

The Impact of ESG Disclosure on the Corporate Value of Automobile Industry: Evidence from China

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Abstract: From the ESG ratings information on A-share listed automotive businesses published from 2018 to 2022, regression analyses using the Ordinary Least Squares (OLS) method were carried out for this company. The study explores how ESG disclosure affects business value in the car sector and experimentally examines the regression model. The study's conclusions show a strong positive influence between ESG disclosure and the worth of enterprises in the automotive sector. Therefore, the financial investment market supports companies with more ESG disclosure more strongly than those with lesser transparency. Through the correlation analysis, it is found that financial leverage and ESG are in negative influence, companies with more financial leverage will use their debt capital more frequently, and they can use lower costs to obtain funds for financial investment and ESG activities, which will increase the return on investment. However, businesses in poor financial condition do not have extra funds to care about ESG related operations. The body of information on ESG in the automobile industry is enriched by this study. It also discusses the effect of business profitability on ESG activities.

Keywords: ESG disclosure, Automobile industry, Company value

1. Introduction

ESG stands for Environment, Social, and Governance (ESG), and its concept was first articulated in the 2004 UN white paper “Who Cares Wins”. The ESG field quickly expanded due to the recommendation in “Who Cares Wins” that ESG be included as a primary factor in both traditional investing decisions and ownership practices [1]. Additionally, the UN published the Paris Agreement, a global agreement on climate change, in 2015. The Paris Agreement aims to promote cooperation among international commercial and public players to address the global challenge of climate change [2].

Furthermore, the combined publication of the “Guiding Opinions on Building a Green Finance System” by relevant Chinese government ministries has laid the foundation for developing an environmentally sustainable finance system in China. However, it also mandates Chinese listed companies to establish an environmental disclosure system. As sustainability becomes more mainstream, ESG indicators are gradually becoming more accurate through adjustments. Investors and businesses are starting to recognize that sustainable investment can help generate profits while also guiding them towards a sustainable path and increasing long-term returns stability. However,

ESG disclosure in China still faces significant obstacles, as it frequently appears only in a company's annual report.

This article presents an innovative research idea by focusing on the impact of ESG disclosure specifically in the automotive industry, which provides targeted and representative results for better advice in this industry. Most of the existing literature focuses on the whole industry sample data research, with only a small part conducting industry segmentation analysis. In this study, we first read a large amount of research literature in the pre-preparation of the thesis and summarize the relevant theoretical results and research conclusions. From there, it audaciously proposes the hypothesis to be tested in this thesis, which is that, in the automobile industry, ESG disclosure has a very favorable connection with company worth.

The primary component of this paper's research methodology is empirical study. First, data from the Huazheng database must be collected empirically before examining the relationship between disclosures regarding ESG and business value of publicly traded businesses in China's automobile industry, and then establish a regression model on top of the theory and carry out the Ordinary Least Squares (OLS) regression on the relevant variables. Then the conclusion is drawn. In this study, Excel and Stata were the primary research tools, and descriptive methodology, analysis of correlation, analysis of regression, robustness analysis, and literature analysis were the primary research methodologies.

2. Literature Review and Research Hypothesis

2.1. Literature Review

As listed businesses are the main players in the market economy, they can significantly affect the global natural environment either directly or indirectly through their economic actions. Therefore, the United Nations Environment Programme has issued a statement hoping that investors will take ESG into consideration when fulfilling their corresponding social responsibilities, and that the task of stabilizing the climate temperature will gradually penetrate enterprises [3]. How ESG factors affect value has been a controversial topic. There are different conclusions on whether and how ESG disclosure affects changes in company value. The main results are categorized into positive influence and negative influence.

According to the first point of view, most of the current research shows a favorable correlation between ESG disclosure and corporate value or financial investment activities [4]. The empirical findings demonstrate that, during the New Crown Pneumonia outbreak, listed companies' ESG disclosure is strongly and favorably connected with firm value. Furthermore, ESG is not a transient phenomenon. Additionally, Fatemi et al. research suggests that ESG disclosure can significantly moderate the influence of advantages and disadvantages on firm value by attenuating both the impact of benefits and drawbacks [5]. Therefore, with the attention of customers and the public, firms are paying more attention to ESG and paying closer attention to customer needs than ever before. And ESG disclosure has become a common denominator for attracting long-term investors [6] and an important indicator for increasing firm value [4].

However, the research findings also differ, and the relationship is negative significant. Because customers can benefit a business by appreciating and recognizing the social and environmental initiatives it supports. But businesses also make significant expenditures in sustainability, which raises the cost of capital [7]. A company's primary goal is often to maximize shareholder wealth. However, bringing about the general well-being of society is another crucial objective for businesses to pursue through ESG. This goal might easily result in a detrimental impact of ESG on firm value [8].

2.2. Hypotheses Development

In the international social environment where ESG is gradually being emphasized, ESG disclosure aims to promote sustainable wealth creation. Despite the acceptance of ESG concepts by investors and managers, there are still divergent views on the inclusion of ESG factors in investment considerations. It has been argued that ESG after an economic crisis shows a positive and stronger effect on corporation value and implies that ESG is not a passing occurrence [4]. Similarly, Fatemi et al. demonstrated that effective ESG information dissemination by the organization can contribute to the company's value growth by giving the public, particularly stakeholders, a deeper awareness of the organization's non-financial information [5].

Differently, some academics contend that there is no connection between social responsibility for companies and business value [9]. Moreover, scholars argued that the company's development goal is for the benefit of its shareholders and should have their interests as its primary goal. A series of ESG-enhancing actions and ESG disclosure by the company will increase the company's operating costs and losses in investment strategy. As a result, the company's share price will decrease, and ESG will have a negative influence on the company's value [8].

However, Xu et al. study argues that ESG disclosure is a means of avoiding the conclusion that corporate value is compromised because of an overemphasis on social benefits [10]. Therefore, I am anticipating a positive effect. And based on this, the study advances what follows presumptions. H1: ESG Disclosure has a Significant Positive Influence on the Company Value of the Automobile Industry.

3. Selection and Measurement of Variables

3.1. Sample Source and Processing

To avoid the negative impact of the regression caused by the unreasonable abnormal samples. The sample data for this investigation are processed as follows. Firstly, listed companies with anomalies or missing data are excluded. Secondly, since many companies face the problem of continuous losses, this will have some impact on the regression outcomes. All of the sample listed firms in the ST category are consequently omitted. The final selection of 155 competent sample companies, and 637 observations are obtained within the research sample interval, and follows the aforementioned screening process. The data will be pre-processed using Excel, and the empirical part of the regression analysis was conducted using Stata 17.0.

3.2. Variable Design

Measures of ESG disclosure are primarily displayed in ESG ratings. Specific rating scores allow investors and regulators to gain an understanding of the overall ESG information of the company and industry. The ESG rating data is from Huazheng's ESG database. The ESG ratings of Huazheng are assigned to nine grades of "AAA-C" in the order of 1~100 from low to high, with 1 indicating a lower level of ESG disclosure and 100 indicating a higher level of ESG disclosure. The key ratings are shown in Table 1.

Table 1: ESG scoring standard.

ESG rating	ESG score
AAA	score \geq 95
AA	90 \leq score $<$ 95
A	85 \leq score $<$ 90
BBB	80 \leq score $<$ 85
BB	75 \leq score $<$ 80
B	70 \leq score $<$ 75
CCC	65 \leq score $<$ 70
CC	60 \leq score $<$ 65
C	score $<$ 60

Return on assets (ROA) is a metric used to assess a company's profitability or commercial success. As a result, it can be used to gauge the company's worth. The ability of the business to earn from its assets increases with higher ROA.

The objective of corporate governance is to maximize shareholders' equity. Therefore, the value of a company can be calculated by the return on equity the rate of return on common stockholders' equity (ROE). The higher the value of this variable, the more helpful it is in stabilizing the company's stock price.

The regression analysis of this study includes the following control variables: operating income growth rate (Growth), independent director ratio (Indratio), institutional investor shareholding (INST), financial leverage (LEV), state-owned enterprises (SOE), shareholding ratio of the first largest shareholder (TOP1), YEAR. Table 2 displays each variable's name, symbol, and calculation.

Table 2: Simple description and formula of variables.

	Variable Name / Abbreviate	Variable Definition / Formula
Dependent Variable	Return on assets (ROA)	Net profit at year end / Total assets at year end
	ROE	Net profit / Average balance of stockholders' equity
Independent Variable	ESG	ESG Score
Control Variable	Growth	(Total operating income for this year - Total operating income for the previous year) / Total operating revenue of last year * 100%
	LEV	Total liabilities / Total assets
	INST	Proportion of institutional investors' / Total shares of the company.
	TOP1	Shares held by the largest shareholder / Total shares of the company * 100%
	Indratio	Number of independent directors / Total directors
	SOE	SOE=1 is a state-owned enterprise in China; SOE=0 is a non-state-owned enterprise.
	YEAR	Dummy Variable

3.3. Regression Model

The research methodology used was the least squares method for regression analysis. To test H1, the regression model assessing the association the correlation among the dependent variable company value (ROA) and the independent variable ESG score. The model looks like this.:

$$ROA_{i,t} = \alpha_0 + \alpha_1 ESG_{i,t} + \alpha_2 Growth_{i,t} + \alpha_3 LEV_{i,t} + \alpha_4 INST_{i,t} + \alpha_5 TOP1_{i,t} + \alpha_6 Indratio_{i,t} + \alpha_7 SOE_{i,t} + \alpha_8 YEAR + \varepsilon \quad (1)$$

In equation (1), the constant term is α_0 , α_i ($i = 1, 2, 3, \dots, n$) are the individual variable regression coefficients for the various enterprises, i is different firms, t is different years, ε is the residual.

4. Empirical Analysis

4.1. Descriptive Analysis

Table 3 displays descriptive information about the research's factors. From the specific statistics in the table, the mean value of ROA obtained by the sample of listed automobile businesses is 0.03. The median is 0.04, and 0.05 for SD (standard deviation). This implies that the profitability of the sample cars is not high. The ESG score has a mean and median of 72.88 and 73.50, respectively. Another is the minimum value is 55.06 less than 60, the lowest rating is C, and 84.84 is the value of maximum. This suggests that the majority of the Huazheng database's A-share listed businesses have medium ESG ratings (the average rating is B; see Table 1 for further information).

In addition, the minimum and maximum of Growth of the sample listed companies are -0.49 and 2.17, respectively. This suggests that there is a large gap in the potential growth capacity among listed automobile corporations in China.

Table 3: Descriptive statistics for the full sample 2018-2022 (N = 637).

	Mean/Prop.	Median	SD	Min.	Max.
ROA	0.03	0.04	0.05	-0.22	0.13
ROE	0.04	0.07	0.14	-0.97	0.31
ESG	72.88	73.50	5.44	55.06	84.84
Growth	0.20	0.14	0.35	-0.49	2.17
LEV	0.45	0.44	0.19	0.08	0.93
INST	46.96	50.33	25.16	0.24	92.48
TOP1	36.00	34.40	15.11	8.17	72.96
Indratio	0.38	0.36	0.07	0.25	0.60
SOE	0.25	0.00	0.43	0.00	1.00

4.2. Correlation Analysis

The correlation analysis of all the research variables in this paper is carried out to test whether the selected research variables are reasonable and provide preliminary evidence for the later theoretical analysis. Tables 4 and 5 display the results.

The correlation coefficient between the independent variable ESG and firm value (ROA), which is positive, is 0.306 and significant at the level of 1%, as shown in Tables 4 and 5. This initially proves H1. The results of correlation between each variable and company value are just a preliminary proof that the hypotheses of this study in the previous paper are justified. Therefore, regression analysis is still being done in this paper to determine how ESG disclosure affects firm value.

Table 4: Impact on the information asymmetry of ESG scores - Correlation 1.

	ROA	ROE	ESG	Growth	LEV
ROA	1				
ROE	0.847***	1			
ESG	0.306***	0.252***	1		
Growth	-0.086**	-0.0620	-0.080**	1	
LEV	-0.434***	-0.308***	-0.149***	0.067*	1
INST	0.0460	0.0600	0.140***	0	0.126***
TOP1	0.179***	0.121***	0.119***	0.00400	-0.0510
Indratio	0.0270	0.0420	0.129***	-0.0500	-0.115***
SOE	-0.074*	-0.0130	0.0410	0.0440	0.332***

Table 5: Impact on the information asymmetry of ESG scores - Correlation 1 - Continued.

	INST	TOP1	Indratio	SOE
ROA				
ROE				
ESG				
Growth				
LEV				
INST	1			
TOP1	0.426***	1		
Indratio	-0.0420	-0.0350	1	
SOE	0.357***	0.070*	-0.167***	1

Note: ***, **, * indicate that the regression results are significant at the 1%, 5%, and 10% levels, respectively.

4.3. Regression Analysis

Table 6 shows the outcomes with and without control factors in Columns (1) and (2), respectively. The regression coefficient of ESG disclosure and firm value in column (2) is 0.002 when controlling for the specific industry, and the influence of ESG on company value (ROA) is 0.002, and the coefficient between them always has a positive influence relationship. This indicates that an elevated degree of disclosure regarding ESG will result in a rise in the firm value. ESG disclosure positively affects the company value at 1% level and this data demonstrates that there are three stars, ESG and company value (ROA) are positively and significantly influence and hypothesis 1 is valid.

Table 6: Impact on the company value of ESG scores Correlation 2.

	(1)	(2)
	ROA	ROA
ESG	0.003***	0.002***
	(8.126)	(6.567)
Growth		-0.007
		(-1.292)
LEV		-0.113***
		(-10.899)
INST		-0.000
		(-0.167)

Table 6: (continued).

TOP1		0.000***
		(3.369)
Indratio		-0.031
		(-1.131)
SOE		0.004
		(0.954)
cons	-0.173***	-0.077***
	(-6.435)	(-2.847)
YEAR	Yes	Yes
N	637	637
r ²	0.102	0.274

Note: r² is goodness of fit.

4.4. Robustness Analysis

To make the above regression results more realistic and reliable, this study adopts the method of replacing the dependent variable and lagging it by one period to test the robustness of the empirical evidence of the hypothesis 1 model.

4.4.1. Substitution Variable Test

This study first uses the technique of substituting variables for the robustness test, and the goal is to improve the outcomes robustness. Here ROA is replaced with a new dependent variable ROE and assigned to firm value and then tested. Table 7 presents the outcomes.

The outcomes of the regression with replacement variables are displayed in column (2) of Table 7. When the dependent variable firm value is replaced from ROA to ROE, even if the independent variable's coefficient (ESG) is 0.005, this data display still has three stars. Therefore, at the 1% level, there is a considerable positive influence link between them. According to these statistics, an increase in the ESG rating increases the company's worth, like excellent financial indicators can contribute to the company value. Based to this outcome, the conclusion obtained that ROE coincides with the outcome when the dependent variable is ROA. That is, the robustness test results support the regression results above and the conclusion is more reliable. As a result, the study's findings are solid and it is reasonable to conclude that ESG disclosure increases firm value.

Table 7: Impact on the company value of ESG scores Robustness Substitution variable.

	(1)	(2)
	ROE	ROE
ESG	0.007***	0.005***
	(6.592)	(5.059)
Growth		-0.016
		(-1.044)
LEV		-0.227***
		(-7.323)
INST		0.000
		(0.365)
TOP1		0.001*

Table 7: (continued).

		(1.667)
Indratio		0.002
		(0.024)
SOE		0.021
		(1.514)
_cons	-0.426***	-0.244***
	(-5.592)	(-3.013)
YEAR	Yes	Yes
N	637	637
r ²	0.072	0.156

4.4.2. Lag Test

The regression results robustness is further tested in this study with a one-period lag. The model is tested for possible bidirectional causality. The results are displayed in Table 8's column (2). ESG has a regression coefficient of 0.002 when lagged by one period and labeled with three stars, which indicates a significant positive influence at the 1% level. This is consistent with the regression results and further supports H1 by showing that ESG disclosure not only positively affects corporate value in the current period but also positively affects the firm's future.

Table 8: Impact on the company value of ESG scores Hysteresis.

	(1)	(2)
	ROA	ROA
L.ESG	0.002***	0.002***
	(6.437)	(5.027)
Growth		-0.002
		(-0.276)
LEV		-0.121***
		(-10.209)
INST		-0.000
		(-0.453)
TOP1		0.000***
		(2.996)
Indratio		-0.034
		(-1.113)
SOE		0.009*
		(1.730)
_cons	-0.150***	-0.050*
	(-5.314)	(-1.744)
YEAR	Yes	Yes
N	481	481
r ²	0.082	0.272

5. Research Conclusion

In accordance with previously published research, and from the perspective of automobile business. It investigates how ESG disclosure by listed firms affects the value of the company, and it comes to the following results. ESG disclosure and corporate value have a strong positive relationship, meaning that the stronger the ESG score, the stronger the firm value. Therefore, firms with higher ESG disclosure are more supported by the financial investment market.

There are some limitations and room for improvement in this article. Limitations include that I can also test which ESG disclosures or ESG activities can increase firm value and reduce information asymmetry by enhancing and improving them. However, this needs to be studied and validated more carefully. The room for improvement should also make clear what specific ESG information can be made available to companies through disclosure with substantial economic benefits.

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