



## Stock Risk as a Moderator in the ESG-Return Relationship: Evidence from the Indonesian Capital Market

Wahfi Zuli <sup>1)</sup>; Berto Usman<sup>2)</sup>; Nikmah<sup>3)</sup>

<sup>1)</sup>Magister of Accounting, Faculty of Economics and Business, Universitas Bengkulu, Bengkulu, Indonesia

<sup>2)</sup>Department of Management, Faculty of Economics and Business, Universitas Bengkulu, Bengkulu, Indonesia

<sup>3)</sup>Department of Accounting, Faculty of Economics and Business, Universitas Bengkulu, Bengkulu, Indonesia

\*Correspondent Author: [wahfizuli@gmail.com](mailto:wahfizuli@gmail.com)

### How to Cite :

Zuli, W.; Usman, B.; Nikmah, N. (2025). *Stock Risk as a Moderator in the ESG-Return Relationship: Evidence from the Indonesian Capital Market*. *Bima Journal : Business, Management and Accounting Journal*, 6 (2). 1439 - 1448. DOI: <https://doi.org/10.37638/bima.6.2.1439-1448>

### ARTICLE HISTORY

Received [15 August 2025]

Revised [27 Sept 2025]

Accepted [24 December 2025]

### KEYWORDS

Risk, Stock, return relationship;  
Indonesian capital market

### ABSTRACT

**Purpose:** This study analyses the influence of Environmental, Social, and Governance (ESG) performance on stock returns, with stock risk—measured by volatility—introduced as a moderating factor. **Methodology:** Using a sample of 33 companies listed in the IDX ESG Leaders and SRI-KEHATI indices between 2021 and 2023, ESG data were derived from the CESGS Universitas Airlangga dataset, returns were calculated through capital gains, and volatility was estimated from standard deviations of monthly returns. Panel regression with a Fixed Effect Model was employed. **Results:** Findings demonstrate that ESG performance negatively affects stock returns, and this negative impact intensifies in conditions of higher volatility. **Findings:** These results suggest that investors in Indonesia prioritise short-term financial risk over sustainability credentials, which weakens the signalling role of ESG. **Novelty:** This research introduces volatility as a moderator in the ESG–return nexus and provides evidence from ESG-specific indices in Indonesia (IDX ESG Leaders and SRI-KEHATI). **Originality:** The research highlights the Indonesian market context, showing that ESG has not yet emerged as a positive driver of stock returns. **Conclusion:** The study highlights that ESG in emerging markets requires stronger regulatory support and enhanced disclosure to translate sustainability practices into financial value. **Type of Paper:** Research article.

This is an open access article  
under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license



## INTRODUCTION

The introduction positions ESG as an increasingly important determinant of corporate value globally, though evidence on its impact remains inconclusive. In developed markets, ESG is often linked positively to firm performance, but in emerging economies like Indonesia, findings are mixed. The study highlights that Indonesian indices (IDX ESG Leaders, SRI-KEHATI) promote ESG awareness, yet investors remain uncertain about its value relevance. Stock risk, particularly volatility, is proposed as a contextual factor that may redefine ESG–return dynamics.

Building on classic financial theories, Modigliani and Miller (1958) argue that capital structure and risk are central to investment decisions and firm valuation, suggesting that any new non-financial factor—such as ESG—must ultimately be assessed in terms of its implications for cost of capital and expected returns. Similarly, Jensen and Meckling (1976) emphasize the role of agency costs and ownership structures, highlighting how managerial behavior and information asymmetry affect firm value. These frameworks imply

that ESG can function both as a governance mechanism to mitigate agency problems and as a potential signal influencing capital market perceptions.

Signalling theory further frames ESG as a credibility mechanism, but its strength depends on market stability. Thus, integrating ESG into investment decisions in emerging markets like Indonesia raises fundamental questions: does ESG performance materially affect stock returns, and does volatility reshape this relationship?

### **Research Objectives**

This study is designed to examine the effect of ESG performance on stock returns within the Indonesian capital market context. Specifically, it investigates whether stock risk plays a moderating role in the ESG–return relationship, thereby assessing the extent to which risk alters the contribution of ESG to stock performance. By positioning risk as a potential “game changer,” this research provides a deeper understanding of the dynamic interaction between sustainability practices and market outcomes. Through these objectives, the study contributes to the ongoing academic debate on ESG and finance while also delivering practical implications for investors, portfolio managers, and policymakers in emerging markets.

### **Signaling Theory**

Signaling theory (Akerlof, 1970; Spence, 1973) explains how firms use credible disclosures to reduce information asymmetry with investors. ESG performance serves as such a signal, reflecting commitment to sustainability and long-term value creation. However, the strength of this signal depends on market conditions: in high-volatility environments, ESG signals may lose relevance, whereas in stable markets they become more credible and influential (Ross, 1997; Xu, 2024).

### **Stock Return**

Stock return represents gains from equity investment, derived from capital appreciation and/or dividends (Copeland & Weston, 1979; Sharpe et al., 1999). This study focuses on capital gains as a measure of return, as it better captures market reactions to information, avoids dividend policy bias, and is more relevant in short-term and emerging market contexts (Bekaert & Harvey, 2002; Bodie et al., 2014; Fama & French, 1992).

### **ESG Performance**

ESG performance reflects how firms manage environmental, social, and governance dimensions (Eccles & George, 2013; Fatemi et al., 2018). Strong ESG practices enhance corporate reputation, mitigate risk, and generate long-term value (Friede et al., 2015; Khan et al., 2016). In this study, ESG performance is measured using the aggregate ESG score provided by the ESG Intelligence Dataset of CESGS Universitas Airlangga.

### **Stock Risk**

Stock risk reflects the uncertainty of price movements, commonly measured by volatility (Bodie et al., 2012). Volatility, calculated as the standard deviation of historical returns, indicates the extent to which actual returns deviate from expected returns. Higher volatility implies greater risk, making it a key indicator in portfolio analysis and risk management. Investors with high risk tolerance prefer high-volatility assets, while risk-averse investors tend to choose safer instruments such as bonds or deposits.

### **Hypothesis Development**

ESG performance represents a firm’s sustainability commitment and capacity to manage non-financial risks, which investors often interpret as a positive signal of managerial quality and long-term prospects (Eccles et al., 2012; Fatemi et al., 2018; Spence, 1973). Firms with higher ESG scores are expected to build stronger reputations, reduce information asymmetry, and increase investor confidence, thereby enhancing stock returns (Friede et al., 2015; Li et al., 2022; Yin et al., 2023).

H1. ESG performance has a positive effect on stock returns.

Stock volatility reflects market uncertainty and influences investor interpretation of information. During periods of high volatility, investors tend to focus on short-term price fluctuations, which can diminish the

importance of ESG signals (Broadstock et al., 2021; Renita Sari & Santi Hariyani, 2024). Conversely, in low-volatility environments, markets are more stable, and ESG information is more likely to be interpreted as a credible signal of long-term resilience and sustainability (Fatemi et al., 2018; Ross, 1997; Spence, 1973). Prior studies confirm that the ESG–return relationship is contingent upon risk conditions (Fu, 2024; Zeng et al., 2025) H2. Stock volatility moderates the relationship between ESG performance and stock returns.

## METHOD

The study adopts a quantitative panel regression design, focusing on 33 firms consistently listed in IDX ESG Leaders and SRI-KEHATI during 2021–2023. Data sources include the CESGS ESG dataset, IDX financial reports, and market trading data. The dependent variable is stock return (monthly capital gains), the independent variable is ESG score, and the moderator is stock volatility (standard deviation of monthly returns). Control variables include firm size, profitability, leverage, and dividend payout ratio. Model estimation applied Fixed Effect Models (FEM) based on Chow, LM, and Hausman tests, with robustness ensured by heteroskedasticity-consistent standard errors.

The study employs a panel data regression model with the following specifications:

Model 1 (baseline model):

$$\text{Returnit} = \beta_0 + \beta_1 \text{esgit} + \beta_2 \text{volit} + \beta_3 \ln\_marketcap + \beta_4 \text{roeit} + \beta_5 \text{derit} + \beta_6 \text{dprit} + \epsilon_{it}$$

Model 2 (moderation model):

$$\text{Returnit} = \beta_0 + \beta_1 \text{esg\_cit} + \beta_2 \text{vol\_cit} + \beta_3 \text{Interaction} + \beta_4 \ln\_marketcap + \beta_5 \text{roeit} + \beta_6 \text{derit} + \beta_7 \text{dprit} + \epsilon_{it}$$

## RESULTS AND DISCUSSION

### RESULTS

#### Descriptive statistics

Before conducting regression analysis, descriptive statistics were calculated for all variables, including stock return, ESG score (and its lagged value), stock return volatility, and control variables (firm size, profitability, leverage, and dividend payout ratio). These statistics provide an overview of the central tendency and dispersion of the data, highlighting variations in both financial and sustainability characteristics among the sample firms.

**Table 1 Descriptive Statistics.**

Variable	Min	Max	Mean	SD	Skewness	Kurtosis
ESG	0,1169	0,8020	0,4686	0,1561	-0,1614	-0,8051
Return	-0,3595	0,4000	0,0013	0,0845	0,2990	14,135
Volatility	0,0045	0,1165	0,0201	0,0086	22,838	154,398
Ln_Market Cap	288,238	346,862	314,603	12,229	0,6484	0,3984
ROE	-0,0041	162,600	0,5538	20,037	60,812	397,452
DER	0,1300	163,700	23,084	30,115	24,272	69,589
DPR	-31,321	110,000	0,4751	0,7992	51,895	680,540

Source: Authors' calculation, R Studio (2025)

#### Model estimation and selection

Panel regression analysis was conducted using Pooled OLS, Fixed Effect Model (FEM), and Random Effect Model (REM), under two specifications: the baseline model and the moderating model that incorporates the interaction between ESG performance and stock return volatility. The summary of p-values for each estimation is presented in Table 3.

**Table 3 Model estimation**

Variabel	Model 1			Model 2		
	Pooled OLS	FEM	REM	Pooled OLS	FEM	REM
<i>Intercept</i>	0.3707	-	0.3705	0.2819	-	0.2817
<i>esg / esg_c</i>	0.2273	0.02326	0.2271	0.2545	0.02793	0.2542
<i>vol / vol_c</i>	6.68e-05	4.77e-07	6.29e-05	4.87e-05	7.82e-08	4.57e-05
<i>interaction</i>	-	-	-	0.4319	0.03852	0.4317
<i>ln_marketcap</i>	0.2247	4.855e-05	0.2244	0.2569	3.338e-05	0.2567
<i>roe</i>	0.7899	0.51752	0.7899	0.7307	0.43923	0.7307
<i>der</i>	0.1125	0.57139	0.1122	0.1015	0.88527	0.1013
<i>dpr</i>	0.1287	0.36235	0.1284	0.1329	0.45262	0.1327

Source: Authors' calculation, R Studio (2025)

To identify the most suitable estimation method, the Chow, Breusch-Pagan LM, and Hausman tests were applied.

**Table 4 Model selection**

Test	Baseline Model Result	Interaction Model Result
Chow Test	$p = 0.0118 < 0.05 \rightarrow$ Fixed Effect is better than Pooled OLS	$p = 0.004827 < 0.05 \rightarrow$ Fixed Effect is better than Pooled OLS
Hausman Test	$p = 3.665e-05 < 0.05 \rightarrow$ Fixed Effect is more appropriate than Random Effect	$p = 1.094e-05 < 0.05 \rightarrow$ Fixed Effect is more appropriate than Random Effect
Lagrange Multiplier Test	$p = 0.9313 > 0.05 \rightarrow$ Not significant $\rightarrow$ Random Effect is not superior to Pooled	$p = 0.8054 > 0.05 \rightarrow$ Not significant $\rightarrow$ Random Effect is not superior to Pooled
<b>Selected Model</b>	<b>Fixed Effect Model (FEM)</b>	<b>Fixed Effect Model (FEM)</b>

Source: Authors' calculation, R Studio (2025)

The results of the model selection tests indicate that the Fixed Effect Model (FEM) is the most appropriate specification for both the baseline model and the interaction model. In the Chow test, the F-statistics are significant ( $p < 0.05$ ), suggesting that FEM outperforms the pooled OLS model. Meanwhile, the Breusch-Pagan Lagrange Multiplier test yields insignificant results ( $p > 0.05$ ), indicating that the Random Effect Model (REM) does not provide additional explanatory power compared to pooled OLS. Finally, the Hausman test reports statistically significant results ( $p < 0.01$ ), confirming that FEM is superior to REM due to systematic differences in coefficients. Taken together, these findings justify the use of the Fixed Effect Model as the most reliable estimation approach in this study.

### Classical assumption tests

The classical assumption tests were conducted on the best model (Fixed Effect Model), covering heteroskedasticity, autocorrelation, and Multicollinearity. The Breusch-Pagan test indicated significant heteroskedasticity (BP = 140,13 and 145,71;  $p < 0.05$ ). The Wooldridge test showed no evidence of autocorrelation ( $F = 0,026$ ,  $p = 0,872$ ;  $F = 0,0003$ ,  $p = 0.986$ ). The VIF values for all variables were below 1.5, suggesting no multicollinearity. To address heteroskedasticity, robust standard errors Huber-White (heteroskedasticity-consistent covariance matrix estimator/HC1) were applied. A summary of the results is presented in the following table:

**Table 4 Classical assumption tests**

Test	Baseline Model Result	Interaction Model Result	Conclusion
<b>Heteroskedasticity (Breusch-Pagan Test)</b>	BP = 140,13, df = 6, p < 0,001 → Heteroskedasticity present	BP = 145,71, df = 7, p < 0,001 → Heteroskedasticity present	Both models exhibit heteroskedasticity; robust standard errors are applied for correction.
<b>Autocorrelation (Wooldridge Test)</b>	F = 0,026, p = 0,872 → Not significant	F = 0,0003, p = 0,986 → Not significant	No evidence of serial correlation in both models.
<b>Multicollinearity (VIF)</b>	VIF range: 1,06 – 1,51 (all < 5)	VIF range: 1,07 – 1,52 (all < 5)	No multicollinearity detected; independent variables are stable and reliable.

Source: Authors' calculation, R Studio (2025)

### Model Fit

The model fit statistics for both the baseline model and the interaction model are summarized, including R-squared, F-statistic, and significance levels.

**Table 7 Model fit statistics**

Statistik	Model Dasar	Model dengan Moderasi
<i>R-squared</i>	0.042345	0.045911
<i>F-statistic</i>	66.383	67.717
<i>p-value (F-statistic)</i>	0.0000006472***	0.0000006832***
N (Observasi)	1.188	1.188

Notes: \*\*\* p < 0.001

Source: Authors' calculation, R Studio (2025)

The results show that both models are statistically significant at the 1% level, as indicated by the F-statistic and its associated p-value. Nevertheless, the explanatory power remains relatively low—around 4%—which aligns with prior empirical evidence in stock return studies, where explanatory variables often capture only a small fraction of return variability.

### Hypothesis Testing

Regression was estimated using the Fixed Effect Model (FEM) with robust standard errors Huber-White to correct for heteroskedasticity. Two specifications were analyzed: the baseline model and the moderating model.

**Table 5 Baseline model**

Variabel	Estimate	Std. Error	t-value	p-value
ESG	-0,0566	0,0200	-2,824	0,0048 **
Volatility	16,883	0,4133	4,085	4,707e-05***
Ln_MarketCap	-0,0287	0,0102	-2,819	0,0049 **
roe	-0,0012	0,0012	-0,979	0,3276
der	-0,0031	0,0033	-0,939	0,3480
dpr	0,0040	0,0023	1,747	0.0809 .

Notes: \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$

Source: Authors' calculation, R Studio (2025)

The baseline model reveals that ESG performance has a statistically significant negative effect on stock returns ( $\beta = -0.0566$ ,  $p = 0.0048$ ). This finding contradicts the initial hypothesis, indicating that higher ESG scores are associated with lower stock returns in the Indonesian market. The coefficient implies that a one-unit increase in the ESG score leads to a decrease of 0.0566 in stock returns, *ceteris paribus*. This suggests that investors in Rasio may not yet perceive ESG initiatives as value-enhancing in the short term, but rather as additional costs that could erode profitability. In contrast, volatility shows a positive and highly significant impact on returns, while market capitalization is negatively related to stock performance, consistent with the well-documented size effect. Meanwhile, profitability, leverage, and dividend payout ratio do not exhibit significant associations with stock returns. These findings are in line with prior evidence from Escobar-Saldívar et al. (2025), Fu (2024), and Gavrillakis & Floros (2024), who also report a negative ESG-return nexus in emerging markets. Accordingly, H1 is rejected.

**Table 6** Moderating model

Variabel	Estimate	Std. Error	t-value	p-value
esg_c	-0,0548	0,0196	-2,791	0,0053 **
vol_c	18,467	0,3613	5,111	3,755e-07***
interaksi (esg×vol)	-42,243	21,176	-1,995	0,0463 *
<i>ln_marketcap</i>	-0,0293	0,0105	-2,792	0,0053 **
roe	-0,0014	0,0011	-1,272	0,2037
der	-0,0008	0,0039	-0,204	0,8384
dpr	0,0033	0,0022	1,489	0,1368

Notes: \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$

Source: Authors' calculation, R Studio (2025)

The interaction term between ESG performance and stock volatility is negative and statistically significant ( $\beta = -42,243$ ,  $p = 0.0463$ ), indicating that volatility weakens the ESG-return relationship. In high-volatility conditions, the negative impact of ESG on stock returns becomes more pronounced, suggesting that market uncertainty overshadows the potential benefits of ESG initiatives. Meanwhile, mean-centered stock volatility itself has a positive and highly significant effect on returns ( $\beta = 18,467$ ,  $p < 0.001$ ), implying that, at average ESG levels, investors in Indonesia may interpret volatility as an opportunity for short-term gains despite its inherent risks. These findings confirm the critical moderating role of volatility in the ESG-return nexus: while ESG information may be valued more positively in stable market conditions, heightened volatility reduces its effectiveness as a return-enhancing signal. This result is consistent with the risk-return trade-off framework (Markowitz, 1952) and aligns with evidence from Broadstock et al. (2021) and (Zhou & Zhou, 2022), who highlight that the impact of ESG performance is highly contingent upon prevailing market risk conditions. Accordingly, H2 is accepted.

## Discussion

### 1. The Effect of ESG Performance on Stock Returns

The estimation results from the baseline model show that ESG performance has a significant negative effect on stock returns. This indicates that, contrary to the initial hypothesis, higher ESG scores are associated with lower stock returns in the Indonesian capital market, particularly among companies listed in the IDX ESG Leaders and SRI-KEHATI indices. This finding suggests that investors in Indonesia may not yet interpret ESG initiatives as value-enhancing signals for short-term profitability. Instead, ESG implementation is more likely

perceived as an additional cost burden that reduces near-term margins, especially in an emerging market context where investor orientation is predominantly short-term (Nugraha et al., 2025).

From the perspective of signaling theory (Spence, 1973), higher ESG scores should ideally act as positive signals about corporate commitment to sustainability, strong governance, and long-term prospects. However, in Indonesia this signaling effect appears to be ineffective. Limited ESG literacy among retail investors means that sustainability information is not automatically translated into expectations of higher profitability (Putri et al., 2024). Moreover, the lack of strong evidence that ESG directly improves short-term financial performance reinforces the perception that ESG represents additional costs. This is consistent with agency cost theory (Jensen & Meckling, 1976), which posits that corporate activities beyond shareholder wealth maximization may be viewed as agency expenditures that reduce firm value.

Furthermore, Modigliani and Miller (1958) highlight that corporate value is determined by its capital structure and cost of capital, meaning that additional expenditures—such as ESG investments—must ultimately be justified by corresponding improvements in expected cash flows or risk reduction. In contexts where such benefits are not immediately observable, ESG may instead be perceived as a form of managerial overinvestment that raises agency costs and depresses firm valuation. Thus, the trade-off between sustainability and short-term profitability requires upfront investments in certification, green technology, and social programs, all of which depress short-term earnings (Fu, 2024).

Empirical evidence from other markets supports this pattern. In Indonesia, Cahyaningtyas et al. (2024) report that environmental disclosures have a negative impact on bank stock returns, while Nugraha et al. (2025) show that higher ESG scores in Southeast Asian indices (LQ45, FTSE KLCI, FTSE STI) are associated with lower returns, despite reducing volatility. Comparable findings emerge in China (Fu, 2024), where ESG implementation costs depress short-term profitability, and in Latin America (Escobar-Saldívar et al., 2025), where a negative ESG–return relationship is documented. Neethila (2025) further notes that in developed markets ESG tends to be negatively associated with returns, while in emerging markets results are more ambiguous. In the European context, Gavrilakis and Floros (2024) also show that ESG can be negatively related to returns, particularly in periods when implementation costs outweigh short-term financial benefits.

Overall, these findings highlight that the ESG–return nexus is not universal but contextual. In emerging markets such as Indonesia, limited ESG literacy, a strong short-term profit orientation, and volatile market dynamics contribute to ESG being perceived more as a cost burden than as a positive signal of future profitability. Incorporating agency theory (Jensen & Meckling, 1976) and capital structure theory (Modigliani & Miller, 1958) into this interpretation reinforces the argument that ESG-related expenditures may be treated by investors as managerial overinvestment that increases costs without delivering sufficient compensating returns in the short run.

## 2. The Moderating Role of Volatility

The interaction model demonstrates that stock price volatility moderates the ESG–return relationship in a significant and negative manner. The negative interaction coefficient indicates that under high-volatility conditions, the negative effect of ESG on stock returns becomes more pronounced. This implies that while ESG might be expected to send positive signals to investors, its effect is overshadowed by market uncertainty in the Indonesian context. In such situations, investors prioritize short-term risk considerations over long-term sustainability prospects.

This finding aligns with prior literature emphasizing the systemic role of volatility in shaping the effectiveness of ESG signals. Nugraha et al. (2025) argue that while ESG can enhance financial performance through reputation and investor trust, these benefits diminish under heightened uncertainty. Similarly, Wahyudyatmika & Astuti (2024) show that ESG is positively perceived in stable markets but loses relevance when volatility increases. Hartikasari et al. (2024) also document that volatility disrupts the fundamental link between sustainability and firm value, as investors become more risk-averse. This is reinforced by Sidharta and Kim (2024), who stress that the positive ESG–return relationship is highly sensitive to fluctuating market conditions. Likewise, Nindya Asih et al. (2024) point out that while ESG contributes to long-term corporate stability, short-term returns remain primarily determined by market risk. Ardianto and Sukardi (2024) further

note that investor trust is crucial: during periods of high volatility, market appreciation for ESG weakens as speculative motives dominate. At the international level, Escobar-Anel Marcos and Jiao (2023) emphasize that volatility undermines the influence of non-financial factors such as ESG, since investors prioritize capital preservation over sustainability reputations.

In addition, the main effect of volatility is found to be positive and highly significant, confirming the high risk–high return principle of modern portfolio theory (Markowitz, 1952). This suggests that Indonesian investors interpret volatility not merely as risk, but also as an opportunity for speculative gains. From a theoretical standpoint, this behavior is consistent with agency cost theory (Jensen & Meckling, 1976), which explains that in times of heightened uncertainty, investors become more cautious toward corporate initiatives—such as ESG programs—that may be perceived as managerial overinvestment increasing agency costs rather than delivering immediate returns. Likewise, Modigliani and Miller (1958) emphasize that firm value ultimately depends on capital structure and the cost of capital. In stable conditions, ESG could potentially lower the cost of capital through stronger reputation and investor trust; however, under high volatility, this channel weakens, as market participants focus primarily on short-term capital preservation and speculative opportunities.

Taken together, the findings confirm that volatility plays a dual role: not only as a direct determinant of returns but also as a moderator that weakens the positive potential of ESG in the Indonesian stock market. Thus, while ESG initiatives may contribute to long-term corporate value, investor sensitivity to short-term market risks remains dominant in shaping stock returns.

## CONCLUSION

The findings of this study lead to two key conclusions. First, ESG performance is found to have a negative and significant effect on stock returns in the Indonesian capital market. This indicates that higher ESG scores are still interpreted by investors as an additional cost burden rather than as a source of short-term profitability, particularly in an emerging market setting where investor orientation remains largely short-term (Cahyaningtyas et al., 2024; Fu, 2024; Gavrilakis & Floros, 2024; Neethila, 2025; Nugraha et al., 2025). While signaling theory (Spence, 1973) suggests that ESG should serve as a positive signal of corporate commitment and long-term growth prospects, in practice such signals have yet to gain full recognition in Indonesia due to limited ESG literacy and the absence of immediate financial payoffs. This pattern is also consistent with agency cost theory (Jensen & Meckling, 1976), which posits that activities beyond immediate shareholder value creation—such as ESG initiatives—may be perceived as managerial overinvestment that reduces firm value.

Second, volatility is found to negatively moderate the ESG–return relationship. Under conditions of high volatility, the negative effect of ESG on stock returns becomes more pronounced, confirming that investors prioritize short-term risk exposure over long-term sustainability (Ardianto & Sukardi, 2024; Hartikasari et al., 2024; Nindya Asih et al., 2024; Nugraha et al., 2025; Sidharta & Kim, 2024; Wahyudyatmika & Astuti, 2024). At the same time, the direct effect of volatility is positive and highly significant, in line with the high risk–high return principle of Modern Portfolio Theory (Markowitz, 1952). This reflects speculative behavior in the Indonesian market, where volatility is often viewed as an opportunity rather than a pure threat. In this context, Modigliani and Miller (1958) remind that firm value ultimately depends on its capital structure and cost of capital—benefits that ESG might deliver in stable conditions, but which are overshadowed when market risk dominates investor attention.

This study offers several implications. Theoretically, it enriches signaling theory by showing that ESG is not automatically perceived as a credible value signal in emerging markets, particularly under volatile conditions, while also linking ESG investment to agency costs and capital structure considerations. Practically, for investors and portfolio managers, the results highlight the importance of integrating ESG analysis with risk management, as overlooking volatility may lead to ESG mispricing. For policymakers and regulators, such as the Indonesia Stock Exchange and the Financial Services Authority, the findings underscore the urgency of

strengthening ESG disclosure standards and enhancing transparency so that ESG is not reduced to symbolic compliance but serves as a credible investment signal.

Despite these contributions, the study has several limitations. The sample is restricted to firms in the IDX ESG Leaders and SRI-KEHATI indices, limiting the generalizability of the findings across all sectors of the Indonesian capital market. Methodologically, the focus on panel regression using the Fixed Effect within estimator eliminates firm-level intercepts, thereby limiting insights into baseline return heterogeneity across firms. Moreover, this study does not conduct a two-sample t-test to compare returns between high- and low-ESG firms, which could have provided complementary evidence on differences in Performance. Finally, the moderating analysis is confined to volatility, leaving out other potential moderators that might influence the ESG-return nexus.

Future research can address these limitations in several ways. Expanding the sample beyond IDX ESG Leaders and SRI-KEHATI would allow researchers to capture sectoral variations in ESG implementation. Complementary analyses, such as mean-difference tests between ESG-based firm groups, could provide further evidence of whether ESG systematically influences returns. Employing alternative estimation methods, such as Random Effect or Generalized Method of Moments (GMM), may help uncover long-term dynamics and potential lagged effects of ESG. Moreover, future studies should explore additional moderating variables, such as liquidity, ownership concentration, or investor sentiment, which could provide a more nuanced understanding of the ESG-return relationship. Finally, cross-country comparative studies, particularly across ASEAN emerging markets, would shed light on whether volatility consistently moderates the financial relevance of ESG across different institutional and market environments.

## REFERENCES

- Ardianto, F., & Sukardi, A. S. (2024). Pengungkapan environmental , social , and governance disclosure terhadap volatilitas harga saham syariah dimoderasikan oleh likuiditas. *Jurnal Ilmiah Ekonomi Islam*, 10(03), 3171–3180. <https://doi.org/http://dx.doi.org/10.29040/jiei.v10i3.15431> 1.
- Broadstock, D. C., Chan, K., Cheng, L. T. W., & Wang, X. (2021). The role of esg performance during times of financial crisis: evidence from covid-19 in china. *Finance Research Letters*, 38, 101716. <https://doi.org/10.1016/j.frl.2020.101716>
- Cahyaningtyas, S. R., Muhsyaf, S. A., & Husnaini, W. (2024). Environmental, social, and governance (esg) disclosure and company performance: empirical evidence in indonesian banking. *JEAM*, 23(62), 134–154. <https://doi.org/https://doi.org/10.19184/jeam.v23i2.47084>
- Escobar-Anel Marcos, & Jiao, Y. (2023). Unraveling the trade-off between sustainability and returns: a multivariate utility analysis. *ArXiv*, 2023, 1–29. <http://arxiv.org/abs/2307.12161>
- Escobar-Saldívar, L. J., Villarreal-Samaniego, D., & Santillán-Salgado, R. J. (2025). The effects of esg scores and esg momentum on stock returns and volatility: evidence from u.s. Markets. *Journal of Risk and Financial Management*, 18(7), 1–21. <https://doi.org/10.3390/jrfm18070367>
- Fu, J. (2024). Esg, stock returns and stock volatility: evidence from chinese listed companies. *SHS Web of Conferences*, 181, 02002. <https://doi.org/10.1051/shsconf/202418102002>
- Gavrilakis, N., & Floros, C. (2024). Volatility and herding bias on esg leaders' portfolios performance. *Journal of Risk and Financial Management*, 17(2). <https://doi.org/10.3390/jrfm17020077>
- Hartikasari, A. I., Wahyuni, S., Rahmawati, I. Y., & Utami, R. F. (2024). The Link Effect of ESG Score , Stock Price Volatility , and Tax Payment: Doing Well while Doing Good. *Media Akuntansi Universitas Muhammadiyah Semarang*, 14(2), 231–242. <https://doi.org/10.26714/MKI.14.2.2024.231-242>
- Jensen, M., & Meckling, W. (1976). Theory of the firm: managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. <https://doi.org/10.1017/CBO9780511817410.023>
- Markowitz, H. (1952). Portfolio selection. *Journal of Finance*, 7(1), 77–91. <https://econpapers.repec.org/RePEc:bla:jfinan:v:7:y:1952:i:1:p:77-91>

- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, XLVIII(June), 261–297. <https://doi.org/10.1057/9781137341280.0038>
- Neethila, N. (2025). Esg scores' effect on stock returns: a study across developed and emerging markets. *Aaltodoc Publication*. <https://urn.fi/URN:NBN:fi:aalto-202505113579>
- Nindya Asih, K., Achsani, N. A., Novianti, T., & Haymans Manurung, A. (2024). Volatility of companies with low esg scores in the Indonesian capital market: impact of domestic and global factors. *International Journal of Social Science and Business*, 8(4), 672–681. <https://dx.doi.org/10.23887/ijssb.v8i4.88286>
- Nugraha, D. A., Asimakopulos, S., & Sudrajat, O. Y. (2025). The impact of esg ratings on stock price and volatility: evidence from Iq45, FTSE KLCI, and FTSE STI. *Dinasti International Journal of Economics, Finance, & Accounting*, 6(2), 968–982.
- Putri, R., Honesty, F. F., & Honesty, H. N. (2024). Pengaruh environmental, social, governance (esg) disclosure, dan kinerja keuangan terhadap return saham. *ECO-BUSS: Economics and Business*, 7(2). <https://doi.org/10.32877/eb.v7i2.1990>
- Sidharta, K., & Kim, S. S. (2024). The influence of esg performance on stock price volatility in Indonesia. *Enrichment: Journal of Management*, 14(3), 447–454.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/https://doi.org/10.2307/1882010>
- Wahyudyatmika, M. B., & Astuti, C. D. (2024). The influence of environmental, social, governance, and corporate scandals on the stock volatility. *Quantitative Economics and Management Studies*, 5(1), 204–214. <https://doi.org/10.35877/454ri.qems2390>
- Zhou, D., & Zhou, R. (2022). Esg performance and stock price volatility in public health crisis: Evidence from COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 19(1). <https://doi.org/10.3390/ijerph19010202>