"ESG implementation and its effect on financial performance: Focusing on sustainable financial strategies of green companies in Indonesia"

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BUSINESS PERSPECTIVES

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ESG IMPLEMENTATION AND ITS EFFECT ON FINANCIAL PERFORMANCE: FOCUSING ON SUSTAINABLE FINANCIAL STRATEGIES OF GREEN COMPANIES IN INDONESIA

Abstract

This study examines the effect of ESG reporting on the financial performance of green companies listed in Indonesia between 2020 and 2024, totaling 85 companies with 425 observations. Using ESG scores and corporate financial data from Bloomberg, three panel models were estimated: a random-effects model for ROA, a fixed-effects model for ROE, controlling for size, leverage, growth, and cash flow, and a test for sectoral differences between energy and non-energy companies. The results indicate that governance scores are positively associated with ROA ($\beta = 0.011$, $p = 0.092$), whereas ESG scores are weakly positively associated with ROA ($\beta = 0.020$, $p = 0.080$). Environmental and social scores are not statistically significant to ROA or ROE. For ROE, firm size is the main significant predictor ($\beta = 2.126$, $p = 0.042$). The results observe significant differences between the energy and non-energy sectors, with the energy sector reporting higher financial performance after controlling for ESG. Finally, this study indicates that ESG reporting policies that promote good governance can yield faster returns to shareholders.

Keywords	ESG, financial performance, sustainable financial strategy, green companies
JEL Classification	G30, M14, Q56

INTRODUCTION

Businesses' concern for environmental factors continues to increase in various circles to ensure long-term benefits for ecosystems, the economy, and human welfare. Several issues have arisen related to the influence of business activities on the ecosystem, including climate change, natural resource management, pollution and waste, and biodiversity (Alnafrah, 2024; Chang & Wang, 2024). Furthermore, social issues include corporate responsibility toward employees and the community and respect for human rights. Good corporate governance plays a crucial role in ensuring corporate transparency and accountability (Kao, 2023; Qiang et al., 2023).

The Indonesian government's policy to mitigate environmental issues is to strengthen its commitment to sustainability targets, including the net-zero emissions target by 2060 (Zahira & Fadillah, 2022). This policy was adopted as a long-term measure in response to environmental issues, which also have a substantial influence on the financial and strategic aspects of business (Wan et al., 2024). Government efforts can be realized through strict sustainability reporting for public businesses, and the implementation of these policies has a global

environmental influence. Currently, global awareness of the importance of infrastructure development that considers environmental, social, and governance (ESG) aspects is increasing (Chen et al., 2022). Indonesia has strengthened its commitment in the 2022 Enhanced Nationally Determined Contribution (ENDC) document by increasing its net zero emission target to 31.89% independently (unconditional) or 43.2% with international support (conditional) by 2030. Several countries encourage the implementation of ESG by providing tax incentives for businesses that effectively apply ESG practices.

Although the government has provided measures and guidance for businesses to implement ESG practices, approximately 40% of businesses in Indonesia do not fully understand the benefits of implementing ESG. One of the main challenges is the high upfront costs of building environmentally friendly infrastructure and adopting sustainable technologies. The majority of businesses consider high costs and a lack of government support as the main obstacles in meeting complex ESG standards (Bai et al., 2024).

The lack of ESG implementation in Indonesia is evident in its slow development and limited adoption of ESG practices. Many businesses struggle to determine appropriate criteria, metrics, and performance indicators, leading to ineffective ESG performance measurement and reporting (Geng et al., 2024). In addition, limited access to relevant data and information further hinders businesses' ability to conduct transparent, accurate evaluations and reporting. These challenges are exacerbated by immature regulations and policies that create uncertainty in ESG reporting standards and processes.

1. LITERATURE REVIEW AND HYPOTHESES

ESG has changed over the last five years, with an emphasis on integration to create sustainable value. Berg et al. (2022) showed that the modern ESG framework is no longer just about compliance, but has become a necessity for business to influence business valuation. Pedersen et al. (2021) developed an ESG integrated valuation model that quantitatively links ESG performance to capital costs and long-term growth. In the context of emerging markets, Aydoğmuş et al. (2022) found that the governance dimension has the greatest influence on business performance, compared with environmental and social factors.

The main mechanisms for creating corporate value in ESG. First, through risk mitigation, business with high ESG scores have lower return volatility during crises (Choi et al., 2024). Second, increased productivity reveals a favorable connection between ESG investment and employee productivity and innovation output (Feng et al., 2025). Third, through valuation premiums, the market assigns higher valuations to businesses with strong ESG performance, particularly in sectors facing stringent environmental regulations (Wedajo et al., 2024). Recent developments in ESG literature identify several critical challenges. Wu et al. (2022) identified the causes of ESG influence by drawing a favorable connection between ESG and performance due to omitted variables. On the other hand, DasGupta and Roy (2023) considered temporal and contextual factors in assessing ESG influences, which is particularly relevant for developing countries such as Indonesia, where institutional factors play an important role.

Businesses with strong ESG practices tend to have greater operational efficiency and optimal capital structure. Liao et al. (2024) show that energy efficiency and environmental risk management reduce operating costs, thereby increasing ROA, and that preferential access to green financing lowers capital costs, thereby increasing ROE. These outcomes are consistent with Cho and Kim (2024), who report a substantial, favorable connection between ESG disclosure quality and both profitability ratios, particularly in emerging markets where ESG information premiums are greater. They confirm the role of ESG as an enabler of financial performance through operational efficiency and financial structure optimization channels.

Sustainable finance strategies can be understood as an integrative approach that combines environmental, social, and governance principles into financial decision-making to increase the long-term value of a business. These strategies serve as a

framework that integrates economic performance with environmental and social sustainability, ultimately resulting in long-term competitive advantage for business (Kuzmina et al., 2023). Capital costs are reduced through access to sustainable financial instruments, increased business valuation by ESG premiums, and mitigation of climate transition risks. This is reinforced by Bertolotti and Roman (2024), who emphasize the importance of a dynamic approach in sustainable finance strategies, where businesses need to balance short-term profitability with long-term climate resilience, especially in developing countries, by increasing regulatory pressures.

Recent studies have strengthened the empirical link between ESG performance and financial outcomes, although nuances remain. Dasilas (2025) found that a business's ESG score is positively associated with beta, identifying businesses with strong performance that can increase systematic risk driven by challenges in integrating ESG into corporate strategy. Similarly, Garcia and Orsato (2020) show that ESG leaders outperform stock returns, especially in markets with strict sustainability regulations. However, Brogi and Lagasio (2025) revealed that the financial benefits of ESG are uneven, with governance factors drawing stronger predictive power than environmental or social factors. Furthermore, a meta-analysis by Kuzey et al. (2023) confirms that excessive investment strategies increase ESG inequality and suggests creating relevant mechanisms in governance and policy to avoid hindering legitimacy and long-term sustainability. These outcomes highlight the need for sector-specific and regionally contextual ESG strategies.

This study uses dynamic panel data analysis of green businesses from 2020 to 2024 to evaluate how ESG implementation affects financial metrics while integrating the latest theoretical advances. This framework is based on the concept of ESG and financial performance proposed by Zainuddin et al. (2024), who argue that ESG factors do not fully influence a business's industry, which in turn affects its performance. The dependent variables include ROA and ROE, while the independent variables are environmental, social, and governance scores, and the control variables are business size, leverage, growth, and cash flow.

Recent empirical studies have increasingly examined the connection between ESG performance and financial performance, considering key moderating variables such as business size, leverage, growth, and cash flow. Albuquerque et al. (2020) found that large businesses with strong ESG performance can leverage economies of scale, leading to greater profits. In contrast, small businesses face disproportionate costs that erode their financial performance. Similarly, Shi et al. (2024) show that businesses with high leverage and strong ESG practices experience lower debt costs due to reduced perceived risk; however, this effect diminishes perceived risk, increasing productivity and business value. Conversely, Yin et al. (2023) revealed that businesses with high growth and strong ESG performance demonstrate better stock returns, as sustainability initiatives align with long-term expansion strategies. However, Mechrgui and Theiri (2024) show that ESG has an unfavorable influence on stock price volatility, with a substantial influence on the environmental and governance dimensions. The tax payment variable moderates the relationship between increasing ESG scores and stock price volatility. These outcomes highlight the importance of tax transparency as a key to financial stability and encourage the development of registered businesses.

This study also analyzes moderation regression using green business-level data to evaluate control variables such as business size, leverage, growth, and cash flow that affect the connection between ESG performance and financial performance. This framework is based on the stakeholder resource theory (Aydoğmuş et al., 2022), which states that the financial influence of ESG depends on a business's ability to transform sustainability efforts into a competitive advantage. Financial performance is measured using ROA, Tobin's Q, and credit ratings as dependent variables, while ESG scores serve as independent variables. The moderator variables include sentiment matrices and control variables for Bloomberg ESG flows. This framework aims to enhance efficiency, innovation, and reputation, increase social legitimacy, and reduce conflicts among stakeholders.

Saini et al. (2023) reviewed 296 academic documents and identified 60 relevant articles on the relationship between ESG performance and cor-

porate financial performance. The analysis shows that businesses that focus on the social dimension tend to incur lower capital costs and reduced exposure to risk. These outcomes are consistent with the stakeholder, legitimacy, and signaling theoretical frameworks that explain how ESG influences financial performance. However, the influence is not homogeneous across all industry sectors. An investigation into inter-sectoral variations across European industries revealed that companies that effectively applied ESG practices typically achieved higher returns on assets (ROA) and returns on equity (ROE), highlighting the positive financial impact of sustainable business strategies across sectors (Koundouri et al., 2022). However, the contribution of ESG to financial performance varies across sectors. The energy sector recorded a relatively low ROI, but businesses with high ESG scores in this sector managed to reduce their unfavorable ROE levels to levels lower than those of other businesses. This indicates that ESG implementation serves as a substantial risk-mitigation instrument, particularly in sectors with high vulnerability.

This study uses fixed-effects panel regression to compare the financial performance of ROA and ROE of green businesses in two main sectors, energy and non-energy, for the period 2020–2024, using green ratings by Sustainalytics for classification. This analytical framework draws on the resource-based view of sustainability (Broadstock et al., 2020), which emphasizes that green competitiveness varies across sectors due to structural and operational differences. The aim is to examine whether ESG performance influences financial outcomes and whether sectoral contexts shape these relationships.

The hypotheses of this study are as follows:

H1: *Environmental factors have a substantial effect on financial performance.*

H2: *Social factors have a substantial effect on financial performance.*

H3: *Governance factors have a substantial effect on financial performance.*

H4: *Size, leverage, growth, and cash flow moderate the relationship between ESG risk and financial performance.*

H5: *There is a significant difference in financial performance between firms in the energy and non-energy sectors.*

2. METHODS

Data released by the Indonesian Stock Exchange as of January 2025 revealed that 951 businesses or issuers were registered on the Indonesian Stock Exchange. In 2017, the Financial Services Authority required businesses to report on their environmental, social, and governance sustainability, and we began collecting data during the 2020–2024 period. To provide adequate ESG disclosure data for analysis, the data collection by 951 businesses was narrowed down to 85 businesses that had recorded their ESG reports on the Indonesian Stock Exchange. Table 1 outlines the criteria for sample selection. The sample included green businesses in Indonesia, comprising several business sectors (Table 2).

Table 1. Sample selection criteria

Criteria	Data
Data business registered on the Indonesian Stock Exchange ESG Market 2020–2024	951
Data on business that did not report ESG and sustainability reports on the Indonesian Stock Exchange ESG Market	(866)
Number (n)	85
Total data (n x 5 years)	425

Table 2. Green business categories based on sector

Sector	Number of business	Percentage
Energy Sector	11	13
Basic Materials Sector	15	17.6
Consumer Cyclicals Sector	13	15.3
Consumer Non-Cyclicals Sector	10	11.8
Financial Sector	13	15.3
Healthcare Sector	4	4.7
Industrial Sector	2	2.4
Infrastructure Sector	9	10.6
Property and Real Estate Sector	5	5.8
Technology Sector	3	3.5

According to Table 2, most of the research data came from the basic materials sector at 17.6%, the financial and consumer cyclicals sector at 15.3%, followed by the energy sector at 13%. The industrial sector had the lowest representation at 2.4% or two businesses.

The dataset consists of 85 businesses from 2020 to 2024, with a total of 425 observations. The dependent variables are ROA and ROE, the independent variables are environmental, social, and governance, and the control variables are size, leverage, growth, and cash flow. Table 3 outlines the measurement of the variables and the research model.

Table 3. Definition of operational variables

Variables	Description Formula
Dependent Variables	
ROA – Return on Assets	Net Profit/Total Assets
ROE – Return on Equity	Net Profit/Equity
Independent Variables	
Environmental	Refinitiv score
Social	Refinitiv score
Governance	Refinitiv score
Control Variables	
Size	Total Assets Logarithm
Leverage	Total Liabilities/Total Assets
Growth	Asset Growth Ratio
Cash Flow	Cash Ownership/Total Assets

The data analysis was divided into several parts. The first part evaluates the validity of the regression equation to measure the relationship among variables and their strength. The approaches used are the common effect model (CEM), fixed effect model (FEM), and random effect model (REM). The second part, after selecting the research method approach, performs panel data regression to test the research hypotheses (Aguade et al., 2022).

We tested two models to investigate the research objectives: ROA and ROE. Several researchers have used ROA and ROE as dependent variables and used size, leverage, growth, and cash as control variables (Biju et al., 2025; Helhel et al., 2024; Kim & Yoon, 2024; Yuan et al., 2025). We ran the following ten models to estimate outcomes.

$$ROA_{it} = \alpha + \beta_1\, ENV + \beta_2\, SIZ \tag{1}$$
$$+\beta_3\, LEV + \beta_4\, GRO + \beta_5\, CAS + \varepsilon_{it},$$

$$ROA_{it} = \alpha + \beta_1\, SOC + \beta_2\, SIZ \tag{2}$$
$$+\beta_3\, LEV + \beta_4\, GRO + \beta_5\, CAS + \varepsilon_{it},$$

$$ROA_{it} = \alpha + \beta_1\, GOV + \beta_2\, SIZ \tag{3}$$
$$+\beta_3\, LEV + \beta_4\, GRO + \beta_5\, CAS + \varepsilon_{it},$$

$$ROA_{it} = \alpha + \beta_1\, ESG + \beta_2\, SIZ$$
$$+\beta_3\left(ESG\_SIZ\right) + \beta_4\, LEV$$
$$+\beta_5\left(ESG\_LEV\right) + \beta_6\, GRO \tag{4}$$
$$+\beta_7\left(ESG\_GRO\right) + \beta_8\, CAS$$
$$+\beta_9\left(ESG\_CAS\right) + \varepsilon_{it},$$

$$ROA = \alpha + \beta ESG + \delta i\left(ESG \cdot Di\right) + \epsilon\varepsilon_{it}, \tag{5}$$

$$ROE_{it} = \alpha + \beta_1\, ENV + \beta_2\, SIZ$$
$$+\beta_3\, LEV + \beta_4\, GRO + \beta_5\, CAS + \varepsilon_{it}, \tag{6}$$

$$ROE_{it} = \alpha + \beta_1\, SOC + \beta_2\, SIZ$$
$$+\beta_3\, LEV + \beta_4\, GRO + \beta_5\, CAS + \varepsilon_{it}, \tag{7}$$

$$ROE_{it} = \alpha + \beta_1\, GOV + \beta_2\, SIZ$$
$$+\beta_3\, LEV + \beta_4\, GRO + \beta_5\, CAS + \varepsilon_{it}, \tag{8}$$

$$ROE_{it} = \alpha + \beta_1\, ESG + \beta_2\, SIZ$$
$$+\beta_3\left(ESG\_SIZ\right) + \beta_4\, LEV$$
$$+\beta_5\left(ESG\_LEV\right) + \beta_6\, GRO \tag{9}$$
$$+\beta_7\left(ESG\_GRO\right) + \beta_8\, CAS$$
$$+\beta_9\left(ESG\_CAS\right) + \varepsilon_{it},$$

$$ROE = \alpha + \beta ESG + \delta i\left(ESG \cdot Di\right) + \int \varepsilon_{it}. \tag{10}$$

3. RESULTS

Table 4 shows that this dataset consists of 85 businesses from 2020 to 2024, with a total of 425 business-year observations. We obtained the dependent and control variables (ROA, ROE, size, leverage, growth, and cash) from Bloomberg. We obtained the independent variables (ENV, SOC, and GOV) from Refinitiv. The ROA variable has an average value of 6.652 and a standard deviation of 8.887, with a range between –56 and 54. Meanwhile, ROE shows a greater average of 13.806, but with a larger standard deviation (19.443) and a very wide range of –84 to 140.200. This indicates considerable fluctuations in the financial performance of businesses. The ESG variables show moderate scores, with an average for the environmental (ENV) aspect of 40.867, social (SOC) 39.411, and

Table 4. Statistical description

Variable	N	Mean	St. Dev	Min	Median	Max
Dependent Variable						
ROA	425	6.652	8.887	−56.000	5.300	54.000
ROE	425	13.806	19.443	−84.000	11.050	140.200
Independent Variable						
ENV	425	40.867	31.929	0.000	37.500	96.875
SOC	425	39.411	27.779	0.000	40.000	90.000
GOV	425	49.388	48.582	0.000	50.000	100.000
ESG_CS	425	42.542	31.370	0.000	45.098	95.098
Control Variables						
SIZ	425	17.049	1.743	5.129	16.993	21.610
LEV	425	60.072	147.361	0.000	43.112	1,602.000
GRO	425	3,420.682	69,426.260	−98.442	6.891	1,431.247
CAS	425	50.019	51.069	0.0007	43.376	963.519

governance (GOV) 49.388. All three belong to a fairly wide range of values, from a minimum value close to zero to a maximum score.

The control variable, business size (SIZ), shows stability with an average of 17.049 and a standard deviation of 1.743. However, leverage (LEV) and growth (GRO) show extremely high values. LEV has an average of 60.072 with a very high standard deviation (147.361) and a maximum value of 1,602. Meanwhile, GRO has an average of 3,420.682, a standard deviation of 69,426.260, and a maximum value of over 1.4 million, indicating the presence of substantial outliers. The cash variable (CAS) has an average of 50.019, with a range of 0.0007 to 963.519. Overall, although most variables were within a reasonable range, the presence of several extreme values should be considered, as they can affect data distribution and the interpretation of analysis outcomes.

Table 5 shows that the Pearson correlation test outcomes indicate that the connection among the ROA and ROE has a very strong favorable correla-

tion (0.779), indicating that these two profitability measures move in the same direction. The ESG variables, namely ENV, SOC, GOV, and the ESG_CS composite score, show strong and substantial favorable correlations among themselves between 0.631 and 0.914, with the strongest connection between SOC and ESG_CS at 0.914 and between ENV and SOC at 0.866. In terms of financial performance, all ESG variables show weak to moderately favorable correlations with ROA (0.127; 0.177) and ROE (0.115; 0.167), indicating that better ESG performance tends to be accompanied by increased profitability, although the connection is not strong. On the control variable side, business size shows a weak unfavorable correlation with ROA of −0.101, while leverage and growth are almost uncorrelated with ROA and ROE. The cash variable also shows no substantial connection to profitability, but has a weak, favorable correlation with business size of 0.163.

A comprehensive series of diagnostic tests and model selection for panel data analysis was conducted through a stepwise process. The

Table 5. Pearson correlation matrix

Variable	ROA	ROE	ENV	SOC	GOV	ESG_CS	SIZ	LEV	GRO	CAS
ROA	1	−	−	−	−	−	−	−	−	−
ROE	0.779	1	−	−	−	−	−	−	−	−
ENV	0.170	0.120	1	−	−	−	−	−	−	−
SOC	0.166	0.167	0.866	1	−	−	−	−	−	−
GOV	0.127	0.115	0.631	0.667	1	−	−	−	−	−
ESG_CS	0.177	0.156	0.895	0.914	0.879	1	−	−	−	−
SIZ	−0.101	0.050	−0.047	0.063	0.094	0.056	1	−	−	−
LEV	−0.005	0.054	−0.095	−0.021	0.013	−0.031	0.042	1	−	−
GRO	−0.036	−0.034	0.013	0.017	0.050	0.033	−0.065	−0.006	1	−
CAS	−0.013	0.001	−0.129	−0.102	−0.027	−0.089	0.163	0.088	−0.029	1

Augmented Dickey-Fuller (ADF) stationarity test confirmed that all variables were stationary and could be used in their original form, devoid of transformation. Model selection began by comparing three alternatives: pooled, fixed-effect, and random-effect models. The *F* test showed that the fixed effects model was superior to the pooled model, while the Breusch-Pagan Lagrange multiplier test guided the use of the random effects model over the pooled model. The Hausman test, which was the final determinant, provided different outcomes for each dependent variable. In Table 6, the Hausman test outcomes for ROA (chi-square statistic 6.744; *p*-value 0.000) strongly support the random effects model, while for ROE (chi-square statistic 8.610; *p*-value 0.035), it recommends the fixed effects model.

Furthermore, additional diagnostic tests identified cross-sectional dependence, heteroscedasticity, and serial correlation in the model. However, the panel data structure of a short five-year time series and 85 cross-sectional units meant that cross-sectional dependence was not a substantial problem. To address heteroscedasticity and serial correlation, this study applied White's robust correction (the sandwich estimator). Finally, the applied model is adjusted based on the Hausman test results: a random effects model for ROA analysis and a fixed effects model for ROE analysis, which control for time-invariant business-specific characteristics. This methodological approach ensures that the resulting parameter estimates are consistent and efficient.

Table 6. Hausman test

Dependent Variable	Test outcome	Chi-Square Statistic	P-Value
ROA	Random Effects	6.744	0.000
ROE	Fixed Effects	8.610	0.035

Tables 7 and 8 present the regression model outcomes. We conducted all the tests and regressions. The outcomes in Table 7 show that the combined ESG and governance scores have a favorable and statistically substantial effect on ROA at the 10% alpha level with *p*-values of 0.080 and 0.092, respectively. Although the environmental and social scores have larger favorable coefficients of 0.019 and 0.015, their significance values do not meet

the statistical threshold, with *p*-values of 0.141 and 0.273, respectively. Among the control variables, only the energy sector dummy variable is consistently substantial at the 5% level in all models, indicating that there is a difference between the energy and non-energy sectors. Other variables, such as leverage and growth, show an unfavorable connection, while business size shows a favorable but not substantial connection.

Table 7. Return on assets random effect regression outcomes

Dependent Variable: ROA				
Variable	1	2	3	4
ENV	0.141 (0.019)	–	–	–
SOC	–	0.273 (0.015)	–	–
GOV	–	–	0.092* (0.011)	–
ESG_CS	–	–	–	0.080* (0.020)
SIZ	0.726 (0.119)	0.743 (0.111)	0.812 (0.081)	0.869 (0.055)
LEV	0.637 (−0.002)	0.595 (−0.002)	0.604 (−0.002)	0.630 (−0.002)
GRO	0.806 (−1.140)	0.794 (−1.210)	0.764 (−1.390)	0.780 (−1.290)
CAS	0.956 (−0.0003)	0.940 (−0.0005)	0.915 (−0.0007)	0.944 (−0.0004)
D_ENE	0.001***	0.001***	0.001***	0.001***
Observations	425	425	425	425

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

Unlike the outcomes for ROA, the regression for ROE in Table 8 shows that none of the ESG variables, either individually or in combination, are statistically significant. The *p*-values for environmental, social, governance, and combined ESG are all well above 0.1. Conversely, the business size control variable proved to have a substantially favorable effect on ROE at the 5% and 1% levels in all models. Leverage also had a consistent, albeit non-substantial, unfavorable effect. Similar to Table 7, the energy sector dummy variable again shows strong significance at the 5% level.

These outcomes reveal an interesting pattern. ESG scores appear to have a limited and substantial effect on profitability, as measured by ROA but not ROE. This suggests that the benefits of ESG performance are reflected more in asset efficiency

than in returns to equity shareholders. The significance of the size variable for ROE but not for ROA indicates that larger businesses tend to deliver better outcomes for shareholders, regardless of their ESG performance. The consistency of variable significance across sectors implies that industry or sector characteristics are strong determinants of financial performance in this sample.

The connection between ESG performance and financial performance is not straightforward and is greatly dependent on the profitability metric used. The influence of ESG on ROA is weak and only substantial for composite and governance scores, while its influence on ROE is not significant. The implication of these outcomes is that for investors and managers, sustainable ESG decisions may not necessarily translate directly into greater profitability, particularly for shareholders. Contextual factors such as business size and, especially, industry sector emerge as much stronger and more consistent predictors of financial performance than ESG scores in this study.

Table 8. Return on equity fixed effect regression outcomes

	Dependent Variable: ROE			
Variable	**1**	**2**	**3**	**4**
ENV	0.587	–	–	–
	(−0.015)			
SOC	–	0.358		–
		(−0.028)		
GOV	–	–	0.482	–
			(0.009)	
ESG_CS	–	–	–	0.995
				(0.00014)
SIZ	0.024**	0.019**	0.062*	0.042**
	(2.323)	(2.433)	(1.918)	(2.126)
LEV	0.296	0.279	0.380	0.323
	(−0.039)	(−0.040)	(−0.033)	(−0.037)
GRO	0.596	0.594	0.632	0.624
	(−4.900)	(−4.920)	(−4.410)	(−4.520)
CAS	0.897	0.896	0.911	0.901
	(0.001)	(0.001)	(0.015)	(−0.001)
D_ENE	0.014**	0.014**	0.014**	0.014**
Observations	425	425	425	425

Note: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Table 9. Hypotheses testing results

Hypothesis	Variable	T Statistic	P Value	Conclusion
H1	ENV → ROA	1.472	0.141	Rejected
H2	SOC → ROA	1.096	0.273	Rejected
H3	GOV → ROA	1.686	0.092	Accepted
H4	ESG CS → ROA	1.755	0.080	Partially Accepted
	SIZ → ESG → ROA	0.164	0.869	
	LEV → ESG → ROA	−0.481	0.630	
	GRO → ESG → ROA	−0.279	0.780	
	CAS → ESG → ROA	−0.069	0.944	
H5	D_ENE	3.222	0.001	Accepted

Note: ENV = environmental; SOC = social; GOV = governance; SIZ = size; LEV = leverage; GRO = growth; CAS = cash; ROA = return on assets; D_ENE = energy sector.

Table 10. Hypotheses testing results

Hypothesis	Variable	T Statistic	P Value	Conclusion
H1	ENV → ROE	−0.542	0.587	Rejected
H2	SOC → ROE	−0.918	0.358	Rejected
H3	GOV → ROE	0.702	0.482	Rejected
H4	ESG CS → ROE	0.005	0.995	Partially Accepted
	SIZ → ESG → ROE	2.034	0.042	
	LEV → ESG → ROE	−0.989	0.323	
	GRO → ESG → ROE	−0.489	0.624	
	CAS → ESG → ROE	0.123	0.901	
H5	D_ENE	2.461	0.014	Accepted

Note: ENV = environmental; SOC = social; GOV = governance; SIZ = size; LEV = leverage; GRO = growth; CAS = cash; ROE = return on equity; D_ENE = energy sector.

Tables 9 and 10 show that environmental and social aspects do not have a significant effect on ROA or ROE, so they are rejected in both models. Governance only has a significant effect on ROA, but not on ROE, so its consistency as a determinant of profitability is weakened in the equity indicator. The variables of firm size, leverage, growth, and cash show mixed effects on both ROA and ROE, so the overall test of this group of variables is categorized as partially accepted. Meanwhile, the energy sector proved significant in both models, suggesting that there are differences in profitability characteristics between energy-sector companies and those in other sectors. In general, it confirms that ESG's contribution to profitability remains limited, with only governance showing a stable influence on ROA. In contrast, equity-based profitability indicators do not receive empirical support from the three ESG pillars.

4. DISCUSSION

The environmental pillar has no substantial effect on corporate financial performance. The high costs and long time required for the implementation of environmental policies are the main reasons why their influence is not immediately reflected in financial performance. Similar outcomes were also recorded by Al Azizah and Haron (2025), who found that ESG performance, comprising the environmental dimension, is unfavorably related to profitability and is not substantial to market value in European businesses. They emphasize that the increased costs of compliance, reporting, and training related to ESG actually suppress profitability, although the quality of a business's environmental information can mitigate this unfavorable influence.

In line with this, Bai and Kim (2024) revealed that the connection between ESG and financial performance globally remains weak and contradictory. The study found a substantial correlation, while Bahadır and Akarsu (2024) only found a moderate correlation. This condition reinforces the view that the environmental pillar is difficult for the market to assess because disclosure tends to be lower than the social and governance aspects of ESG. In addition to high costs and long-term outcomes, environmental

information is often viewed with skepticism by market participants, especially in sensitive industries such as energy, mining, and chemicals (Adiwardhana et al., 2025). As a result, even though businesses increase environmental disclosure to meet stakeholder pressure, the financial value obtained remains limited.

Business performance, which includes aspects of human rights, labor, product responsibility, and community reflected in social scores, is not always related to successful financial performance. Businesses are often seen as entities that must focus on profit without incurring broad social responsibilities (Arı et al., 2024; Tamasiga et al., 2024). Sharma (2023) states that social aspects do not have a favorable effect on business performance. A weak favorable correlation is recorded between social disclosure and business financial performance, such as ROA and ROE. Social responsibility is not yet considered a key indicator of financial performance for green businesses in Indonesia.

Furthermore, Ernst et al. (2025) show that voluntary disclosure often does not attract the attention of investors because social and human capital are not necessarily determinants of business value. Social information is often considered irrelevant to market valuation because extensive and objective reporting does not automatically attract quality employees, increase productivity, or strengthen stakeholder trust. Thus, social disclosure can be perceived as an additional cost that does not substantially reduce transaction costs or increase business value.

Governance has been shown to have a favorable effect on financial performance, though in some studies the effect is relatively weak or context-dependent. Aydoğmuş et al. (2022) and Yavuz et al. (2025) found that governance scores are positively associated with profitability and business value, reinforcing the argument that good governance can reduce conflicts of interest and enhance operational efficiency. Similarly, Al Azizah and Haron (2025) show that, before the pandemic, governance played an important role in increasing profitability and market valuation, though its influence weakened afterward due to changes in macroeconomic conditions. This

confirms that governance is an important factor in maintaining financial stability, but its magnitude of influence can vary by context and time period.

In general, good governance functions as a control mechanism that increases transparency and reduces operational risk, thereby receiving favorable assessments from investors (Bai & Kim, 2024). Business transparency is a signal of trust that can foster stakeholder confidence, even though its financial influence is sometimes moderate. Governance practices, such as credible disclosure and effective board structures, help reduce unnecessary costs and support the long-term sustainability of businesses. Therefore, even though the influence of governance on financial performance is sometimes not strong, the consistent application of governance principles provides an important foundation for increasing business value while maintaining business sustainability.

CONCLUSION

This study explores how the implementation of environmental, social, and governance aspects affects the financial performance of green companies in Indonesia. The results show that the implementation of environmental and social aspects does not have a significant influence on overall financial performance. Meanwhile, governance has a weak influence on financial performance. Although governance scores have a weak influence on ROA, this influence is inconsistent and not observed in return on equity.

Nevertheless, this study shows substantial differences between the energy and non-energy sectors. Businesses in the energy sector show better financial performance than other sectors, which may be due to regulations, government incentives, or industry characteristics that encourage sustainable practices. This implies that certain sectors may be better prepared or benefit more from ESG implementation, requiring different approaches depending on the sectoral context. From a policy perspective, although ESG has not directly influenced financial performance, the ESG reporting requirements imposed by the government and the Indonesian Stock Exchange remain relevant.

This study has several limitations, including the observation period and the use of ESG data, which is limited to companies in Indonesia. The analysis also focuses only on the direct relationship between ESG and financial performance (ROA, ROE), without considering efficiency or risk-mitigation mechanisms as mediating factors. Future research could expand the coverage to the banking sector, analyzing how ESG dimensions drive operational efficiency and support sustainable financial stability through a quantitative approach using DEA or SFA models.

AUTHOR CONTRIBUTIONS

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