

The Role of ESG Disclosure in Moderating the Effect of Profitability on Firm Value in the Energy Sector on the Indonesia Stock Exchange

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Abstract

This research aims to investigate the influence of profitability on firm value while also assessing the moderating role of Environmental, Social, and Governance (ESG) disclosure in the association between profitability and firm value in energy sector companies listed on the Indonesia Stock Exchange throughout the 2021–2024 period. A quantitative research design was adopted by utilizing secondary data collected from financial statements, annual reports, and sustainability reports. The study involved 35 companies, resulting in 140 observational data points selected through a purposive sampling technique. Data analysis was carried out using panel data regression combined with Moderated Regression Analysis (MRA). The findings indicate that profitability exerts a positive and statistically significant influence on firm value. Conversely, ESG disclosure neither demonstrates a significant direct impact on firm value nor strengthens or weakens the relationship between profitability and firm value. This research enriches the existing body of knowledge by exploring the moderating function of ESG disclosure within the profitability–firm value relationship in Indonesian energy companies, a topic that has received relatively little empirical attention. Furthermore, the results offer practical insights for companies to improve the transparency and consistency of ESG reporting and may serve as a valuable reference in formulating sustainability strategies aimed at increasing firm value.

INTRODUCTION

Capital market dynamics reflect how the market values a company. This valuation is essentially observed through the company's value—a key focus for investors, creditors, and management alike. The level of a company's value indicates the extent to which it has successfully built market confidence in its performance (Saminem et al., 2024). Fluctuations in firm value are influenced by various factors, ranging from financial performance and corporate governance to a company's commitment to business sustainability (Abdi et al., 2022; Aydoğmuş et al., 2022). In recent years, the energy sector has faced significant business transformations and heightened demands for sustainability. Global investment in energy transition assets has risen sharply, surpassing USD 2 trillion in 2024 (KPMG, 2025). The global energy transition compels energy companies to shift away from reliance on fossil fuels toward more sustainable business practices (Sirin & Yilmaz, 2024). This shift is driven by intense pressure on the energy sector as a major contributor to national emissions—particularly given that Indonesia ranks among the world's top ten greenhouse gas emitters (Resmi et al., 2025). Simultaneously, global commodity price volatility continues to create uncertainty regarding financial performance (Barman & Mahakud, 2025). These conditions directly influence how investors assess a company's prospects, thereby making ESG disclosures increasingly relevant to investment decisions. Changes in market conditions, corporate performance, and sustainability demands drive fluctuations in the market valuation of energy sector companies.

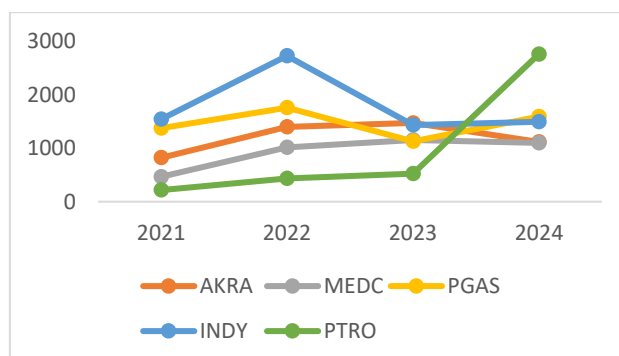


Figure 1. Stock Price Trends of Energy Sector Companies (2021–2024)

Source: <https://finance.yahoo.com> (processed by the author, 2026)

As shown in Figure 1, the stock prices of listed energy companies exhibited volatility between 2021 and 2024. While some companies experienced stock price increases, others saw declines during specific periods. These fluctuations reflect how investors reassess a company's standing in the capital market (Afriyani et al., 2026). Stock price is considered a key indicator of firm value and serves as a measure of investor confidence in a company's performance. A higher stock price generally signals a more positive investor outlook on the company, whereas... A decline in stock prices can dampen investor interest (Pangestuti et al., 2022). Profitability is a key aspect used by investors to evaluate a company's value. A company's capacity to generate high profits is generally interpreted as a positive signal, as it demonstrates effective performance in profit generation (Asni & Agustia, 2022). Research by Dorothy & Endri (2024) and Alghifari et al. (2022) found that profitability positively impacts firm value, as it is viewed as a favorable signal by investors. However, Adekunle (2025) demonstrated that profitability does not always influence firm value, given that investor assessments are also shaped by factors other than financial performance. Consequently, alongside financial performance, non-financial aspects are increasingly attracting investor attention when evaluating companies.

Beyond financial factors, ESG disclosure has now become a key determinant of firm value. Investors look beyond mere financial performance to consider a company's responsibility toward its stakeholders. ESG disclosure is believed to signal transparency, accountability, and a commitment to long-term sustainability to investors (Sari et al., 2025). However, the prevalence of "greenwashing" has led investors to scrutinize the quality of corporate ESG disclosures more closely. In Indonesia, ESG implementation is supported by capital market regulations, specifically Financial Services Authority (OJK) Regulation No. 51/POJK.03/2017 regarding sustainability reporting (Otoritas Jasa Keuangan, 2017; Prahbawati & Isnalita, 2025). Maysari & Endri (2025) and Wu et al. (2022) indicate that ESG disclosure has a positive impact on firm value; conversely, Rohendi et al. (2024) found that ESG disclosure does not have a direct impact on firm value.

Highly profitable companies attract the attention of capital market investors. Meanwhile, a company's commitment to business continuity is increasingly evident through the adoption of ESG practices (Yu & Xiao, 2022). Companies that combine high profitability with robust ESG disclosure tend to elicit more positive investor responses. However, investor reactions to ESG disclosure can vary from company to company. High investor confidence suggests that ESG disclosure can influence the relationship between profitability and firm value (Tyas & Prastiwi, 2025).

Although research into the interplay between profitability, ESG disclosure, and firm value has evolved significantly in recent years, the majority of prior studies have focused on companies in Thailand and the broader ASEAN region (Abubakr et al., 2026; Tyas & Prastiwi, 2025). Inconsistent findings from previous studies regarding the correlation between profitability, ESG disclosure, and firm value indicate a need for further examination, particularly within the energy sector—an industry characterized by high risk levels and significant focus on sustainability aspects.

In light of these limitations, this study aims to analyze the impact of profitability on firm value and the role of ESG disclosure as a moderating variable among energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period. This study is expected to provide empirical evidence and enrich the literature regarding the role of ESG disclosure in moderating the impact of profitability on firm value. Furthermore, the findings are expected to offer practical implications for companies seeking to enhance the quality and consistency of their ESG disclosures.

Hypotheses

H1: Profitability has a positive effect on firm value.

H2: ESG disclosure has a positive impact on firm value.

H3: ESG disclosure moderates the impact of profitability on firm value..

METHOD

This study employs a quantitative approach with an explanatory research design to analyze the effect of profitability on firm value, using Environmental, Social, and Governance (ESG) disclosure as a moderating variable. The study focuses on energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period. A quantitative approach was adopted because the study examines relationships between variables using numerical data and statistical analysis. Secondary data were obtained from financial statements, annual reports, and sustainability reports available on the official IDX website, while stock price data were sourced from Yahoo Finance. As all data used are publicly available, the study did not involve direct human participants.

The study population comprises all energy sector companies listed on the IDX between 2021 and 2024, totaling 87 companies. The sample was selected using a purposive sampling technique based on the availability and completeness of the required data throughout the observation period. Forty-two companies were excluded due to incomplete financial statements, annual reports, or sustainability reports, while another 10 companies failed to provide the specific information required for the study. This process resulted in a final sample of 35 companies. Given the four-year observation period, the total number of observations amounted to 140 data points.

Data collection was conducted via the documentation method, gathering financial statements, annual reports, sustainability reports, and stock price data for the 2021–2024 period. The data were then screened against sample criteria and processed according to the operational definitions of each variable. Data processing and analysis were performed using EViews 12 software.

Data analysis began with descriptive statistics to outline the characteristics of each research variable. Subsequently, a panel data regression model was selected using the Chow test, Hausman test, and Lagrange Multiplier test to determine the most appropriate model. Once the regression model was selected, classical assumption tests—covering normality, multicollinearity, heteroscedasticity, and autocorrelation—were conducted. Hypothesis testing was conducted using panel data regression and Moderated Regression Analysis (MRA). Panel data regression was employed to examine the effect of profitability on firm value, while MRA was used to assess the role of ESG disclosure in moderating the relationship between profitability and firm value.

The dependent variable in this study is firm value, which reflects the market's perception of a company's performance and prospects. Firm value is measured using Tobin's Q, a ratio comparing a company's market value to the book value of its assets. A higher Tobin's Q value indicates a

more favorable market valuation of the company. The independent variable, profitability, represents the company's ability to generate profit through asset management and is measured using Return on Assets (ROA).

The moderating variable, ESG disclosure, indicates the extent of a company's transparency in reporting information regarding environmental, social, and governance aspects. Measurement was carried out via content analysis using a dummy approach, assigning scores based on the presence or absence of disclosure for each ESG indicator. The indicators used are based on Global Reporting Initiative (GRI) standards, comprising 30 indicators for environmental aspects (GRI 300), 38 indicators for social aspects (GRI 400), and 47 indicators for governance aspects (GRI 2 and GRI 200).

This study also incorporates two control variables: size and leverage. Size refers to the company's scale, measured using the natural logarithm of total assets. Leverage indicates the extent of debt usage in the company's capital structure and is measured by the ratio of total debt to total assets. These control variables are included to minimize the potential influence of other factors on firm value, thereby allowing for a more precise analysis of the relationships between profitability, ESG disclosure, and firm value.

The first analysis model is used to examine the effect of profitability on firm value, taking into account ESG disclosure and control variables. The second model is used to test the moderating effect via the interaction between profitability and ESG disclosure. The regression equations used are as follows:

Model 1

$$\text{Tobin's } Q_{it} = \alpha + \beta_1 \text{ROA}_{it} + \beta_2 \text{ESG}_{it} + \beta_3 \text{SIZE}_{it} + \beta_4 \text{LEV}_{it} + \epsilon_{it}$$

Model 2

$$\text{Tobin's } Q_{it} = \alpha + \beta_1 \text{ROA}_{it} + \beta_2 \text{ESG}_{it} + \beta_3 (\text{ROA} \times \text{ESG})_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \epsilon_{it}$$

In these equations, Tobin's Q represents firm value, ROA represents profitability, ESG represents ESG disclosure, ROA × ESG represents the interaction between profitability and ESG disclosure, SIZE represents firm size, LEV represents leverage, α represents the constant, β represents the regression coefficient, ϵ represents the error term, i denotes the firm, and t denotes the observation period.

RESULT AND DISCUSSION

Descriptive Statistics

According to Table 2, firm value has a mean of 0.011, a minimum of -1.332, and a maximum of 1.520. This range indicates that firm values within the research sample are quite diverse. The profitability variable has a mean of 0.000, with a minimum of -0.355 and a maximum of 0.507, demonstrating varying levels of profitability among the companies during the study period. The ESG disclosure variable has a mean of -0.000, a minimum of -0.309, and a maximum of 0.272, indicating that ESG disclosure levels also vary across companies. The firm size variable has a mean of 9.041, a minimum of 6.246, and a maximum of 12.021, confirming that the study encompasses companies of varying sizes. Meanwhile, leverage has a mean of 1.108, a minimum of 0.046, and a maximum of 5.533, showing differences in debt usage levels among the sample companies.

Table 2. Descriptive Analysis

Variables	Mean	Std.De	Min	Max
v.				
Nilai Perusahaan	0.011	0.466	-1.332	1.520
Profitabilitas	0.000	0.134	-0.355	0.507
ESG	-0.000	0.180	-0.309	0.272

Size	9.041	1.429	6.246	12.021
Leverage	1.108	0.946	0.046	5.533

Source: EViews 12 output

Model Selection

Chow Test

According to Table 3, the probability value for the Chow test is <0.001 ; therefore, the Fixed Effect Model (FEM) is selected as the more appropriate model compared to the Common Effect Model (CEM).

Table 3. Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	9.496885	(34,100)	0.0000
Cross-section Chi-square	201.87322 0	34	0.0000

Source: Eviews 12 output

Hausman Test

According to Table 4, the Hausman test results show a probability value of 0.0494 (< 0.05); therefore, the Fixed Effect Model (FEM) is selected as the more appropriate panel data regression model compared to the Random Effect Model (REM). Based on the results of the Chow test and the Hausman test, all hypothesis testing in this study utilizes the Fixed Effect Model (FEM).

Table 4. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	11.100542	5	0.0494

Source: Eviews 12 Output

Classical Assumption Test

Normality Test

According to Table 5, the Jarque-Bera probability value is 0.000 (< 0.05); thus, the research data are not normally distributed. However, since the number of observations in this study exceeds 30, the data can be assumed to be normally distributed based on the Central Limit Theorem (Febriyanto et al., 2023; Ghozali, 2018).

Table 5. Normality Test

Method	Probability
Jarque-Bera	0.000

Source: EViews 12 Output

Autocorrelation Test

According to the Durbin-Watson autocorrelation test results in Table 6, the measured DW value is 1.605. This value is close to 2, indicating that the regression model does not suffer from serious autocorrelation issues.

Table 6. Autocorrelation Test

Metode Pengujian	Nilai
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Durbin-Watson stat	1.605
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Source: EViews 12 Output

Heteroskedasticity Test

The results of the heteroskedasticity test using the Glejser method, presented in Table 7, demonstrate that all variables have probability values greater than 0.05. Consequently, it can be concluded that the regression model does not suffer from heteroskedasticity issues and is therefore suitable for use in the study.

Table 7. Heteroskedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.745	0.488	1.526	0.130
Profitability	-0.158	0.159	1.996	0.321
ESG Disclosure	-0.014	0.232	-0.060	0.953
Size	-0.068	0.054	-1.245	0.216
Leverage	-0.008	0.019	-0.441	0.660

Source: Eviews 12 Output

Multicollinearity Test

Based on the multicollinearity test using the Variance Inflation Factor (VIF) shown in Table 8 above, all independent variables exhibit Centered values above 1 and VIF values below 10. These values demonstrate that the regression model does not suffer from multicollinearity issues, making it suitable for further analysis.

Table 8. Multicollinearity Test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	136384.6	114.7933	NA
Profitability	102619.1	1.533335	1.533324
ESG	10.7330.9	2.922041	2.922025
Size	3473488.	119.0961	2.882985
Leverage	1684.175	3.000502	1.259262

Source: Eviews 12 Output

Hypothesis Testing Results

Panel Data Regression Results

According to Table 9, the regression model is significant overall, with a Prob(F-statistic) value of 0.000. The Adjusted R^2 value of 0.767 indicates that the model explains 76.7% of the variation in firm value. The results of the H1 test demonstrate that profitability has a positive and significant impact on firm value ($\beta = 0.938$; $p = 0.003$); thus, H1 is accepted. The results of the H2 test show that ESG disclosure does not have a significant impact on firm value ($\beta = 0.302$; $p = 0.513$); thus, H2 is rejected. The control variables—firm size and leverage—also do not show a significant impact on firm value.

Table 9. Panel Data Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.050	0.966	-0.051	0.969
Profitability	0.938	0.308	3.045	0.003

ESG Disclosure	0.302	0.460	0.656	0.513
Size	0.004	0.107	0.038	0.970
Leverage	0.021	0.038	0.564	0.574
R-squared	0.831			
Adjusted R-squared	0.767			
F-statistic	13.024			
Prob(F-statistic)	0.000			

Source: Eviews 12 Output

Moderated Regression Analysis (MRA) Results

According to Table 10, the moderation model is significant overall, with a Prob(F-statistic) value of 0.000. The Adjusted R² value of 0.765 indicates that the model explains 76.5% of the variation in firm value. The results of the H3 test demonstrate that the interaction between profitability and ESG disclosure does not have a significant impact on firm value ($\beta = 0.500$; $p = 0.773$); therefore, H3 is rejected. Profitability continues to have a positive and significant impact on firm value, whereas ESG disclosure does not have a significant impact.

Table 10. Moderated Regression Analysis (MRA) Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.035	0.972	-0.036	0.971
Profitability	0.917	0.317	2.898	0.005
ESG Disclosure	0.298	0.462	0.646	0.511
Profitability * ESG Disclosure	0.500	1.727	0.290	0.773
Size	0.002	0.108	0.020	0.984
Leverage	0.021	0.038	0.564	0.574
R-squared	0.831			
Adjusted R-squared	0.765			
F-statistic	12.577			
Prob(F-statistic)	0.000			

Source: EViews 12 output

Discussion

The Effect of Profitability on Firm Value

The study results demonstrate that profitability has a positive and significant impact on firm value. This finding supports signaling theory, which posits that profitability serves as a positive signal for investors when assessing a company's prospects. Investors use this information as a basis to evaluate the company's future growth prospects and performance. High profitability reflects a company's capacity to manage assets effectively. Companies capable of maintaining their profitability levels are perceived as having strong performance and more promising business prospects. These findings also support stakeholder theory, which explains that profits provide the

resources necessary for a company to conduct operations and fulfill its responsibilities to stakeholders. Companies require adequate resources to sustain operations and support investments. This capability fosters a positive perception of the company, thereby increasing its value. These findings align with those of Fatima et al. (2023) and Tyas & Prastiwi (2025), who also found that profitability has a positive and significant impact on firm value. These results confirm that profitability remains a primary indicator considered by investors when evaluating companies in the energy sector.

The Effect of ESG Disclosure on Firm Value

The study results demonstrate that ESG disclosure does not have a significant impact on firm value. This finding does not support signaling theory or stakeholder theory, which suggest that ESG disclosure can serve as a positive signal for investors and demonstrate corporate responsibility toward stakeholders. The results indicate that ESG information is not yet a primary factor in company valuation. Market assessments remain more heavily influenced by financial information, as it is perceived to better reflect a company's condition and prospects. Furthermore, investors prioritize a company's profit-generating capacity over sustainability information when making investment decisions. The benefits of ESG disclosure are generally realized over the long term; thus, its impact on firm value is not immediately apparent. Variations in ESG disclosure levels across companies also prevent the market from forming consistent assessments based on this information. Consequently, ESG disclosure has not yet become a primary basis for investment decisions or market valuation. These results are consistent with the findings of Rohendi et al. (2024) and Oktaviana et al. (2025), who state that ESG disclosure does not yet have a significant impact on firm value. These findings indicate that companies need to improve the quality and consistency of their ESG disclosures so that sustainability information can provide added value for investors.

ESG Disclosure Moderating the Effect of Profitability on Firm Value

The study results demonstrate that ESG disclosure does not moderate the impact of profitability on firm value. These findings do not support signaling theory, which posits that ESG disclosure can reinforce the positive signal conveyed to investors by profitability information. Conversely, stakeholder theory suggests that companies capable of generating profit while also addressing environmental, social, and governance aspects should receive more favorable assessments from stakeholders. However, the study results show that profitability levels remain the primary basis for firm valuation, while ESG disclosure fails to strengthen this correlation. High profitability does not necessarily translate into more extensive ESG disclosure; conversely, higher levels of ESG disclosure are not necessarily accompanied by increased profitability. Companies must balance resource allocation among operational activities, investments, and sustainability programs, meaning that profit growth does not automatically lead to broader ESG disclosure. Consequently, ESG information does not yet provide added value in terms of amplifying the impact of profitability on firm value. Although Hidayati (2026) and Jeanice & Kim (2023) examined the direct impact of ESG disclosure on firm value, their findings also demonstrated that ESG disclosure did not enhance firm value. These results indicate that, during the study period, ESG disclosure did not act as a factor strengthening the correlation between profitability and firm value within the energy sector.

CONCLUSION

This study examines the correlation between profitability and firm value, positioning Environmental, Social, and Governance (ESG) disclosure as a moderating variable for energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period. The analysis reveals that profitability has a positive and significant impact on increasing firm value. Conversely, ESG disclosure does not show a significant impact on firm value, nor does it

strengthen or weaken the correlation between profitability and firm value. These findings indicate that investors in the energy sector still prioritize profitability levels as the primary basis for company valuation, while ESG disclosure has not yet provided sufficient added value to market valuation during the study period. The results suggest that companies need to continue prioritizing financial performance improvements alongside efforts to enhance the quality and consistency of ESG disclosures to optimize their benefits regarding market valuation.

A limitation of this study lies in the sample selection, which was restricted to energy sector companies listed on the IDX between 2021 and 2024. Consequently, the findings cannot be generalized to conditions outside this sector, as they are influenced by the specific characteristics of energy companies. Furthermore, the measurement of ESG disclosure relies on the availability and completeness of corporate sustainability reports, leading to potential variations in disclosure quality across companies.

The study suggests that future research should expand the scope to include multiple sectors and utilize a longer observation period to yield more comprehensive findings. Additionally, incorporating other variables—such as liquidity, dividend policy, firm growth, corporate governance, or institutional ownership (which may influence firm value)—could provide a broader understanding of the factors affecting the results. Employing different ESG disclosure metrics or indices could also offer deeper insights into the role of ESG in determining firm value.

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