making processes. Previous investors evaluate the listed companies only through financial indicators such as market value, operating income and profitability (Rashid, 2021). Currently, ESG is considered a significant factor in measuring the sustainability of the invested companies or assets (Hübel & Scholz, 2020). Investors can understand their environmental, social and corporate governance contributions more clearly, including how effectively they are driving sustainable development, and to what extent by assessing companies' ESG activities. This approach helps investors more fully assess whether their investment behavior is appropriate and precise.

Firm value measures the total value of a company. Since the concept of ESG was proposed and included as a factor in the valuation of listed companies, the view that ESG activities will affect the firm value has become increasingly intense. Scholars mainly focus on two theoretical bases: stakeholder theory (Freeman, 2010) and shareholder primacy theory (Friedman, 2016). The former insists that ESG activities benefit the enhancement of firm value, while the latter holds the opposite view. The question of how ESG factors may affect firm value has been extensively researched. Most previous scholars used a single ESG measure to study the relationship between ESG and firm value. In this paper, we use two ESG measures, Sino ESG and Bloomberg ESG, to investigate the impact of companies' ESG activities severally. Sino ESG is adpoted to measure ESG performance (Wu, Li, Du, & Li, 2022), while Bloomberg is used to measure ESG disclosure (Yoon, Lee, & Byun, 2018). This paper is structured as follows. Section 2 reviews the literature and develops hypotheses. Section 3 describes our methodology. Section 4 presents the empirical results and analysis. The last section summarizes this paper and gives some suggestions.

II. LITERATURE REVIEW

Much literature has explored the relationship between ESG and firm value based on the following two theories. According to Freeman (2010), stakeholder theory holds that the development of any corporate cannot be separated from the input or participation of all stakeholders, and enterprises pursue the overall interests of stakeholders rather than only the interests of some subjects. Stakeholders of enterprises, including shareholders, employees, creditors, central government, local government, social groups and the natural environment, share the risks of enterprise operation from different angles. Those enterprises that are able to align the interests of all stakeholders are considered sustainable and thus will add firm value. Shareholder primacy theory (Friedman, 2016) puts forward the idea that enterprises should strive to maximize profits and shareholder value instead of using business funds for charitable endeavors. They proposed that such conduct about ESG would increase operating costs and lead to rising prices of products and services, thus affecting the original competitiveness of the company, losing the trust of investors, and ultimately impairing firm value. The two theories above are mutually exclusive. Similarly, the results of the relationship between ESG and firm value are mixed. Whelan, Atz, Van Holt and Clark (2021) assemble more than 1,000 pieces of evidence from studies published between 2015 and 2020 to explore the relationship between ESG and financial performance. In the meta-analysis, they conclude that 58% of studies found a positive correlation between ESG and financial performance, 8% show a negative relationship, 13% indicate a neutral relationship, and the remaining 13% reported mixed results. In conclusion, there is no consensus on the results of existing researches.

Most of the existing papers only focus on one country. They study the relationship between ESG and enterprises from different dimensions and conclude different results. The research on US companies from 2006 to 2011 represents that ESG strengths enhance firm value, while ESG concerns reduce firm value. They conclude that information disclosure moderates the assessment results by mitigating the negative effects of weaknesses and the positive effects of strengths (Fatemi, Glaum, & Kaiser, 2018). Wong, Batten, Mohamed-Arshad, Nordin and Adzis (2021) demonstrate that ESG impacts firm value positively in Malaysian market. Their research studies a sample of Malaysian listed companies that first obtain Bloomberg ESG ratings between 2005 and 2018. The results show that after receiving an ESG rating, the company's cost of capital decreases by an average of 1.2%, while Tobin's Q increases by 31.9%, which indicates a positive relationship between ESG disclosure and firm value in Malaysia. However, the research from Yoon et al. (2018) implies different results. They adopt the Korea Corporate Governance Service (KCGS) ESG score to assess the effectiveness of the CSR assessment and evaluate their impact on firms. Evidence indicates that corporate social responsibility has a stronger positive valuation effect on chaebol conglomerates in Korea, but it is negative or insignificant for ordinary Korean companies. The results from Korea illustrate that this relationship can be mixed.

Many papers investigate the same country but conclude a different relationship between ESG and firm value. Take China as an example. Luo, Guo, Zhong and Wang (2019) use a fixed effects regression model to analyze the data of 842 listed companies in China's heavy pollution industry from 2014 to 2016 in order to find out how the quality of corporate environmental information disclosure affects the debt financial costs. The empirical results show that the quality of corporate environmental information disclosure has a significant negative impact on corporate debt. However, Wu et al. (2022) explore Chinese manufacturing listed companies and draw diametrically opposite conclusions. They use a fixed effects model based on the Hausman test and conclude that ESG has a significant positive relationship with Tobin's Q, indicating that ESG activities can help companies enhance firm value. Therefore, it suggests that the relationship between ESG and firm value will also be distinct in diverse industries.

There are many previous multinational studies as well. Garcia, Mendes-Da-Silva and Orsato (2017) use the linear regression database with the Thomson Reuters Eikon data panel of 365 listed firms in sensitive industries from Brazil, Russia, India, China and South Africa (the so-called BRICS countries), covering the period between 2010 and 2012 when analyzing the impact of ESG disclosure on financial performance. The results demonstrate financial performance improves as environmental performance improves. Garcia and Orsato (2020) investigate 2165 companies across emerging and developed countries from 2007 to 2014. The results suggest that ESG performance is significantly negative with financial performance in emerging countries.

Based on the above literature, a number of papers suggest a positive relationship between ESG and firm value. However, there are also many negative and mixed results. We expect that ESG performance and ESG disclosure will have an impact on firm value respectively. Hence, we formulate the following hypotheses:

H1a. ESG performance scores have a positive and significant impact on firm value.

H1b. ESG performance scores have a negative and significant impact on firm value.

H2a. ESG disclosure scores have a positive and significant impact on firm value.

H2b. ESG disclosure scores have a negative and significant impact on firm value.

Figure 1 shows the conceptual framework

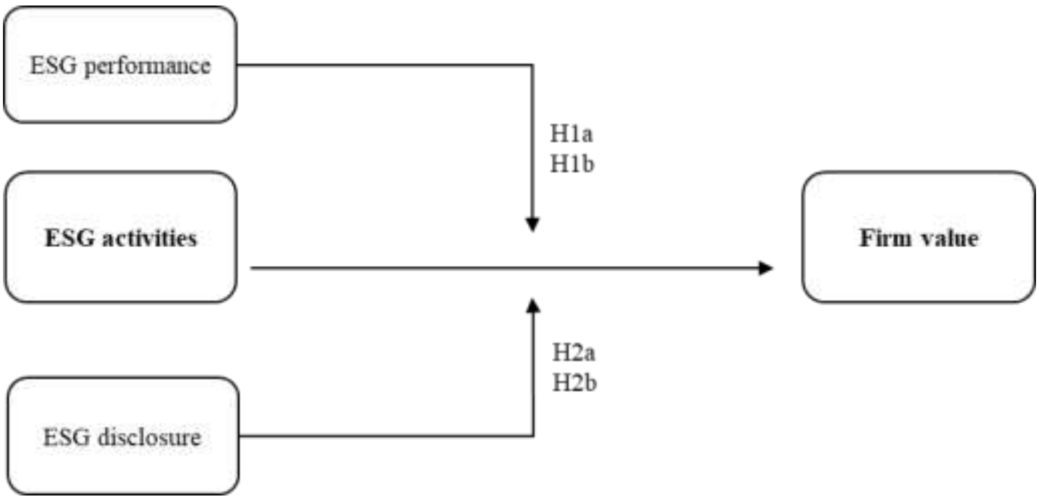

Figure 1. Conceptual framework

III. METHODOLOGY

3.1 Sample selection and data sources

In this paper, we utilize three databases: China Stock Market and Accounting Research Database (CSMAR), Sino Security ESG Database, and Bloomberg Database. Firstly, CSMAR database provides comprehensive accounting data and stock pricing data on Chinese listed companies since 1990. Sino security ESG database provides ESG ratings for all Chinese listed firms since 2009, and Sino ESG has a complete and mature evaluation system to assess the firms' substantial ESG performance (Wu et al., 2022). Bloomberg Database is another data source of ESG, which starts from 2011 and reflects the disclosure score of firms' ESG (Yoon et al., 2018). These two ESG databases measure firms' ESG in different ways, which allows me to clearly distinguish the "talk" and "walk" between firms' ESG activities.

The steps for cleaning data are as follows. Firstly, we keep only A-share main board and growth enterprise market (GEM) companies. Secondly, we exclude special treatment (ST) stocks and financial stocks. Finally, we match the merged datasets of firms' accounting and stock data with Sino ESG and Bloomberg ESG respectively. The sample of Sino ESG starts from 2009 to 2022, which consists of 39504 firm-year observations. The sample of Bloomberg ESG is from 2011 to 2021, consists of 11418 firm-year observations.

3.2 OLS regression

Tobin's Q is considered to measure firm value (Dalal & Thaker, 2019). A fixed effects panel regression model is used to assess the impact of ESG performance and disclosure on firm value in terms of Tobin's Q in China. This paper uses Tobin's Q as a dependent variable and four independent variables, namely ESG score, Environmental score, Social score and Governance score. We include total assets, cash ratio, leverage, and ROA as control variables (Wong et al., 2021). For simplicity, all these variables are defined in Table 1. The regression model is estimated as follows:

$$Tobin's\ Q_{i,t} = \beta_0 + \beta_1 * ESG_{i,t} + \sum_{k=2}^{n} \beta_k * Controls_{k,i,t} + FE + \varepsilon_{i,t}$$

$Tobin's\ Q_{i,t}$ represents that the value of Tobin's Q of firm i in year t. β_0 is a constant term. β_1 is the coefficient on the $ESG_{i,t}$. $ESG_{i,t}$ is ESG score of firm i in year t and the ESG score will be substituted by Environmental score, Social score and Governance score respectively. β_k is the coefficient on the control variable. $Controls_{k,i,t}$ is the value of control variable k of firm i in year t. FE is fixed effects, which represents year effects and industry effects are fixed or year effects and industry effects are fixed. $\varepsilon_{i,t}$ is an error term.

Table1

Summary of variables

Variable	Description
Tobin's Q	The sum of market capitalization, total liabilities, preferred equity and minority interest divided by total assets.
ESG	ESG score weighted by Environmental score, Social score and Governance score
E	Environmental score
S	Social score
G	Governance score
Log(asset)	Logarithm of total assets
Cash ratio	Ratio of cash divided by current liabilities
Leverage	Ratio of total debt to total assets
ROA	Return on asset

IV. RESULT ANALYSIS

Firstly, we conduct descriptive statistics on relevant variables, as shown in Table 2. Next, we formally examine the impact of ESG rating including ESG combined score, Environmental score, Social score and Governance score on firm's Tobin's Q with different fixed effects. Tables 3 and 4 present the results of the regression models.

Table 2 is a summary statistics table, which provides descriptive statistics on the two samples of Sino ESG and Bloomberg ESG respectively for the ESG scores and financial information. The table includes the mean, standard deviation, min, median and max values.

Table 2

Summary statistics

All continuous variables are winsorized at 1% and 99% level.

Panel A: Sino ESG

Variables	n	Mean	Std	Min	Median	Max
Tobin's Q	39504	2.044	1.284	0.875	1.628	8.439
ESG	39504	4.131	1.062	1.000	4.000	8.000
E	39504	1.908	1.144	1.000	2.000	9.000
S	39504	4.193	1.148	1.000	4.000	9.000
G	39504	5.382	1.374	1.000	6.000	9.000
Log(asset)	39504	22.170	1.296	19.868	21.972	26.220
Cash ratio	39504	0.189	0.135	0.015	0.152	0.664
Leverage	39504	0.163	0.136	0.000	0.139	0.553
ROA	39504	0.037	0.063	-0.258	0.038	0.196

Panel B: Bloomberg ESG

Variables	n	Mean	Std	Min	Median	Max
Tobin's Q	11418	1.987	1.402	0.839	1.498	8.817
ESG	11418	28.135	8.996	6.198	27.206	68.917
E	11418	8.977	12.385	0.000	1.933	75.868
S	11418	12.402	7.122	0.000	10.278	54.386
G	11418	63.782	13.948	26.786	69.115	96.117
Log(asset)	11418	23.195	1.327	20.476	23.081	26.974
Cash ratio	11418	0.171	0.119	0.015	0.139	0.585
Leverage	11418	0.186	0.143	0.000	0.174	0.570
ROA	11418	0.046	0.059	-0.184	0.039	0.219

As can be observed in panel A of Table 2, Sino ESG, the mean for Tobin's Q is 2.044 and the median for Tobin's Q is 1.628. ESG mean scores are as follows: ESG mean score 4.131, Environment mean score 1.908, Social mean score 4.193 and Governance mean score 5.382. The results reveal the Environmental performance is far inferior to Social and Governance performance. Most companies have a good performance in Governance, a common performance in Social and a bad performance in Environmental. In panel B of Table 2, Bloomberg ESG, the mean for Tobin's Q is 1.987 and the median for Tobin's Q is 1.498. Bloomberg ESG Disclosure scores range from 0 to 100, with close to 100 being the best score. As can be seen from the table, the maximum score for Environmental is 75.868 and the mean for Environmental is 8.977. The maximum score for Social is 54.386 and the mean for Social is 12.402. The very low mean scores of Environmental and Social indicate that most enterprises do not perform well in Environmental disclosure and Social disclosure, while the good score of Governance indicates that companies have a good performance in Governance disclosure. Based on the data from panels A and B of Table 2, the average firms receive very low Environmental scores both in terms of performance and disclosure. It indicates that companies invest too little in the environmental aspect with poor performance and low-quality disclosure.

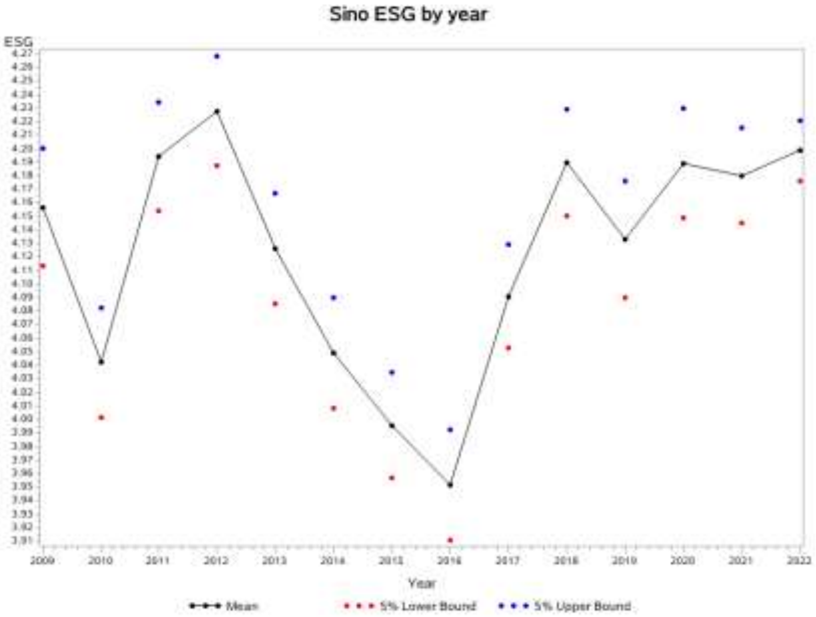

Figure 2 Sino ESG performance score by year

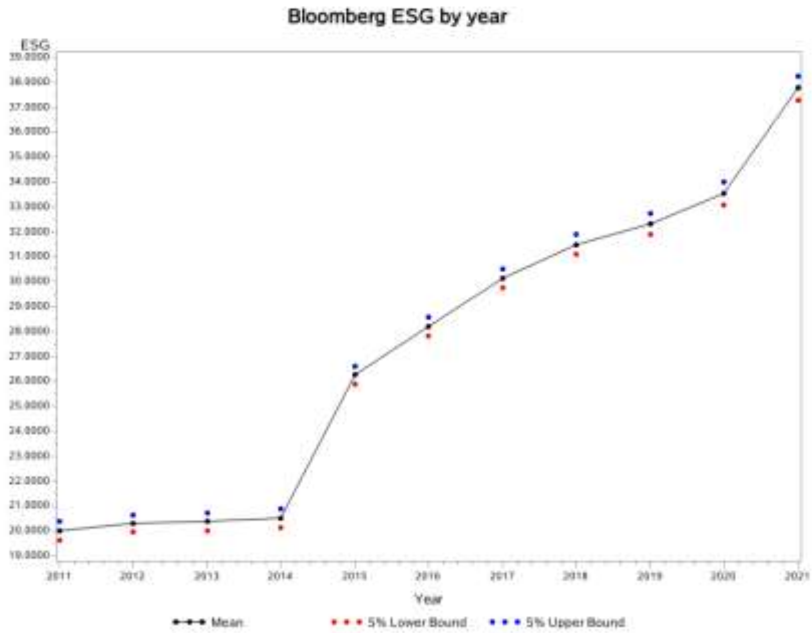

Figure 3 Bloomberg ESG disclosure score by year

Figures 2 and 3 reflect the trend in ESG scores by year. Figure 2 demonstrates that Sino ESG performance score fluctuates. There is a large fluctuation before 2018 and a small fluctuation after 2018. It indicates that firms' ESG performance is unstable. Figure 3 shows that Bloomberg ESG disclosure score increases yearly which means the quality of ESG disclosure is better.

Table 3
Sino ESG and Firm Value

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q
ESG	-0.060***	-0.028***						
	(-10.68)	(-4.94)						
E			-0.035***	-0.016***				
			(-6.91)	(-2.97)				
S					-0.052***	-0.021***		
					(-9.80)	(-4.03)		
G							-0.042***	-0.019***
							(-9.40)	(-4.38)
Log(asset)	-0.326***	-0.528***	-0.331***	-0.531***	-0.328***	-0.529***	-0.331***	-0.531***
	(-64.35)	(-47.46)	(-65.37)	(-47.94)	(-64.88)	(-47.67)	(-66.32)	(-48.01)
Cash ratio	-0.102**	-0.974***	-0.145***	-0.990***	-0.111**	-0.979***	-0.089*	-0.966***
	(-2.05)	(-18.95)	(-2.92)	(-19.31)	(-2.24)	(-19.05)	(-1.79)	(-18.71)
Leverage	-0.721***	-0.023	-0.693***	-0.015	-0.712***	-0.019	-0.729***	-0.028
	(-14.49)	(-0.38)	(-13.96)	(-0.24)	(-14.33)	(-0.30)	(-14.64)	(-0.46)
ROA	2.724***	2.271***	2.550***	2.232***	2.702***	2.265***	2.724***	2.273***
	(26.97)	(23.73)	(25.61)	(23.40)	(26.78)	(23.66)	(26.84)	(23.72)
Constant	9.543***	13.963***	9.471***	13.963***	9.551***	13.974***	9.638***	14.032***
	(87.72)	(57.25)	(86.45)	(57.24)	(87.79)	(57.29)	(88.29)	(57.44)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	No	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes	No	Yes
Obs	34,882	34,452	34,882	34,452	34,882	34,452	34,882	34,452
r2	0.28	0.64	0.27	0.64	0.28	0.64	0.28	0.64

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3 presents the regression results for the impact of Sino ESG performance on Tobin's Q. In column 1, the coefficient for ESG is negative and significant, which implies that Tobin's Q is reduced by 6% if Sino ESG score increases by 1 unit. In column 2, the regression uses firm effects instead of industry effects. Even with the stricter fixed effects, the coefficient is still significantly negative, indicating a 2.8% reduction for

Tobin's Q if Sino ESG score increases by 1 unit. The regression in columns (1, 3, 5, 7) uses the same fixed effect but replaces ESG score with Environmental score, Social score and Governance score respectively. The fixed effect used in columns (4, 6, 8) is the same as in column 2, but the ESG score is replaced by the environmental score, social score and governance score respectively. The results reveal that the coefficients of Environmental, Social and Governance are negative and significant.

Table 4

Bloomberg ESG and Firm Value

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q
ESG	0.010***	0.016***						
	(6.02)	(7.46)						
E			0.004***	0.009***				
			(4.13)	(7.89)				
S					0.002	0.018***		
					(1.24)	(8.35)		
G							0.003***	-0.002
							(2.69)	(-1.29)
Log(asset)	-0.398***	-0.311***	-0.388***	-0.308***	-0.378***	-0.320***	-0.379***	-0.290***
	(-40.30)	(-13.63)	(-40.66)	(-13.44)	(-40.69)	(-13.94)	(-40.86)	(-12.77)
Cash ratio	0.624***	-0.737***	0.701***	-0.657***	0.675***	-0.676***	0.624***	-0.692***
	(6.18)	(-6.28)	(6.84)	(-5.49)	(6.62)	(-5.71)	(6.17)	(-5.87)
Leverage	-0.417***	0.292**	-0.436***	0.287**	-0.445***	0.293**	-0.441***	0.254**
	(-4.77)	(2.44)	(-4.96)	(2.39)	(-5.07)	(2.45)	(-5.04)	(2.12)
ROA	6.106***	4.230***	6.125***	4.214***	6.143***	4.215***	6.170***	4.310***
	(30.07)	(20.10)	(29.98)	(19.89)	(30.16)	(19.99)	(30.38)	(20.44)
Constant	10.592***	8.594***	10.604***	8.864***	10.377***	9.017***	10.231***	8.648***
	(50.15)	(16.45)	(48.86)	(16.80)	(49.61)	(17.13)	(49.80)	(16.32)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	No	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes	No	Yes
Obs	10,597	10,556	10,459	10,413	10,543	10,502	10,597	10,556
r2	0.35	0.69	0.35	0.69	0.35	0.69	0.35	0.69

t-statistics in parentheses

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

Table 4 displays the regression results for the impact of Bloomberg ESG disclosure on Tobin's Q. As seen in column 1, the coefficient value ESG implies that Tobin's Q is enhanced by 1% if Bloomberg's ESG increases by 1 unit. The result in column 2 is still positive and significant, although the model uses a stricter fixed effect. Hence, the relationship between ESG and firm value is positive and significant. The regressions in Table 4 use the same fixed effects as in Table 3. The results indicate that Environmental is significantly positive on firm value, but Social and Governance are not positive or significant on firm value respectively, when different fixed effects are used.

Based on the results above, we conclude that ESG performance scores have a negative and significant impact on firm value and ESG disclosure scores have a positive and significant impact on firm value. The result is consistent with hypotheses 1b and 2a, implying that the "talk" of firms' ESG activities can add firm value and the "walk" of firms' ESG activities can reduce firm value. From a theoretical point of view, these results support shareholder primacy theory. When a company develops ESG activities, it will damage part of the company's interests and reduce firm value eventually. However, the company's disclosure information on ESG is often exaggerated, not equivalent to their actual ESG activities, that is "Greenwashing". Disclosure will not damage the company's interests but will arouse the public's good impression. Therefore, ESG disclosure will enhance firm value.

V. CONCLUSION

This paper uses Sino ESG performance measure and Bloomberg ESG disclosure measure to analyze Chinese listed firms in order to investigate the relationship between ESG and firm value. We use a fixed effects panel regression model. The analysis implies that ESG performance scores have a negative and significant impact on firm value and ESG disclosure scores have a positive and significant impact on firm value, which indicates that the company can benefit from ESG information disclosure. There are several suggestions are given based on this study. For investors, it is suggested that they should pay more attention to the ESG performance information than the ESG disclosure information before making investment decisions. For regulators, they need to strengthen their supervision of listed companies' ESG activities to ensure that what is disclosed is consistent with performance.

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