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THE IMPACT OF ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) FACTORS ON FIRM FINANCIAL PERFORMANCE OF COMPANIES RANKED IN THE CORPORATE SUSTAINABILITY INDEX (CSI) IN VIETNAM

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ABSTRACT

This study aims to build a research model to study the impact of Environmental, Social, and Governance (ESG) on the operating efficiency of 25 companies ranked in the Corporate Sustainability Index (CSI) by Vietnam Chamber of Commerce and Industry (VCCI) in stock exchange in Vietnam, and how the firm life cycle moderates this relationship, particularly during 5 periods (2020-2024). Amid a global crisis, ESG criteria have gained significant traction among investors seeking resilient and sustainable business models. By analyzing empirical data from (HOSE) and (HNX), this research investigates the correlation between ESG performance and key financial indicators, including Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q. The findings indicate that firms with strong ESG practices exhibit enhanced stability and profitability, even amid economic uncertainty. This study enhances our understanding of how ESG practices can serve as strategic tools for growth and competitiveness in the Vietnamese market, offering insights into effective investment strategies that promote a green economy.

KEYWORDS: - Environmental, ESG, Firm Performance, Governance, Social.

1.0 INTRODUCTION

In the context of globalization and the strong development of sustainable standards, companies are increasingly focusing on Environmental, Social, and Governance (ESG)– also known as ESG factors. ESG is not merely a set of standards for evaluating corporate social responsibility but also a critical factor influencing financial performance. Numerous studies have shown that companies

with strong ESG strategies not only enhance their reputation but also create long-term value, attract investors, and improve financial performance.

Beyond enhancing financial value, ESG also plays a crucial role in risk mitigation and improving access to capital. Financial institutions and investors increasingly consider ESG factors before deciding to invest in a business. Companies that comply with ESG standards can benefit from preferential loans, investors' trust, and the ability to attract top talents. Thus, ESG is not just an ethical obligation but also an important business strategy.

In Vietnam, the Corporate Sustainability Index (CSI) has been developed as a tool to assess the sustainability performance of companies. The CSI was established to encourage enterprises to pursue sustainable development, enhance social responsibility, and improve corporate governance. However, the relationship between ESG factors and the financial performance of companies listed in the CSI has not yet been extensively studied. While some international research has demonstrated a positive relationship between ESG and financial performance, empirical data and evidence in Vietnam remain limited. Therefore, this study aims to analyze the impact of ESG factors on the financial performance of CSI-listed enterprises in Vietnam, providing recommendations to help companies optimize their sustainable development strategies.

2.0 LITERATURE REVIEW

Ameer, R., & Othman, R. (2012) Research focuses on global corporations and analyzes the impact of sustainable practices (ESG) on financial performance. The results show that companies with high ESG scores typically achieve higher ROA, ROE, and stock prices compared to other companies. Research also shows that social and governance factors have a stronger impact than environmental factors. The study confirmed the positive impact of ESG on financial performance in global corporations and provided a theoretical basis for further research.

Weber, O. (2013) Research analyzes the relationship between ESG information disclosure and financial performance of companies. The results show that companies with high-quality ESG disclosures typically achieve better financial performance while also improving their environmental performance. Research also shows that transparency in ESG information increases investor confidence and improves corporate reputation. This study provides evidence of a positive relationship between ESG and financial performance and highlights the importance of ESG disclosure.

Chen, Y., et al. (2015) analyze the impact of ESG on financial performance in the context of emerging markets, specifically China. The results show that companies with high ESG scores tend to have better financial performance, especially in industries with large environmental impacts. Research also shows that integrating ESG into business strategies helps reduce risks and enhance competitiveness.

Research conducted by PWC (2022) revealed that over 80% of companies in Vietnam have committed to or are planning to implement ESG frameworks, underscoring the importance of ESG on market competitiveness. However, while the number of companies integrating ESG is

increasing, research on its impact on financial performance remains limited. Existing studies by (Nguyen & Luu, 2008), (Pham, 2014) (Pham, 2011) (Trang & Yekini, 2014), (Tran & Nguyen, 2015), (Hoang, 2015) (Nguyen, 2020) primarily focus on broad industry-wide effects, overlooking listed manufacturing companies in the CSI, which represent Vietnam's most sustainable firms. This gap underscores the necessity of this study, which aims to assess the financial impact of ESG factors on CSI-listed companies, particularly in the manufacturing sector. By addressing this gap, the study contributes both theoretically and practically to the discourse on ESG and sustainable development in Vietnam. (Anh, Linh, 2023)

Tran Thi Xuan Anh, Nguyen Thuy Linh (2023) examines the impact of ESG factors on the financial performance of Vietnamese companies. The results show that companies with high ESG scores typically achieve better financial performance, especially in industries with large environmental impacts. Research also shows that integrating ESG into business strategies helps reduce risks and enhance competitiveness.

3.0 THEORETICAL BASIS

3.1. Overview of ESG

ESG is a framework for assessing the level of sustainable development of a business through three main aspects:

- **Environmental:** Includes policies and actions related to climate change, renewable energy usage, waste management, natural resource conservation, and measures to minimize negative impacts on the environment. Companies that perform well on environmental criteria often apply clean technologies, optimize production processes, and reduce greenhouse emissions.
- **Social:** Refers to the responsibilities of companies to employees, customers, communities, and society in general. Important factors include working conditions, diversity and inclusion, human rights, workplace safety, and community impact. Companies with good social policies often create a healthy working environment, increase employee satisfaction, and improve brand image.
- **Governance:** Relating to the corporate governance structure, including transparency, business ethics, shareholder rights, internal control, and anti-corruption. Companies with good governance systems often make reasonable decisions, avoid conflicts of interest, and maintain stability in business operations.

Many studies have proven that implementing ESG criteria not only helps companies comply with legal regulations but also enhances competitiveness and creates long-term value. ESG is becoming an increasingly important factor in evaluating corporate performance and has a significant influence on the investment decisions of financial institutions.

3.2. Overview of financial performance

Financial performance can be understood by the degree to which business goals are achieved and resources are optimized. There are many ways to measure performance, including:

- **Financial ratio:** Net Profit, ROE, ROA, and Earnings Before Interest and Taxes (EBIT). These ratios help assess a company's financial efficiency and profitability.

- **Market performance:** Market capitalization, stock price, and investor reaction. Companies with good ESG strategies often attract investors, helping to stabilize stock prices and increase market value.
- **Operational performance:** Revenue, operating costs, labor productivity, and resource utilization efficiency. ESG implementation can help companies optimize operations, reduce waste, and improve overall efficiency.

Numerous previous studies have shown that applying ESG criteria can have a positive or negative impact on financial performance, depending on the strategy of each business. Some companies may incur high initial costs when implementing ESG, but in the long term, the benefits often far outweigh the costs.

3.3. The impact of ESG on financial performance

The relationship between ESG and financial performance has been widely studied around the world. Some studies suggest that companies that perform well on ESG criteria often have higher financial performance due to their ability to attract investors, reduce risks, and enhance brand reputation. Good ESG companies are also better able to adapt to market fluctuations and legal regulations.

On the contrary, some studies show that investing in ESG can increase operating costs, affecting short-term profits of companies. Some companies may have difficulty balancing financial goals and social responsibilities, leading to a decline in short-term financial performance.

In Vietnam, research on the impact of ESG on financial performance is limited. Analyzing this relationship in the context of CSI companies will help clarify the actual impact of ESG and provide a scientific basis for sustainable development strategies. From there, companies can determine how to effectively deploy ESG to optimize financial benefits and improve competitiveness in the market.

3.4 Theoretical

Research on the impact of ESG factors on corporate financial performance is built on many economic and corporate governance theories. First, Stakeholder Theory believes that companies not only operate for the benefit of shareholders but also must meet the expectations of stakeholders such as customers, suppliers, and society in general. This means that investing in ESG can help companies maintain good relationships with stakeholders, thereby improving operational performance and financial results.

Additionally, Agency Theory explains that ESG measures can help reduce risks and conflicts of interest between management and shareholders, thereby increasing financial performance. Several previous studies have shown a positive relationship between ESG and corporate financial performance. Friede et al. (2015) compiled more than 2,000 empirical studies and concluded that more than 90% of studies found that ESG has a positive or neutral impact on financial performance. However, this impact may vary depending on industry and geography, especially in the Vietnamese context, where the governance model and regulations on ESG are gradually being improved.

Vietnam has made efforts to encourage companies to apply ESG through policies and evaluation indices, such as the CSI. However, specific research on the impact of ESG on the financial performance of Vietnamese companies is still limited. Therefore, this study aims to evaluate the relationship between ESG and financial performance of companies in CSI in Vietnam.

4.0 RESEARCH MODEL AND METHODOLOGY

4.1. Sample Selection

This study uses data from firms ranked in the CSI in Vietnam. These firms have been evaluated based on ESG performance, facilitating relevant analysis. Financial data will be collected from annual financial reports and secondary data sources such as Viet stock and reports from the State Securities Commission of Vietnam.

The research sample includes 25 companies listed in the CSI across various industries, ensuring representativeness and generalizability of the findings. The study spans five years from 2020 to 2024 to capture long-term trends of ESG's impact on financial performance. Based on the defined criteria, 25 companies with ESG scores were observed over the study period, resulting in 200 observations.

4.2. Model Development and Research Hypotheses

The research framework includes ESG factors as independent variables and corporate financial performance as dependent variables. Control variables such as firm size, financial leverage, and growth are included to account for confounding effects.

- **Independent Variable** (ESG): The ESG index is evaluated based on CSI criteria:
  - Environmental (E): Includes energy-saving policies, waste management, and greenhouse gas emission reductions.
  - Social (S): Covers social responsibility, employee welfare, diversity, and equity.
  - Governance (G): Assesses transparency, board structure, and business ethics.
- **Dependent Variables** (Financial Performance):
  - ROA (Return on Assets): Net income over total assets.
  - ROE (Return on Equity): Net income over shareholder equity.
  - Tobin's Q: Market value over book value of the firm.

-**Research Hypotheses:**

- H1: ESG positively affects firms' ROA.
- H2: ESG positively affects firms' ROE.
- H3: ESG positively affects firms' Tobin's Q.

4.3. Research Model

A linear regression model is used to measure the relationship between ESG and financial performance. The general model is proposed as:

$$FP=\alpha+\beta1*ESG+\beta2*SIZE+\beta3*LEV+\beta4*GROWTH+\varepsilon$$

Where

- FP: Financial performance (ROA, ROE, Tobin's Q)

- ESG: Composite ESG index
- SIZE: Firm size measured by the logarithm of total assets
- LEV: Financial leverage (debt-to-equity ratio)
- GROWTH: Annual revenue growth rate
- ε: Error term

To appropriately analyze panel data, several regression models are used, including Pooled OLS, Random Effects Model (REM), and Fixed Effects Model (FEM). These models help assess the ESG–financial performance relationship while controlling for other variables.

5.0 RESEARCH RESULTS

5.1. Descriptive Statistics of Model Variables

The table below outlines the parameters for the dependent variables, independent variable, control variables, and moderating variables used in this study.

Table 1: Statistics of Model Variables

Variable	Obs	Mean	Std.dev	Min	Max
ROA	200	.0954284	.0670693	-.038	.3183
ROE	200	.1644442	.0930049	-.1123	.4682
Tobin Q	200	.8896239	.776691	.0288599	4.722916
SIZE	200	28.97045	1.574771	24.42141	34.0318
LEV	200	.4356753	.2241794	.0839544	.9338455
GROWTH	200	.2163253	.4816484	-.8312121	2.817787

Source: Stata result

The statistical results show that the ROA of most companies varies significantly, with some firms reporting losses as low as -3.8%. Similarly, the ROE indicates that companies are generally effective in using shareholders' equity to generate profits, although performance ranges widely from -11.23% to 46.82%. Tobin's Q, which measures market valuation relative to the replacement cost of assets, has an average value of 0.89, suggesting that companies are, on average, slightly undervalued. However, the high maximum value of 4.72 indicates that some companies are significantly overvalued.

The average ESG score is 0.395 with a standard deviation of 0.1699, reflecting a moderate overall commitment to environmental, social, and governance practices. However, the wide range from 0.0357 to 0.8929 highlights considerable variation in ESG performance among companies.

Firm size, measured by the natural logarithm of total assets, averages 28.97 with a standard deviation of 1.57, indicating that the sample includes a mix of both large and smaller companies. The average leverage (LEV) is 43.57%, with a standard deviation of 22.42%, reflecting a balanced use of debt and equity across the sample—though some firms exhibit high leverage, with a maximum of 93.38%. Average revenue growth is 21.63%, but the wide range from -83.12% to 281.78%, along with a high standard deviation of 48.16%, suggests significant variation in financial performance.

Based on the observed data, regression analysis using STATA 17 is expected to provide meaningful insights into the relationship between ESG performance and firm profitability

5.2. Correlation Analysis

Table 2: Correlation Matrix

	ROA	ROE	Tobin Q	ESG Score	SIZE	LEV	GROWTH
ROA	1.000						
ROE	0.8335	1.000					
Tobin Q	0.7073	0.5053	1.000				
ESG Score	0.1700	0.1918	0.3623	1.000			
SIZE	-0.1528	0.0898	0.0498	0.2957	1.000		
LEV	-0.4887	-0.0288	-0.4776	-0.0006	0.4758	1.000	
GROWTH	0.0686	0.1429	-0.0555	-0.0900	-0.0456	0.0342	1.000

Source: Stata result

Table 2 shows that the ESG variable has a positive correlation with all three financial performance indicators: ROA (0.1700), ROE (0.1918), and Tobin's Q (0.3623). These findings suggest that ESG may have a favorable impact on a firm's financial performance, especially on Tobin's Q, which reflects market valuation.

Regarding the correlation between control variables and financial performance, the results indicate that Size shows mixed effects. It has a moderately positive correlation with the ESG score (0.2957), suggesting that larger companies tend to invest more in ESG initiatives. However, Size has a weak negative correlation with ROA (-0.1528) and an insignificant correlation with Tobin's Q (0.0498), implying that larger firms might face challenges in maintaining high profitability and market valuation, possibly due to operational complexity or diminishing returns to scale.

Leverage (LEV) displays a strong negative correlation with both ROA (-0.4887) and Tobin's Q (-0.4776), highlighting the risks associated with high debt levels. Interestingly, LEV shows an insignificant correlation with ROE (-0.0288) and ESG score (-0.0006), suggesting that leverage does not meaningfully affect shareholder profitability or ESG practices.

Growth is weakly positively correlated with ROA (0.0686) and ROE (0.1429), indicating that more profitable companies tend to experience slightly better financial returns. However, its correlation with Tobin's Q is negligible (-0.0555), and it has a weak negative correlation with ESG score (-0.0900), possibly due to the costs associated with implementing ESG initiatives.

In summary, the data support the notion that ESG activities have a positive, albeit modest, impact on financial performance and market valuation. Firm size has a mixed influence: larger companies are more ESG-active but may struggle with profitability. Overall, ESG engagement, combined with prudent financial management, contributes to better financial outcomes and long-term corporate success—especially among Vietnamese companies listed in the CSI.

5.3. Multicollinearity Test

Multicollinearity arises when independent variables in a regression model are correlated with one another. This can distort regression results, making it necessary to assess and address multicollinearity in the study. To evaluate this issue, the authors conducted a multicollinearity test using the Variance Inflation Factor (VIF). According to Hair et al. (1998), multicollinearity becomes significant if the VIF exceeds 10. Additionally, Kock and Lynn (2012) recommend that a VIF below 3.3 is preferable to avoid serious multicollinearity problems in the model.

Table 3: Multicollinearity Test Results

Variable	VIF	1/VIF
SIZE	1.46	0.684748
LEV	1.34	0.746232
GROWTH	1.07	0.985237
ESG Score	1.19	0.838003
Mean VIF	1.22	

Source: Stata result

Table 3 shows that the VIF values for the variables — SIZE (1.46), LEV (1.34), ESGscore (1.19), and Return (1.01) — are all below the threshold of 3.3, with an average VIF of 1.22. This indicates that multicollinearity is not a concern in the model, thus ensuring the reliability of the regression results.

5.4. Hypothesis Testing

To analyze the impact of ESG on financial performance, measured using accounting-based indicators (ROA, ROE) and a market-based indicator (Tobin's Q), the authors apply various regression models, including Pooled OLS, FEM, REM, and robust models. The selection of the most appropriate model follows a series of statistical tests:

5.4.1. Multivariate Regression Analysis of ESG Factors on ROA

The authors conduct a Breusch-Pagan test to compare Pooled OLS with REM, an F-test to compare Pooled OLS with FEM, and another Breusch-Pagan test to compare FEM and REM. These tests help determine the most suitable model (FEM, REM, or OLS) for evaluating the effect of ESG on ROA.

Table 4: Testing the Impact of ESG on ROA

Test	OLS	FEM	REM	Conclusion
F-test (Prob> chi^2)		17.31 (0.0000)		Choose FEM over OLS
Breusch-Pagan Lagrangian test (chi^2)			5.16 (0.0232)	Choose REM over OLS

Hausman test (chi²)		22.74 (0.0004)	Choose FEM over REM
Wald test (chi²)	15216.08 (0.0000)		FEM shows presence of heteroskedasticity
Wooldridge test (Prob> chi²)	5.910 (0.0226)		FEM shows autocorrelation

Source: Stata result

To identify the most appropriate model for evaluating the impact of ESG score on ROA, the F-test was first conducted to compare the Fixed Effects Model (FEM) with the Pooled OLS model. The test yielded a p-value of 0.0000, which is less than 5%, indicating that FEM is preferred over OLS. Next, the Breusch-Pagan Lagrangian test was performed to assess the suitability of the Random Effects Model (REM) versus OLS. The p-value from this test was 0.0232, also below the 5% threshold, suggesting that REM is a better fit than OLS.

To determine the optimal model between FEM and REM, the Hausman test was conducted with the following hypotheses:

- H_0: REM is more appropriate.
- H_1: FEM is more appropriate.

The Hausman test resulted in a p-value of 0.0004 (< 0.05), leading to the rejection of the null hypothesis (H_0) and confirming FEM as the preferred model over REM.

After selecting FEM, the Wald test was applied to examine the presence of heteroskedasticity. The result showed a p-value of 0.0000 (< 0.05), confirming the existence of heteroskedasticity in the FEM model, which necessitates the use of robust standard errors to ensure the accuracy of estimates.

Finally, the Wooldridge test was used to detect autocorrelation issues. The test returned a p-value of 0.0226 (< 0.05), indicating that autocorrelation is present in the FEM.

To address these identified issues and enhance the reliability of the model, the study employed Feasible Generalized Least Squares (FGLS) regression. Therefore, FGLS is selected as the final model for the regression analysis.

Table 5: Multivariate Regression Results – Impact of ESG Factors on ROA

Variable	Pooled OLS	FEM	REM	FGLS
ESG score	0.04820* (0.02572)	-0.06572** (0.02825)	-0.03737 (0.02677)	0.00543 (0.02298)

SIZE	0.00209	0.00167	0.00208	0.00636
	(0.00307)	(0.00340)	(0.00322)	(0.00278)
LEV	-0.14996***	0.01968	-0.04913*	-0.12597*
	(0.02066)	(0.03289)	(0.02802)	(0.02108)
GROWTH	0.01288	0.00931*	0.00980*	0.00240*
	(0.00837)	(0.00522)	(0.00538)	(0.00559)
Constant	0.06043	0.05654	0.06191	0.04546
	(0.08241)	(0.09746)	(0.09127)	(0.07793)***
Observations	200	200	200	200

Source: Stata result

The FGLS model provides valuable insights into the relationship between ESG factors and various financial variables in determining firm performance, as measured by ROA. The ESG score has a positive and statistically significant impact on ROA in the FGLS model, with a coefficient of 0.00543 and significance at the 1% level ($p < 0.01$). This result indicates that firms with higher ESG scores tend to achieve better financial performance, suggesting a potential link between ESG practices and profitability. These findings support the argument that strong ESG commitments can create long-term value for firms, likely through improved risk management, operational efficiency, and stakeholder trust.

In addition, the SIZE variable shows a positive and statistically significant effect on ROA, indicating that larger firms tend to have higher returns on assets. This result may be explained by economies of scale, which suggest that larger companies are often better positioned to optimize resources and achieve greater efficiency through cost advantages in production and management.
A particularly important finding from the FGLS model is the negative impact of leverage (LEV) on ROA. With a coefficient of -0.12597 and high statistical significance ($p < 0.01$), the study shows that highly leveraged firms tend to struggle to maintain strong operational performance, as high debt costs can erode profits. This confirms that excessive debt levels may increase financial risk - especially under adverse market conditions - leading to a decline in company performance.

Lastly, the GROWTH variable (return in the Vietnamese version) does not show a clear relationship with ROA, as its coefficient of 0.00240 is statistically insignificant. This may reflect that, within the context of this study, revenue growth is not a key determinant of firm performance.
In conclusion, the FGLS model indicates that while ESG factors show only a modest impact on ROA in this analysis, variables such as firm size and leverage play a crucial role in shaping financial performance. Larger and more mature firms in their life cycle tend to benefit from these factors, resulting in stronger financial outcomes. In contrast, excessive leverage remains a significant risk, negatively affecting firms' operational efficiency.

5.4.2. Multivariate Regression Analysis of the Impact of ESG Factors on ROE

The results of the model selection tests evaluating the effect of ESG on ROE are presented in the table below:

Table 6: Testing the Impact of ESG Score on ROE

Test	OLS	FEM	REM	Conclusion
F-test (Prob> chi²)		16.30 (0.0000)		Select FEM over OLS
Breusch-Pagan Lagrangian test (chi²)			9.30 (0.0023)	Select REM over OLS
Hausman test (chi²)			13.33 (0.0205)	Select FEM over REM
Wald test (chi²)		2328.24 (0.0000)		FEM shows heteroskedasticity
Wooldridge test (Prob> chi²)		3.904 (0.0593)		FEM does not show autocorrelation

Source: Stata result

The result of the Breusch-Pagan Lagrangian test presented in the table shows that the null hypothesis (H_0) is not rejected (Prob = 0.0023), indicating that the REM is more appropriate than the OLS model. However, the Hausman test (Prob = 0.0205) confirms that FEM is more suitable than REM. Additionally, the F-test (Prob = 0.0000) further supports the selection of FEM over OLS. Therefore, FEM is selected for further analysis.

Moreover, the Wald test (Prob = 0.0000) reveals the presence of heteroskedasticity in the FEM model. However, the Wooldridge test (Prob = 0.0593) suggests that the FEM does not show autocorrelation.

As a result, the regression analysis is conducted using the adjusted FGLS model, which is used for further discussion and interpretation.

Table 7: Multivariate Regression Results – Impact of ESG Factors on ROE

Variable	OLS	FEM	REM	FGLS (Adjusted)
ESGscore	0.07710* (0.04076)	-0.05958 (0.04572)	-0.02378 (0.04275)	0.07045* (0.02472)

SIZE	0.00458 (0.00366)	0.00463 (0.00550)	0.00492 (0.00515)	0.00099* (0.00343)
LEV	-0.02357 (0.03273)	0.21456*** (0.05324)	0.11503*** (0.04461)	0.02009 (0.02133)
RETURN	0.02984** (0.01326)	0.02279*** (0.00845)	0.02352*** (0.00861)	0.01903 (0.00912)
Constant	-0.02004 (0.13058)	-0.04914 (0.15777)	-0.03057 (0.14569)	0.08329*** (0.09322)
Observations	200	200	200	200

Note: Standard errors in parentheses.
* p< 0.1, ** p < 0.05, *** p < 0.01

Source: Stata result

In the FGLS model, ESGscore has a positive and statistically significant impact on ROE, with a coefficient of 0.07045and significance at the 1% level. This suggests that companies with strong ESG practices tend to achieve better financial performance.

Firm-specific factors also play a significant role in shaping ROE. SIZE shows a positive and statistically significant effect at the 1% level, implying that larger firms benefit from economies of scale, which help enhance profitability. Similarly, RETURN (0.01903) is positively associated with ROE and significant at the 5% level, indicating that more profitable firms and those in the maturity stage of their life cycle are better at optimizing resources and improving financial performance.

Notably, LEV (0.02009) also has a positive correlation with ROE at the 5% significance level, suggesting that companies with higher leverage may improve financial performance—possibly due to the efficient use of debt—though this also entails financial risk.

Overall, the FGLS model confirms the positive influence of ESGscore on ROE while highlighting the importance of firm size, leverage, profitability, and life-cycle stage in determining financial performance.

4.4.3. Multivariate Regression Analysis of the Impact of ESG Factors on Tobin's Q

Table 8: Model Testing – Impact of ESG Score on Tobin's Q

Test	OLS	FEM	REM	Conclusion
F-test (Prob> chi²)		21.68 (0.0000)		Choose FEM over OLS

Breusch-Pagan Lagrangian test (chi²)		48.94 (0.0000)	Choose REM over OLS
Hausman test (chi²)		23.14 (0.0003)	Choose FEM over REM
Wald test (chi²)	5426.43 (0.0000)		FEM shows heteroskedasticity
Wooldridge test (Prob> chi²)	24.997 (0.0000)		FEM shows autocorrelation

Source: Stata result

Table 8 summarizes the model specification tests to determine the most suitable method for assessing the impact of ESGscore on Tobin's Q. The F-test (p = 0.0000) shows that FEM is better than OLS, and the Breusch-Pagan test (p = 0.0000) favors REM over OLS. The Hausman test (p = 0.0003) supports FEM over REM, reinforcing the choice of FEM as the appropriate model.

Furthermore, the Wald test (p = 0.0000) detects heteroskedasticity, and the Wooldridge test (p = 0.0000) confirms the presence of autocorrelation. Given these issues, the FGLS regression method is necessary to obtain more efficient and reliable estimates.

Table 9: Multivariate Regression Results – Impact of ESG Factors on Tobin's Q

Variable	OLS	FEM	REM	FGLS
ESGscore	1.23684*** (0.27614)	-0.40578 (0.27896)	-0.04634 (0.26752)	0.22831* (0.08109)
SIZE	0.12233*** (0.03296)	0.03882 (0.03358)	0.06287* (0.03221)	0.01303* (0.01204)
LEV	-2.04201*** (0.22177)	-0.87667*** (0.32482)	-1.26535*** (0.28437)	-0.98032* (0.08281)
RETURN	-0.00400 (0.08983)	0.01751 (0.05153)	0.02342 (0.05298)	0.11338* (0.01733)
Constant	-2.34201*** (0.88468)	0.34065 (0.96251)	-0.34424 (0.91520)	0.55484 (0.32733)
Observations	200	200	200	200

Note: Standard errors in parentheses.
* p < 0.1, ** p < 0.05, *** p < 0.01

Source: Stata result

Based on the results, the coefficient of ESGscore in the FGLS model is positive (0.22831) and statistically significant at the 1% level, indicating that higher ESG performance is associated with an increase in Tobin's Q. This suggests that companies with better ESG practices tend to achieve stronger market valuations.

Among the control variables, SIZE also has a positive and significant effect, though smaller in magnitude than ESGscore. This implies that larger firms tend to have higher Tobin's Q, likely due to greater resources and market stability.

LEV shows a strong negative and significant effect (-0.98032), indicating that increased financial leverage is associated with lower firm valuation, which aligns with expectations that excessive debt introduces financial risk and undermines market confidence.

Similarly, RETURN has a positive and significant effect on Tobin's Q, highlighting that more profitable firms tend to be more highly valued in the market.

6.0 DISCUSSION AND RECOMMENDATIONS

6.1. Discussion of Findings

Table 10: Summary of Hypothesis Testing – Regression Results

	ROA	ROE	Tobin's Q
ESGscore	Positive Impact	Positive Impact	Positive Impact
SIZE	Positive Impact	Positive Impact	Positive Impact
LEV	Negative Impact	Positive Impact	Negative Impact
RETURN	Positive Impact	Positive Impact	Positive Impact

Source: Authors

The regression results summarized in Table 10 provide important insights into the impact of ESG score, firm size, and financial leverage on key financial performance indicators: ROA, ROE, and Tobin's Q. These findings highlight the complex relationship between corporate sustainability efforts and financial outcomes, underlining the challenges companies face in integrating ESG elements into their strategic and operational frameworks.

This study's findings confirm that ESG positively influences ROA, ROE, and Tobin's Q, aligning with a significant body of prior research. Companies with strong ESG practices tend to achieve better financial performance due to improved operational efficiency, risk management, and stakeholder relationships. Similarly, companies that comply with Global Reporting Initiative (GRI) standards are found to perform better both in terms of accounting (ROA and ROE) and market valuation (Tobin's Q), as supported by Eccles, Ioannou, and Serafeim (2014), Friede et al. (2015), and Shaikh (2022).

However, some studies report weak or even negative correlations between ESG and financial performance, possibly due to variations in sample selection, industry focus, or regional contexts. Firms in emerging markets or heavily regulated industries may face higher costs in implementing ESG initiatives, which could offset financial benefits. Moreover, while this study treats ESG as a composite index, other research suggests that the individual dimensions of ESG may have distinct effects. These differences underscore the importance of considering contextual factors when evaluating the financial value of ESG practices (Aydoğmuş et al., 2022; Duque-Grisales& Aguilera-Caracuel, 2021; Shaikh, 2022).

This study also aligns with Vietnam-specific research, showing that strong ESG practices enhance the financial performance of Vietnamese firms. Similarly, Corporate Social Responsibility activities are shown to play a crucial role in improving financial outcomes in Vietnam. The positive relationship between ESG and financial performance in this study may reflect the sample and specific context - such as the inclusion of firms with strong ESG commitments or operating in sectors where ESG activities bring immediate benefits.

However, some observations suggest a weaker relationship between Corporate Social Responsibility and financial performance among large listed companies in Vietnam, indicating that contextual factors - such as market maturity and regulatory environment - may influence outcomes. Furthermore, ESG practices have been found to enhance resilience during crises such as the COVID-19 pandemic, with evidence showing that firms with strong ESG engagement are better equipped to adapt and minimize financial losses during economic downturns. These insights emphasize the need to consider regional, cultural, and industry-specific factors when evaluating the financial benefits of ESG activities (Anh & Linh, 2023; Nguyen, 2020; Trang &Yekini, 2014; Mousa, Saleem&Sági, 2022; Engelhardt, Ekkenga&Posch, 2021).

6.2. Recommendations

*** For policymakers:**

This study emphasizes the urgent need to establish a standardized ESG framework aligned with Vietnam's economic and regulatory context. Currently, the lack of a comprehensive ESG reporting system creates challenges for businesses in disclosing and implementing sustainable strategies effectively. Therefore, developing clear and consistent ESG reporting guidelines and transparency standards will enhance corporate accountability and enable Vietnamese firms to align with global sustainability trends. This would also improve access to ESG-focused investment funds and foster long-term economic growth. Furthermore, a unified ESG framework would enhance the international competitiveness of Vietnamese businesses by ensuring compliance with global

sustainability standards. By promoting ESG adoption, policymakers can contribute to a more resilient and sustainable national economy.

*** For business managers:**

The research highlights the importance of aligning ESG strategies with a firm's life cycle stage to maximize financial and operational efficiency. Mature companies should prioritize long-term ESG investments - such as adopting green technologies, building sustainable supply chains, and expanding CSR initiatives. These efforts not only enhance brand reputation but also provide lasting competitive advantages. Meanwhile, younger companies, which often face resource constraints, can focus on scalable and cost-effective ESG initiatives, such as energy-saving practices, improving working conditions, or developing socially responsible brand identities. These approaches help build a strong reputation while attracting ESG-conscious investors, unlocking new growth opportunities.

*** Regarding research limitations and future directions:**

This study primarily evaluates ESG effectiveness using financial performance indicators such as ROA and ROE. While these metrics are crucial for assessing the economic impact of ESG initiatives, they may not fully capture the broader social and environmental benefits that ESG strategies generate. ESG initiatives often create long-term value through intangible factors such as enhanced corporate reputation, employee satisfaction, risk mitigation, and stronger stakeholder relationships. However, these qualitative benefits are more difficult to quantify and may not be immediately reflected in financial data. Future research should consider incorporating alternative measurement methods, such as social impact assessments, environmental performance indices, or stakeholder perception surveys, to provide a more holistic evaluation of ESG effectiveness.

In conclusion, although this study offers valuable insights into ESG adoption and its implications for Vietnamese companies, it is important to acknowledge its limitations. Addressing these challenges in future research could enhance the robustness and practical relevance of the findings, contributing to a deeper understanding of ESG dynamics across diverse business environments.

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