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The Impact of ESG Practices on the Financial Performance of New Energy Vehicle Manufacturing Enterprises

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Abstract: *As China continues to place increasing emphasis on sustainable development, the new energy vehicle (NEV) industry has emerged as a critical sector driving the transition to a greener economy. Environmental, Social, and Governance (ESG) practices have become pivotal factors influencing the competitiveness and financial health of enterprises within this sector. Using a sample of NEV manufacturing companies listed on the A-share and Hong Kong stock markets between 2016 and 2023, this study employs an empirical analysis to uncover the mechanisms by which ESG performance across various dimensions impacts corporate financial performance. The findings reveal a significant positive correlation between ESG practices and financial performance. It is further demonstrated that continuous improvements in environmental protection, social responsibility fulfillment, and corporate governance by NEV enterprises can contribute to enhanced financial performance and long-term sustainable development.*

Keywords: *New Energy Vehicles, ESG Practices, Financial Performance*

1. Introduction

With the intensification of global climate change and the promotion of the "dual carbon" targets, the concept of sustainable development has been widely embraced within the new energy vehicle (NEV) industry. While striving for technological innovation and competitive advantages in the market, NEV enterprises are also required to enhance their long-term sustainability through environmental protection, fulfillment of social responsibilities, and improved corporate governance. Environmental, Social, and Governance (ESG) factors have increasingly become critical indicators for evaluating a company's overall competitiveness and financial health. The implementation of ESG practices not only influences a company's social reputation and brand value but also exerts direct and indirect impacts on its financial performance[1]. However, existing research in this field primarily focuses on developed countries in Europe and North America, with limited attention given to NEV manufacturers in China. Based on data from 2016 to 2023, this study empirically examines the relationship between ESG practices and financial performance in Chinese NEV manufacturing enterprises. The aim is to contribute to the theoretical understanding of this relationship and provide both theoretical support and practical guidance for improving ESG performance and enhancing financial outcomes in the industry.

2. Related Theories and Research Hypotheses

The theory of sustainable development provides a foundation for analyzing the environmental practices of new energy vehicle (NEV) enterprises, emphasizing the integration of economic activities with environmental protection. NEV manufacturers, by reducing carbon emissions, improving energy efficiency, and developing clean energy technologies, not only fulfill social responsibilities but also lower operational costs and regulatory risks. These practices enhance their environmental image and secure government support, such as tax incentives and subsidies, thereby improving financial performance. Furthermore, strong environmental performance aligns with stakeholder expectations, helping enterprises gain recognition from society, customers, and investors, thus enhancing market competitiveness[2]. Consumers increasingly prefer environmentally friendly products, boosting sales and financial outcomes. Through green strategies and technological innovation, NEV enterprises meet stakeholder demands, enhance competitiveness, and increase profitability.

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The stakeholder theory plays a crucial role in the social dimension, as corporate social responsibility (CSR) involves employees, customers, communities, and suppliers. NEV enterprises that actively fulfill social responsibilities foster strong relationships with stakeholders. For instance, by ensuring employee welfare, providing safe working environments, and promoting employee satisfaction, firms can reduce turnover and attract talent. Supporting community development and participating in charitable initiatives enhance social image and brand value. CSR practices, consistent with sustainable development theory, improve corporate market reputation, attracting customers and investors while boosting competitiveness and customer loyalty. These efforts drive sales growth and financial performance[3].

Agency theory highlights the conflict of interest between management and shareholders, with robust corporate governance structures identified as key to addressing this issue. Effective governance reduces information asymmetry, increases transparency, and improves operational efficiency. NEV enterprises that optimize board structures and strengthen internal oversight can minimize managerial errors, mitigate financial risks, and attract investment, thereby enhancing financial stability. Within the sustainable development framework, sound governance fosters long-term corporate sustainability, strengthens investor confidence, and improves performance in capital markets[4]. Furthermore, effective governance aligns with stakeholder theory by protecting shareholder rights, ensuring proper management, building trust, and enhancing social capital, all of which contribute to financial performance improvement.

Based on the above analysis, this paper proposes Hypothesis H1: ESG practices are positively correlated with the financial performance of new energy vehicle manufacturing enterprises.

3. Research Design

3.1 Data Sources

This paper utilizes a research sample comprising A-share and Hong Kong-listed companies in China's new energy vehicle (NEV) manufacturing sector from 2016 to 2023. The ESG ratings and financial data of these enterprises were obtained from the Wind database. To ensure the authenticity and reliability of the data, companies categorized as ST or *ST, as well as those with missing values for key variables, were excluded from the sample. Additionally, to mitigate the influence of outliers on the research results, all continuous variables were winsorized at the 1% level on both tails.

3.2 Variable Design

3.2.1 Dependent Variable

The dependent variable is financial performance, measured using the return on assets (ROA) as the core indicator. ROA, a commonly used financial metric, reflects a company’s ability to generate profits from its assets and evaluates the efficiency with which assets are utilized to create net income.

3.2.2 Independent Variable

The independent variable is the company’s ESG performance (ESG), which assesses its practices in the areas of Environment (E), Social Responsibility (S), and Corporate Governance (G). To ensure the authority and objectivity of the ESG data, this study employs ratings from the China Securities Index (CSI) ESG rating system as the benchmark for measuring ESG performance[5]. The CSI ESG rating system categorizes companies into nine levels, ranked from highest to lowest as follows: AAA, AA, A, BBB, BB, B, CCC, CC, and C. For robustness testing, the ESG ratings were transformed into numerical values based on their ranking. The lowest rating, “C,” was assigned a value of 1, and each subsequent level was incrementally assigned higher values, with the highest rating, “AAA,” assigned a value of 9. A higher numerical value indicates better ESG performance by the enterprise.

3.2.3 Control Variables

Based on previous research[6], this paper incorporates cash flow (Cashflow), corporate growth (Growth), and the shareholding ratio of the largest shareholder (Top1) as control variables. Detailed definitions of these variables are provided in Table 1.

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Table 1 Definitions of Key Variables

Variable Type	Variable Name	Symbol	Definition
Dependent Variable	Return on Assets	ROA	The ratio of net profit to total assets
Independent Variables	ESG Performance	ESG Score	The ESG rating score provided by China Securities ESG Ratings
	ESG Performance	ESG Assignment	Scores assigned based on the China Securities ESG Ratings
	Environmental Performance	E Score	The ESG environmental rating score provided by China Securities ESG Ratings
	Social Performance	S Score	The ESG social rating score provided by China Securities ESG Ratings
	Governance Performance	G Score	The ESG governance rating score provided by China Securities ESG Ratings
Control Variables	Cash Flow	Cashflow	The ratio of net cash flow from operating activities to total assets
	Growth of Enterprises	Growth	Revenue growth rate
	Shareholding of Largest Shareholder	Top1	The shareholding ratio of the largest shareholder

3.3 Model Construction

In order to test the research hypothesis of this paper, the empirical model (1) is constructed:

$$ROA_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 Cashflow_{it} + \beta_3 Growth_{it} + \beta_4 Top1_{it} + \varepsilon_{it} \quad (1)$$

4. Empirical Research Results

4.1 Descriptive Statistics

From the descriptive statistical analysis presented in Table 2, it was observed that the minimum value of ROA is -71.98, while the maximum value is 12.85, with a mean of -0.11 and a standard deviation of 8.67. These results indicate significant variability and notable differences in ROA among the sampled enterprises. For the overall ESG score, the minimum value is 32.30, the maximum value is 74.64, the mean is 52.82, and the standard deviation is 10.03. This suggests considerable disparities in the environmental, social, and governance performance of the sampled companies, with the majority of firms positioned at an average level.

Table 2 Descriptive Statistical Analysis

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	mean	sd	min	max
ROA	187	-0.110	8.670	-71.98	12.85
ESG Score	187	52.82	10.03	32.30	74.64
E Score	187	49.37	8.581	32.28	72.90
S Score	187	52.67	16.75	11.11	79.86
G Score	187	55.30	8.735	40.09	72.75
Growth	187	13.78	97.55	-79.78	1,128
Top1	187	37.69	16.31	10.89	83.41
Cashflow	187	0.421	0.244	-0.0000000118	1
ESG Assignment	181	4.398	1.109	1	7

4.2 Correlation Analysis

Correlation analysis is crucial for understanding the relationships among variables and for constructing the model. The analysis results indicate that the coefficient of the core independent variable, ESG composite score, is 0.339 and is significant at the 1% level, demonstrating its positive

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impact on financial performance. Similarly, the coefficient of the substituted ESG rating variable is 0.361 and is also significant, further supporting its positive influence. The correlation coefficients for the ESG subdimensions—E (Environmental), S (Social), and G (Governance)—are 0.486, 0.695, and 0.591, respectively, all of which are significant. These results suggest that improving corporate social responsibility and sustainable development capabilities may have a favorable effect on financial performance. The analysis of control variables shows that the correlation coefficient of cash flow is 0.189 and is significant, indicating that strong cash flow contributes to enhanced performance. The correlation coefficient of corporate growth is 0.158 and significant, demonstrating that higher growth potential positively impacts performance. The correlation coefficient of the largest shareholder's shareholding ratio is 0.273 and significant, suggesting that the influence of the largest shareholder on corporate decisions and strategies aids in improving performance. While the ESG composite score exhibits significant correlations with other control variables, the absolute values of these correlations are relatively small. Additionally, the correlations between the ESG subdimensions and the control variables are generally insignificant or have low absolute values. Therefore, multicollinearity is not a concern in this study.

4.3 Baseline Regression Analysis

To evaluate the impact of the overall ESG score on ROA, a multiple regression model was employed. The overall ESG score was used as the core independent variable, while ROA served as the dependent variable. Control variables included cash flow, growth rate, and the shareholding ratio of the largest shareholder. The regression analysis results are presented in Table 3.

Table 3 Baseline Regression and Lagged One-Period Results

	(1)	(2)
	ROA	ROA
ESG Score	0.2465***	
	(4.1548)	
L.ESG Score		0.2535***
		(3.6267)
Cashflow	4.7102*	3.1042
	(1.9281)	(1.1707)
Growth	0.0157***	0.0147**
	(2.6427)	(2.3697)
Top1	0.0928**	0.1078***
	(2.5122)	(2.6294)
_cons	-18.8296***	-19.2824***
	(-5.9013)	(-5.3924)
N	187	163
R^2	0.1976	0.1861

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

According to the regression results, after including all control variables, the coefficient for the overall ESG score is 0.2465, indicating a significant positive impact on ROA. For every one-point increase in the ESG score, ROA improves by 0.2465 units. This demonstrates that better ESG performance is associated with higher corporate financial performance. Effective ESG practices help reduce environmental risks and costs, improve resource utilization efficiency, enhance social responsibility, and strengthen brand image. These factors collectively increase customer satisfaction and loyalty, leading to improved financial performance. Moreover, robust corporate governance ensures transparency and efficiency in decision-making and operations, reducing internal risks and costs. Through these combined effects, companies with superior ESG performance achieve higher financial returns and sustained improvement in financial performance.

Due to the potential bias in estimation results caused by endogeneity issues, this study employs the lagged one-period core explanatory variable in the regression analysis to preliminarily mitigate the

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influence of endogeneity on the results. Additionally, the effect of ESG practices on corporate performance often exhibits a degree of lag. Therefore, the relationship between the lagged one-period core explanatory variable and corporate performance is also analyzed in this paper. As shown in the table, the regression coefficient for the lagged one-period overall ESG score is 0.2535, which is significant at the 1% level. This indicates that the lagged ESG score has a positive impact on corporate financial performance, suggesting a delayed effect of ESG performance on ROA. Consequently, companies should place greater emphasis on improving their long-term ESG performance and develop strategic plans to ensure sustainable and progressive enhancements in ESG practices.

4.4 Robustness Test

To ensure the robustness of the conclusions, a robustness test was conducted using the variable substitution method. Specifically, the core independent variable, ESG composite score, was replaced with ESG rating values. The results of this analysis are presented in Table 4.

Table 4 Robustness Tests with Alternative Variables and Lagged One-Period Regression Results

	(1)	(2)
	ROA	ROA
ESG Assignment	2.5373***	
	(4.6660)	
L.ESG Assignment		2.3199***
		(3.7415)
Cashflow	5.2432**	3.5270
	(2.1010)	(1.2806)
Growth	0.0173***	0.0166***
	(2.9062)	(2.6248)
Top1	0.0839**	0.1044**
	(2.2576)	(2.4933)
_cons	-17.0191***	-16.4388***
	(-6.5425)	(-5.7555)
N	181	157
R^2	0.2189	0.1945

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

As shown in the table, the coefficient of the ESG rating variable is 2.5373, which is significant at the 1% level. Additionally, the coefficients for cash flow, corporate growth, and the largest shareholder's shareholding ratio are all positive and significant at various levels of significance, consistent with the original conclusions. This confirms that ESG practices positively influence corporate financial performance (ROA). Similarly, corporate growth, cash flow, and the largest shareholder's shareholding ratio also have a positive impact on ROA. In the regression results using the lagged ESG rating variable, the coefficient for the lagged core independent variable is 2.3199, which is significant at the 1% level. This result aligns with the original conclusion, further confirming that ESG practices exhibit a delayed effect on corporate financial performance (ROA). In summary, the conclusion that ESG practices positively influence corporate financial performance (ROA) and that this effect is subject to a delay is robust.

4.5 Further Analysis

Given that this study examines ESG practices encompassing three dimensions—Environment (E), Social Responsibility (S), and Corporate Governance (G)—it is possible that the impact of ESG on corporate financial performance varies across these dimensions. To explore whether differences exist among these aspects, regression analyses were conducted separately for the three subcomponents of the ESG composite score: E score, S score, and G score. The results of these analyses are presented in Table 5.

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Table 5 Sub-Dimensional Analysis of Environmental, Social, and Governance Factors

	(1)	(2)	(3)	(4)
	ROA	ROA	ROA	ROA
ESG Score	0.2465***			
	(4.1548)			
E Score		0.1438**		
		(2.0295)		
S Score			0.1315***	
			(3.5958)	
G Score				0.2515***
				(3.7614)
cashflow	4.7102*	5.7821**	4.5428*	4.9294**
	(1.9281)	(2.2990)	(1.8322)	(2.0047)
Growth	0.0157***	0.0169***	0.0145**	0.0164***
	(2.6427)	(2.7093)	(2.4042)	(2.7269)
Top1	0.0928**	0.1133***	0.0901**	0.1225***
	(2.5122)	(2.9982)	(2.3865)	(3.3636)
_cons	-18.8296***	-14.1517***	-12.5483***	-20.9385***
	(-5.9013)	(-3.8103)	(-5.7622)	(-5.3033)
N	187	187	187	187
R^2	0.1976	0.1409	0.1797	0.1848

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

Based on the sub-regression results presented in the table, the coefficient for the E (Environmental) score is 0.1438, which is significant at the 5% level. The coefficient for the S (Social Responsibility) score is 0.1315, significant at the 1% level, while the coefficient for the G (Corporate Governance) score is 0.2515, also significant at the 1% level. From the direction of the regression coefficients, all three dimensions positively influence corporate financial performance (ROA). When considering the magnitude of the effects, corporate governance appears to have the greatest impact on ROA. This suggests that, in efforts to optimize financial performance, companies should prioritize strengthening corporate governance structures. However, the importance of environmental (E) and social responsibility (S) performance should not be overlooked, as these dimensions also contribute positively to financial outcomes.

5. Conclusion and Recommendations

This paper, based on an empirical analysis of new energy vehicle (NEV) manufacturing companies listed on China's A-share and Hong Kong stock markets from 2016 to 2023, reveals that ESG practices across the dimensions of Environment (E), Social Responsibility (S), and Corporate Governance (G) significantly enhance corporate financial performance, with the effect of corporate governance being the most pronounced. Improvements in the environmental dimension reduce operational costs and increase policy support, fulfilling social responsibilities strengthens brand image and customer loyalty, and optimized corporate governance reduces managerial errors and boosts investor confidence. Furthermore, the influence of ESG practices on financial performance exhibits a lag effect, highlighting the need for long-term planning by enterprises. Overall, integrating ESG practices into development strategies contributes to the green transition of NEV companies, enhances financial performance, and promotes high-quality development within the industry.

Based on the findings, it is recommended that enterprises strengthen their investment in ESG practices, integrating environmental protection, social responsibility, and corporate governance into their core strategies, with particular attention to optimizing governance structures, improving transparency, and establishing long-term plans to achieve a win-win situation for financial and sustainable development. At the same time, governments should improve relevant policies and incentive mechanisms, such as providing tax exemptions, subsidies for technological research and development, and support for green financing, while strengthening supervision and evaluation of corporate ESG performance to promote the industry’s shift toward green and low-carbon development. Moreover, the general public should actively participate in ESG oversight by supporting environmentally friendly and socially responsible enterprises, fostering a green consumption culture,

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and using media and nonprofit organizations to encourage companies to improve their ESG performance, thereby creating a virtuous cycle of shared governance and social progress.

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