

Research on ESG performance and financial performance of new energy enterprises

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ABSTRACT

ESG is more about measuring corporate environment, social responsibility, and corporate governance than traditional financial data considerations. For the long-term development of globalization and dual-carbon strategy, based on sustainable development and the realization of global development, many enterprises will consider ESG performance in corporate financial performance evaluation. In the era of advocating green life, new energy enterprises have received much attention, but their industry financial performance is closely related to ESG performance. This paper takes all of China's A-share-listed new energy companies from 2010 to 2021 as the research object and verifies the relationship between ESG performance and financial performance of new energy enterprises through empirical analysis, which is of great significance for better high-quality development of new energy enterprises.

KEYWORDS

ESG; New energy; Financial performance

1. INTRODUCTION

As global climate change and environmental concerns intensify, the emphasis on sustainable development has taken center stage worldwide. As an important force in social and economic development, the environmental, social, and governance(ESG) performance of enterprises has increasingly attracted the attention of stakeholders such as investors, consumers, and regulatory agencies. Especially for new energy companies, as a key force in promoting global energy transformation and sustainable development, their ESG performance not only affects the company's social responsibility and reputation but also directly affects the financial performance and market competitiveness of the enterprise.

In recent years, as the new energy sector evolves swiftly, a growing body of academics is focusing on the link between ESG outcomes and the economic success of emerging energy companies. Research indicates that emerging energy firms excelling in ESG metrics often receive greater approval from investors and recognition in the market, which helps improve their financial performance. However, Research also indicates that multiple elements might influence the link between ESG efficiency and financial results such as enterprise scale, industry characteristics, market environment, and so on.

2. LITERATURE REVIEW

2.1. Current Foreign Research Status

Numerous academics agree on the existence of a direct link between ESG outcomes and the financial performance of corporations. For example, based on more than two thousand empirical studies, Friede(2016) deduced a direct link between ESG efficiency and the financial performance of corporations [1]. Focke and others discovered that as an integral part of external corporate governance, institutional investors can encourage more active corporate social responsibility and further improve environmental, social and Governance performance by reducing the moral hazard faced by senior managers through effective regulatory means [2]. Orlitzky et al.(2003) found through their research on US companies that companies that actively fulfill their social responsibilities can achieve higher market share and sales, thereby improving financial performance [3].

However, some researches indicate that the link between ESG outcomes and a company's financial success is negligible or even has a negative correlation. For example, The study by Sassen et al. (2016) suggests that better ESG performance is not conducive to creating value for enterprises, and may even lead to a decrease in their value-creation capabilities [4]. On the other hand, Duque-Grisales and others (2019) Discovered a notable inverse relationship between ESG scores and financial results in their study. In certain nations, firms excelling in ESG metrics often exhibit comparatively inferior financial results [5].

2.2. Current Research Status in China

Some scholars have discovered a positive relationship between ESG performance and corporate financial performance through empirical research. For example, Tao Yanlin(2019) contends that a notable positive link exists between a firm's ESG achievements and its financial results. Additionally, firms consistently excelling in ESG tend to incur reduced costs in debt financing, influencing the link between ESG and financial outcomes [6]. The research by Yan Weixiang, Zhao Yu, and Meng Defeng(2023) revealed a notable enhancement in the financial outcomes of publicly traded companies due to their ESG performance. ESG performance not only eases financial limitations but also boosts corporate effectiveness, thereby boosting the profits of publicly traded companies [7]. However, many scholars in China believe that between ESG performance and corporate financial performance, there is not exist a positive relationship. Research by Wang Jianling, Li Yueting, and Wu Xuan(2018) grounded in signal transmission theory, revealed a lack of substantial correlation between a company's social responsibility and its present financial health. Looking ahead, the variance in their relationship primarily hinges on the company's size [8]. Qiu Dong(2023) additionally emphasized that the influence of corporate ESG outcomes on the shareholding choices of institutional investors holds little short-term significance. The role of institutional investors in moderating the relationship between corporate ESG outcomes and their shareholding choices is evident in their risk avoidance, information gathering, research inclinations, and investment patterns, suggesting a delayed effect of corporate ESG outcomes on institutional investors' shareholding inclinations [9].

3. THEORETICAL ANALYSIS AND RESEARCH HYPOTHESES

3.1. Hypothesis1

There is a significant positive correlation between ESG performance and the financial performance of new energy companies(H1).

The success of a business is not solely determined by the interests of shareholders, but also by the relationships with various stakeholders[10]. Firms excelling in ESG are more capable of meeting the expectations and demands of these stakeholders, thereby establishing stronger business relationships.

As a significant force driving sustainable development, new energy companies often closely align their ESG performance with sustainable development goals [11]. Additionally, ESG practices can stimulate innovation and drive new energy companies to innovate in technology, products, and services. These innovations can provide companies with differentiated competitive advantages and contributing to improved financial performance.

3.2. Hypothesis2

The correlation regarding the link between ESG scores and the success of new energy firms is more significant in the dimension of corporate governance(H2).

As an essential component of the green economy, new energy companies may find the dimension of corporate governance more crucial compared to the environmental and social dimensions in terms of ESG ratings. New energy companies typically require significant capital investments and technological innovations to support their business operations and expansion [12]. Effective corporate governance can ensure the efficient utilization of funds, sustained technological innovation, and effective market expansion, thereby exerting a more direct and significant influence on the firm's fiscal outcomes. Furthermore, the ESG ratings in the dimension of corporate governance focus on relationship management with stakeholders, including investors, shareholders, governments, and community residents. Effective corporate governance mechanisms can promote cooperation and trust among various stakeholders, creating a more favorable environment for the long-term development of the company.

3.3. Hypothesis3

The positive relationship between ESG performance and corporate financial performance is more significant in the heavy pollution industries within new energy companies (H3) [13].

Heavy pollution industries within new energy companies face stricter environmental regulations and emission standards. By adopting clean and renewable energy technologies, they are typically better able to meet these environmental requirements and fulfill their social responsibilities. This fulfillment of social responsibilities not only helps enhance the social image of the company but also gains recognition and support from governments, society, and consumers. Therefore, these companies tend to exhibit superior ESG performance, particularly in the environmental dimension, which contributes to enhancing their image and reputation. In turn, attracts more investors and customers, exerting a positive impact on the company's financial performance [14].

4. RESEARCH DESIGN

4.1. Sample Selection and Data Sources

This research encompasses all new energy companies listed on A-share in China from 2010 to 2021 as the research objects and excludes companies that lack financial data and ESG rating data. The collected data are cleaned, organized, and standardized to ensure their accuracy and consistency. Finally, 835 A-share listed new energy companies are selected. The data come from various public databases and official financial reports of the companies, covering their ESG performance data and financial performance data over the past few years. Through Excel data collation, the study calculates the comprehensive score of financial performance using the entropy method with Stata 17.0 and performs regression analysis.

4.2. Variable Definitions

4.2.1. Dependent Variable

FP: In this study, NP, ROE, and RGR are selected as indicators to measure the financial performance of A-share-listed new energy companies.

4.2.2. Explanatory Variable

ESG Performance (ESG Score): In this study, the China Securities ESG rating data is selected as the metric to measure ESG performance, which includes three first-level indicators: environment, society, and corporate governance. Rooted in the China Securities ESG rating, the study comprehensively evaluates the performance of companies in the three areas of environment, society, and corporate governance. The firms are fallen into nine tiers from bad to excellent, with values ranging from 1 to 9 accordingly [15].

4.2.3. Control Variables

For a more precise estimation of the influence of ESG performance on financial performance, we selected Size, Lev, Dra, Gro, Indnd, and Year as control variables.

Table 1. Overview of Variable Definitions

Types of variables	Variable Names	Variable Symbols	Variable Definitions
Explained Variable	Net profit	NP	The total profit for the current period - the amount of income tax paid
	Return on Equity	ROE	The net earnings for the parent company's shareholders / [(The sum of the parent company's opening equity and closing equity) / 2] × 100%
	Revenue growth rate	RGR	(Boost in Operating Revenue for the Present Year / Overall Operating Revenue for the Past Year) × 100%
Explanatory Variable	ESG Rating	ESG	China Securities ESG ratings are assigned 9-1 from AAA to C
Control Variable	Enterprise Scale	Size	Logarithmic Measure of Total Assets at Period's Conclusion
	Debt-to-Asset Ratio	Lev	Total Liabilities / Total Assets × 100%
	Debt Repayment Capacity	Dra	Total Cash Flow from Operational Tasks / Present Liabilities
	Growth Capacity	Gro	(Current Total Assets - Total Assets of the Same Period Last Year) / ABS(Total Assets of the Same Period Last Year) × 100%
	Industry	Indnd	Industry
	Year	Year	Year

4.3. Model Construction

The research will utilize the ordinary least squares (OLS) regression approach. The Ordinary Least Squares regression model functions as a method for linear regression analysis that estimates model parameters by minimizing the sum of squared residuals, making it suitable for exploring linear relationships among variables [16].

Based on the above variable definitions, we have constructed the following OLS regression model:

$$FP = \beta_0 + \beta_1 ESG_{i,t} + \beta_i Control_{i,t} + \varepsilon_{i,t} \quad (1)$$

In this model, FP represents financial performance, $Control_{i,t}$ represents the control variables, β_0 is the intercept term, β_1 is the regression coefficient for the dependent variable, β_i is the regression coefficient for each control variable and ε is the error term.

5. EMPIRICAL RESULTS ANALYSIS

5.1. Descriptive Statistical Analysis

Displayed in the table are the descriptive statistical outcomes for the variables. Specifically, the average value of NP is 1.03 billion yuan with a standard deviation of 0.052. The average value of ROE is 0.137 with a standard deviation of 0.041. The average value of RGR is 0.201 with a standard deviation of 0.123. Taken together, the dispersion of the sample is relatively low. Additionally, the average ESG rating is 6.78, indicating that the overall ESG rating of new energy companies is slightly above the medium level, corresponding to a BBB rating in the China Securities ESG rating system. The standard deviation of 1.05 suggests a relatively low dispersion of the sample. This aligns with the descriptive statistical results reported in previous studies for the control variables. (Table 2)

Table2. Overview of Variable Descriptions

Variable Names	unit	Sample size	Average	Standard deviation	Minimum	Maximum
ESG Performance-Related Variables						
ESG Score	Score	835	6.78	1.05	3.5	9.5
ESG Env	Score	835	7.02	0.98	3.8	9.8
ESG Soc	Score	835	6.65	1.12	3.2	9.2
ESG Gov	Score	835	6.51	1.09	3.0	9.0
Financial Performance-Related Variables						
NP	Billion yuan	835	10.3	5.2	-2.0	35.0
ROE	%	835	13.7	4.1	3.0	28.0
RGR	%	835	20.1	12.3	-10.0	65.0
Control Variables						
Size	Billion yuan	835	60.2	25.3	10.0	200.0
Leverage	%	835	58.7	10.2	30.0	90.0
Liquidity	%	835	1.3	0.4	0.6	2.5
Age	Year	835	12.8	6.7	2.0	30.0

5.2. Regression Results and Analysis

Based on the regression model analysis, the regression coefficient for the environmental dimension (ESG Env) is 0.26 and is significant at the 1% level ($t=6.50$, $p<0.001$), indicating that the ESG score for the environmental dimension possesses a beneficial and substantial effect on the economic outcomes of emerging energy firms. The regression coefficient for the social dimension stands at 0.19 and holds significance at the 1% threshold ($t=6.33$, $p<0.001$), showing that the ESG score for the social dimension also has a positive impact on financial performance. The regression coefficient for the governance dimension (ESG Gov) stand at 0.15 and holds significant at the 1% threshold ($t=5.00$, $p<0.001$), indicating that good corporate governance mechanisms contribute beneficially to the fiscal outcomes of new energy firms. According to the data, the interplay between the performance of new energy firms in the governance dimension and ESG ratings is more significant. For the control

variables Size and Industry, the regression coefficients stand at 0.14 and 0.09, respectively, each showing significance at the 1% threshold ($p < 0.001$), signifying that these variables hold a significant position within the model.

Through empirical analysis using regression models, it was discovered a positive association between ESG performance and the financial performance of new energy firms, supporting Hypothesis 1. This indicates that the efforts of new energy companies in environmental protection, social responsibility, and corporate governance can enhance their financial performance. Therefore, new energy companies should actively strengthen ESG practices, improve environmental performance, actively fulfill social responsibilities, and improve corporate governance mechanisms to enhance their comprehensive competitiveness and financial performance. At the same time, governments and regulatory agencies should encourage and support new energy companies' investment and practices in ESG to promote their better sustainable development. (Table 3)

Table 3. Regression Results

Variable	Regression Coefficient	Standard Deviation Value	t	p
ESG Env	0.26	0.04	6.50	<0.001
ESG Soc	0.19	0.03	6.33	<0.001
ESG Gov	0.15	0.03	5.00	<0.001
Size	0.14	0.02	7.00	<0.001
Industry	0.09	0.02	4.50	<0.001
β_0	1.50	0.30	5.00	<0.001

5.3. Heterogeneity Analysis

The objective is to determine if there's a stronger positive link between ESG outcomes and corporate financial results in industries with high pollution levels within new energy companies, a heterogeneity analysis model is constructed. Since the focus is on heavily polluting industries within new energy companies, the sample is limited to listed companies that belong to both new energy and heavily polluting industries. The application of a multiple linear regression model is to analyze the correlation between ESG performance and corporate financial performance, taking into account the heterogeneity of the industries in which the companies operate. The configuration of the model is as outlined below:

$$FP = \beta_0 + \beta_1 \text{ESG Score} + \beta_2 \text{Industry Dummy} + \beta_3 \text{Pollution Dummy} + \beta_4 \text{New Energy Dummy} + \beta_5 \text{Industry} \times \text{New Energy Dummy} + \beta_6 \text{Control Variables} + \varepsilon \quad (2)$$

In this model: FP represents the financial performance indicator of the firm. ESG Score represents the ESG rating of the company. The Industry Dummy serves as a placeholder variable to represent different industries, controlling for differences across industries. The pollution Dummy serves as a placeholder variable to represent the level of pollution, featuring a value of 1 for industries with high pollution and 0 for those with low pollution. A New Energy Dummy is a dummy variable representing new energy firms, with a value of 1 for new energy firms and 0 for non-new energy firms. Industry x New Energy Dummy is a cross-term dummy variable representing the interaction between industry and new energy, capturing the special effects of heavily polluting industries within new energy companies. Control Variables represent a series of control variables such as enterprise size, financial leverage and ε represents the error term.

The ESG Score is calculated based on the publicly available ESG-related information of these companies, while FP is measured using financial indicators such as ROA and ROE. According to the outcomes of the heterogeneity analysis, the ESG Score's coefficient exhibits a notably positive value, indicating a positive relationship between ESG performance and corporate financial performance.

The coefficient of New Energy Dummy is also significantly positive, indicating that new energy firms have higher financial performance in comparison to non-new energy firms. Furthermore, the coefficient of Industry x New Energy Dummy is significantly positive, suggesting that there is a more distinct positive link between ESG outcomes and the financial performance of corporations in heavily polluting industries within new energy companies. This may be because these companies face higher environmental and social responsibility requirements, thus placing greater emphasis on ESG practices, which consequently results in better financial performance. (Table 4)

To sum up, there's a notable positive link between ESG efficiency and the financial results of corporations within new energy companies, supporting Hypothesis 3. This underscores the importance of strengthening ESG practices in these specific industries [17].

Table 4. Heterogeneity Analysis Results

Variable	Variable	Standard Error	t	p
ESG Score	0.20	0.03	6.67	<0.01
Industry Dummy	0.05	0.04	1.25	0.21
Pollution Dummy	0.08	0.05	1.60	0.11
New Energy Dummy	0.12	0.04	3.00	<0.01
Industry x New Energy Dummy	0.15	0.06	2.50	<0.05
Control Variables	——	——	——	——
Constant	1.50	0.20	7.50	<0.01
R2	0.45			

5.4. Robustness Test

For the purpose of maintaining the solidity of the findings, this research chooses to replace the dependent variables NP, ROE and RGR with ROA. The findings indicate a direct positive relationship between the replaced ESG Score and corporate financial performance remains significant, suggesting that this research's findings remain unaffected by the source of ESG score data.

6. CONCLUSIONS AND IMPLICATIONS

The findings of this research are summarized below: There is a significant positive correlation between ESG performance and the financial performance of new energy firms. Compared to the social and environmental dimensions, new energy firms' performance in the corporate governance dimension is more significantly related to ESG ratings. The positive relationship between ESG performance and corporate financial performance is more pronounced in heavily polluting industries within new energy companies. New energy companies should strengthen ESG practices, commit to achieving high performance in environmental, social, and governance aspects, and promote sustainable development and financial performance. It is recommended to put special focus on ESG practices in the corporate governance dimension, strengthen board construction, improve internal control mechanisms, and enhance the transparency of information disclosure to improve the ESG performance and financial performance of companies. At the same time, governments and regulatory agencies should strengthen supervision and guidance of ESG performance in new energy companies to promote the healthy development of the new energy industry.

REFERENCES

- [1] Gunnar, F., Timo, B., Alexander, B. (2016). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*. 6(4), 210-233.

- [2] Kordsachia, O., Focke, M., Velte, P. (2022). Do sustainable institution investors contribute to firms's environmental performance? Empirical evidence from Europe. *Review of Managerial Science*, (5):1409-1436.
- [3] Orlitzky, M., Schmidt, F. L., Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, 24(3), 403-441.
- [4] Remmer, S., Anne, K. H., Inga, H. (2016). Impact of ESG factors on firm risk in Europe. *Journal of Business Economics*.
- [5] Duque, G. E., Aguilera, C. J. (2021). Environmental, social and governance (ESG) scores and financial performance of multilatinas: moderating effects of geographic international diversification and financial slack. *Journal of Business Ethics*, 2(7):315-334.
- [6] Tao, Y. (2023). An Empirical Study on the Impact of ESG Ratings on Corporate Financial Performance: Evidence from A-share Listed Companies. *China Market*, (34): 13-20.
- [7] Yan, W., Zhao, Y., and Meng, D. (2023). A Study on the Impact of ESG Ratings on the Financial Performance of Listed Companies. *Journal of Nanjing Audit University*, 20 (06): 71-80.
- [8] Wang, J., Li, Y., and Wu, X. (2018). The Signaling Role of Social Responsibility: A Study Based on the Chinese Market. *Chinese Journal of Management Science*, 26 (08): 31-41.
- [9] Qiu, D. (2023). A Study on the Impact of Corporate ESG Performance on Institutional Investors' Shareholding Preferences. *Modern Business*, (22): 133-136.
- [10] Solikhin, A., Lubis, T. A., & Siregar, A. P. (2019). Role of corporate reputation in corporate social responsibility relations to firm performance in Jambi Province. *MICEB: Mulawarman International Conference on Economics and Business*, Vol 2, No 1.
- [11] Li, K., & Zhang, R. (2020). The impact of corporate environmental, social, and governance performance on financial performance: Evidence from renewable energy firms. *Journal of Cleaner Production*, 256, 120376.
- [12] Liu, Z., and Gao, J. (2021). Environmental, Social, and Governance Factors and Corporate Financial Performance: Empirical Evidence Based on Chinese Listed Companies. *Nankai Business Review*, 24(2): 5-23.
- [13] Wong, Y., Ching, W. (2023). The Relationship between ESG and Corporate Financial Performance during the Covid-19 Crisis. *University Tunku Abdul Rahman, Master of Business Administration (Corporate Governance)*.
- [14] Garriga, E., & Mele, D. (2019). Corporate social responsibility theories: Mapping the territory. *Journal of Business Ethics*, 155(1), 1-35.
- [15] Xie, X., & Xie, Y. (2023). The Impact of ESG Ratings on the Financial Performance of Technology-Based Enterprises. *Co-operative Economy & Science and Technology*, (13), 150-152.
- [16] Shrestha, S., & Thakur, R. M. C. (2023). Impact of Capital Structure on Profitability of Dabur Nepal Private Limited. *Nepal Journals Online: Journal of Economics and Management*, Vol. 3 No. 1.
- [17] Sheng, Y., Liu, C., & Liu, T. (2023). Research on the Relationship between ESG and Financial Performance in Pharmaceutical Manufacturing Enterprises. *Friends of Accounting*.