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The Role of Sustainability Risk in the Relationship Between Profitability and Firm Value in Indonesia

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ABSTRACT

Purpose: The study aims to determine whether, for IDX-listed companies, sustainability risk mitigates the correlation between profitability and firm value.

Research Method: The following metrics are used to assess the worth of a company: Tobin's Q for profitability, ESG Risk Ratings for sustainability risk, and imbalanced panel data from 84 businesses spanning 2022–2024 (140 firm-year observations). Controlling for business size, age, leverage, and liquidity, the research employs REM GLS with robust standard errors and moderated regression.

Results and Discussion: Profitability is positively related to firm value. The profitability–sustainability interaction is negative but not statistically strong in the linear model, indicating limited evidence of moderation. However, simple slopes analysis showed that the effect of profitability on firm value declines as sustainability risk increases, suggesting a conditional pattern rather than a direct moderating effect.

Implications: Sustainability risk may influence how the market interprets profitability signals. Managers should manage sustainability risk to maintain valuation credibility, while investors may consider it contextual information when evaluating performance.

Originality: This study provides an early exploration from Indonesia that sustainability risk acts as a contextual factor that conditions, rather than directly determines, the profitability–firm value relationship.

Keywords: sustainability risk; ESG risk rating; profitability; firm value; Tobin's Q.

1. Introduction

The market's evaluation of a company's future potential, management skills, and long-term sustainability determines the firm's value, which is one of the primary goals of corporate finance (Brigham & Houston, 2018). In an era characterized by growing investor sophistication and accelerating information accessibility, understanding the determinants of firm value has become increasingly complex, as capital markets respond not only to financial performance but also to broader risk factors, including environmental, social, and governance (ESG) considerations, which have become material in assessing firm value. Emerging markets like Indonesia's, where information asymmetry is still relatively significant, make this complexity all the more apparent. Furthermore, sustainability-related risks are increasingly material to corporate valuations (Huang, 2022).

Among the various determinants of firm value, profitability remains one of the most fundamental indicators of firm performance, reflecting managerial efficiency and future cash flow

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potential. Strong financial success, from a signaling standpoint, may communicate in a way that closes the knowledge gap between external and internal stakeholders of a company, thereby raising stock prices. (Ross, 1977; Spence, 1973; Connelly *et al.,* 2011). While financial performance remains an important consideration for investors, the PwC Global Investor Survey (2022) highlights a growing emphasis on ESG-related factors, with investors increasingly incorporating sustainability risks and opportunities into their investment analysis. In Indonesia, this development is supported by the sustainability framework introduced by Otoritas Jasa Keuangan (OJK) through Regulation No. 51/POJK.03/2017, which mandates that businesses provide sustainability-related data and implement sustainable practices. This policy reflects an effort to reduce environmental and social risks while aligning with global investment trends (OJK, 2021).

Findings from empirical studies conducted in the Indonesian setting, however, have not been convincing. The correlation between profitability and business value is positive and frequently seen (Jonnius, 2021; Lutfi & Panuntun, 2024; Nico & Widyastuti, 2025; Rahayu & Susanto, 2023; Amrotun *et al.,* 2025). The alternative is that sustainability risk will probably not significantly affect the firm value (Sanga *et al.,* 2024; Aulia & Mutasowifin, 2025; Natalia *et al.,* 2025) or profitability (Aulia & Mutasowifin, 2023; Dewi *et al.,* 2026; Fachrezi *et al.,* 2024). This raises the possibility that sustainability risk does not act as a direct determinant but instead influences how the market interprets financial performance. Prior studies provide mixed evidence. Research on sustainability risk and firm value in Indonesia and ASEAN largely reports insignificant or inconsistent results (Sanga *et al.,* 2024; Aulia & Mutasowifin, 2025; Ramadhan *et al.,* 2024; Fachrezi *et al.,* 2024), although some studies find negative relationships or effects that depend on context (Prabawati *et al.,* 2022; Istikomah *et al.,* 2023; Eriandani & Winarno, 2024; Handajani *et al.,* 2026). Studies on sustainability risk and profitability also show varied results, ranging from positive to negative and insignificant effects depending on sector and conditions (Hermansyah *et al.,* 2025; Marliza, 2024; Aulia & Mutasowifin, 2025; Fachrezi *et al.,* 2024; Dewi *et al.,* 2026; Oktrivina *et al.,* 2024; Gunawan *et al.,* 2025). Meanwhile, there is a lot of proof suggesting a positive relationship between profitability and firm value (Jonnius, 2021; Lutfi & Panuntun, 2024; Nico & Widyastuti, 2025; Pratiwi & Asyik, 2023; Amrotun *et al.,* 2025), with some evidence suggesting that ESG-related factors may influence this relationship through a moderating role (Caceres, 2024; Brighi *et al.,* 2025). This research utilizes these results to investigate the potential moderating effect of sustainability risk. It focuses on firms traded on the IDX and looks at how sustainability risk affects the profitability-firm value link. From a signaling perspective (Spence, 1973), profitability provides information about firm performance, but its interpretation may depend on the level of sustainability risk. From a stakeholder perspective (Freeman, 1984), sustainability risk reflects how well firms manage stakeholder-related issues that may affect valuation.

The remainder of this paper is organized as follows. Section 2 provides a literature review and hypothesis development. Section 3 presents the research method and design. Section 4 provides a discussion; Section 5 is the Concluding Remarks and Recommendations.

2. Literature Review and Hypothesis Development

2.1 Signaling Theory

Using both monetary and non-monetary disclosures, signaling theory elucidates how businesses reduce the information gap between management and external parties (Spence, 1973; Connelly *et al.,* 2011). In

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capital markets, investors do not have full access to internal firm quality and therefore rely on observable signals provided by firms. Within this context, sustainability-related information can be viewed as a signal of firm quality. Firms with stronger sustainability performance may be perceived as having better risk management practices, more transparent governance structures, and better chances for the future. The value of a company could rise or fall depending on how investors perceive these signals.

In addition, profitability can serve as a financial signal of a firm's internal performance. Firms with higher profitability are generally perceived as more efficient in generating earnings from their assets, which may be interpreted positively by the market. However, the strength of this signal may vary depending on how investors interpret sustainability-related risk, which may influence valuation decisions.

2.2 Stakeholder Theory

Freeman (1984) first proposed the concept of "stakeholder theory," which states that businesses have responsibilities to more than just their shareholders. According to this view, businesses should balance monetary, social, and environmental concerns while making decisions. According to this research, sustainable policies are only one way businesses try to appease the many groups whose expectations they must meet: shareholders, government agencies, consumers, and the general public. Firms with stronger sustainability engagement may be better positioned to maintain stakeholder relationships, reduce potential conflicts of interest, and enhance perceived legitimacy (Freeman *et al.,* 2010). In addition, stakeholder theory holds that a company cannot survive in the long run unless it satisfies everyone with a stake in its success. Given the importance of context in shaping market perceptions of financial performance, sustainability risk is an important consideration in this setting. Greater exposure to uncertainties relating to environmental, social, and governance may be reflected in higher levels of sustainability risk, which in turn may influence investor perceptions of corporate value.

2.3 Firm Value

The market's evaluation of a company's performance, risk exposure, and development potential determines its value. For instance, Tobin's Q, first introduced by Tobin in 1969, accounts for investor assumptions about future performance by comparing the market value of a business's assets to their replacement cost. Contradictory results have been found in empirical studies examining the factors that influence a company's value. Chang and Wirianata (2025) find that profitability (ROA) positively affects firm value, while Hasanah and Fauzan (2025) report no significant effect of profitability and differing impacts of leverage and firm size. Similarly, findings on the ESG–firm value relationship remain inconsistent, as Febrianti *et al.,* (2025) document significant effects of ESG scores, whereas Zahrani and Darmawan (2025) report varying effects across ESG components. These inconsistencies suggest that conventional ESG measures may not fully capture firms' sustainability exposure.

The interpretation of financial information by investors may be affected by sustainability-related risks, which in turn affect business value (Sampurna *et al.,* 2020; Nurdyastuty *et al.,* 2025). Accordingly, this study measures firm value using Tobin's Q. It frames it as the market's response to profitability (ROA), with ESG risk serving as a proxy for sustainability-related risk that may affect how financial performance translates into market valuation.

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2.4 Profitability

One of the most important ways to gauge a business's financial well-being and profitability is to look at its financial performance. According to Brigham and Ehrhardt (2019), financial management emphasizes the efficient use of corporate resources to maximize firm value, which is reflected in profitability and overall financial outcomes. ROA is a popular yardstick for gauging financial success. which reflects how efficiently a firm utilizes its total assets to generate earnings. ROA is widely used as a proxy for profitability in empirical research because it captures both operational performance and asset utilization.

2.5 Sustainability Risk

From its origins in debates about sustainable resource use and the boundaries of economic development, the idea of sustainability has expanded to include ESG factors (Purvis *et al.,* 2019). In the corporate context, sustainability is viewed as a holistic approach that embeds these dimensions into organizational practices and decision-making processes (Lozano & von Haartman, 2018). Additionally, this viewpoint is backed by Dyllick and Muff (2016), who emphasize that sustainability extends beyond minimizing negative impacts to also creating value for society and the environment. Similarly, Elkington (2018) conceptualizes sustainability through the Triple Bottom Line, highlighting the balance between profit, people, and planet.

Building on this foundation, sustainability is increasingly interpreted from a risk perspective, particularly in relation to firm valuation and investment decisions. Empirical evidence indicates that sustainability-related factors are financially material, although their measurement remains inconsistent. Berg *et al.,* (2022) document substantial divergence in ESG ratings due to differences in measurement, scope, and weighting, suggesting that conventional ESG scores may not consistently reflect firms' underlying sustainability exposure. This limitation supports the use of ESG risk ratings, which are designed to capture firms' exposure to material sustainability risks more explicitly. In addition, Dyck *et al.,* (2019) provide evidence that institutional investors influence how well companies perform on environmental and social responsibility, implying that these concerns are considered in investment decisions. A company's exposure to unmanaged sustainability-related risks as a proportion of its value is called ESG risk. (Morningstar Sustainalytics, 2023). This makes ESG risk an important consideration when determining a company's market value and assessing how corporate performance affects that value.

Investors rely on profitability as a key indicator of a company's success, according to signaling theory. The market often views higher profitability as a favorable indicator of a company's capacity to effectively generate profits from its resources, leading to an expectation that firm value would rise (Spence, 1973; Connelly *et al.,* 2011). Empirical evidence also consistently supports a positive correlation between ROA and firm value (Tobin's Q) (Jonnius, 2021; Lutfi & Panuntun, 2024; Nico & Widyastuti, 2025; Rahayu & Susanto, 2023; Amrotun *et al.,* 2025). This research incorporates several control variables—firm age, size, leverage, and liquidity—to account for firm-specific traits.

H1: *Profitability has a positive effect on firm value.*

However, not everyone will understand the profitability indication. Stakeholder theory states that companies must manage their ESG concerns alongside their financial performance, taking into account the requirements of all their constituents. (Freeman, 1984; Freeman *et al.,* 2010). Sustainability

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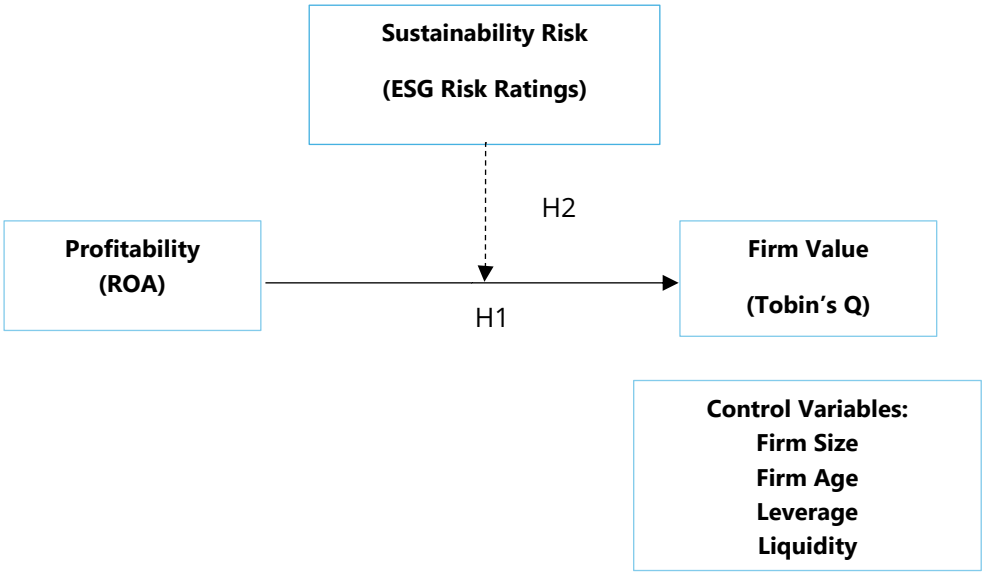
risk reflects the extent to which firms are exposed to such ESG-related risks. When sustainability risk is high, investors may perceive current profitability as less sustainable due to potential future costs, such as regulatory penalties, reputational risks, or stakeholder pressures. Conversely, when sustainability risk is low, profitability is more likely to be perceived as a credible and sustainable signal of firm performance, thereby strengthening the market's response. In this context, sustainability risk does not necessarily directly determine firm value but rather serves as a conditional factor that influences how profitability translates into market valuation. The following is the second hypothesis that is derived from this argument:

H2: *Sustainability risk moderates the relationship between profitability and firm value, such that higher sustainability risk weakens the positive effect of profitability on firm value.*

Figure 1 shows the relationships among all variables and the hypotheses to be tested.:



Source: *Author (2026)*

Figure 1. Conceptual Framework

3. Research Method

3.1 Samples and sampling techniques

There are 956 companies in the sample for this study. They are listed on the IDX in 11 different industrial sectors: Healthcare, Basic Materials, Financials, Transportation & Logistics, Technology, Industrials, Energy, Consumer Cyclicals, Infrastructure, and Property & Real Estate. Nevertheless, a purposive sample strategy is used in the research, which entails selecting only organizations that fulfill the following criteria: (1) Businesses that make their ESG Risk Ratings available for the years 2022–2024; (2) Businesses that provide comprehensive yearly reports for the years 2022–2024.

3.2 Measurement of Variables

Dependent Variable (Firm Value/Tobin's Q):

$$Tobin's\ Q = \frac{Market\ Value\ of\ Equity + Total\ Debt}{Total\ Assets}$$

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Independent Variable (Profitability/ROA):

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

- *Moderating Variable (Sustainability Risk/ESG Risk Ratings)*
  ESG Risk Rating data are obtained from the IDX for 2024, while historical data for 2022–2023 are sourced from the Indonesia Capital Market Institute (TICMI). The ESG Risk Rating is developed in collaboration with Morningstar Sustainalytics and ranges from 0 to 100, where higher scores indicate greater exposure to unmanaged ESG risk.

  The ESG Risk Rating is based on the Morningstar Sustainalytics methodology, which measures ESG risk exposure and management. The final score reflects unmanaged ESG risk, calculated as the portion of risk exposure not mitigated by firm-level policies and practices. In this study, ESG Risk Rating is used as a proxy for sustainability risk.

- *Control Variables*
  Firm Size (SIZE, Log Assets), Firm age (AGE, Log years), leverage (LEV, total liabilities divided by total assets), and liquidity (LIQ, current ratio) are some of the control variables that may be used in this analysis. As is the typical procedure in empirical panel data research, SIZE and AGE are log-transformed to decrease skewness (Wooldridge, 2010).

3.3 Research Model

The Moderated Regression Analysis model is:

$$TobinsQit = \alpha + \beta_1 ESGit + \beta_2 ROAit + \beta_3 (ESG \times ROA)it + \beta_4 SIZEit + \beta_5 AGEit + \beta_6 LEVit + \beta_7 LIQit + ui + \varepsilon it$$

A significant β_2 supports H1, which predicts that ROA affects firm value (Tobin's Q). A significant β_3 supports H2, which predicts that ESG moderates the correlations between ROA and Tobin's Q. A systematic pattern of conditional marginal effects of ROA on Tobin's Q across different ESG levels (e.g., ESG = 10, 25, and 40), where the magnitude and/or significance of the effect changes as ESG increases, provides additional evidence of the moderating effect (Aiken & West, 1991).

Table 1. Variables and Measurement

Variable	Code	Proxy	Measurement	Role
Firm Value	Tobin's Q	Tobin's Q	(Market Value of Equity + Total Debt) / Total Assets	Dependent
Profitability	ROA	Return on Assets	Net Income / Total Assets	Independent
Sustainability Risk	ESG	ESG Risk Ratings	ESG Risk Ratings	Moderator
Firm Size	SIZE	Company Size	Ln (Total Assets)	Control
Firm Age	AGE	Company Age	Ln (Years since IPO)	Control
Leverage	LEV	Debt-to-Ratio	Total Debt / Total Assets	Control
Liquidity	LIQ	Current Ration	Current Assets / Current Liabilities	Control

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4. Results and Discussion

4.1 Analysis Results

4.1.1 Descriptive Statistics & Correlation Matrix

Descriptive data are presented in Table 2, and the relationship matrix in Table 3. The mean ESG Risk Rating of 25.81 (Medium Risk category) with a range of 7.11–54.02 confirms sufficient cross-sectional variation to test the moderating mechanism. A mean Tobin's Q of 1.754 indicates that, on average, market values sample firms above their book values. A mean ROA of 0.065 indicates modest but positive asset efficiency, consistent with prior IDX-based studies (Sanga *et al.,* 2024; Aulia & Mutasowifin, 2023). Pearson correlations show that the ESG Risk Rating has a near-zero relationship with ROA (r = 0.055) and Tobin's Q (r = −0.077), confirming the absence of a simple linear ESG–value relationship and motivating the moderation specification. The strongest bivariate relationship with Tobin's Q is ROA (r = 0.363), consistent with previous empirical review (Jonnius, 2021; Lutfi & Panuntun, 2024; Nico & Widyastuti, 2025; Pratiwi & Asyik, 2023; Amrotun *et al.,* 2025).

Table 2. Descriptive Statistic (N = 140)

Variable	Mean	SD	Min	Max	VIF
Tobin's Q	1.754	1.792	0.281	10.570	
ROA	0.065	0.067	-0.126	0.293	1.31
ESG	25.81	8.81	7.11	54.02	1.04
SIZE	17.770	1.495	14.625	21.610	1.40
AGE	2.826	0.751	0.693	3.761	1.17
LEV	0.480	0.307	0.030	2.765	1.39
LIQ	2.641	3.317	0.180	28.131	1.31

Source: *Processed data (Stata 17). SD = standard deviation; Mean VIF = 1.27. Winsorization at 1st/99th pct. Applied to ROA and Tobin's Q.*

Table 3. Correlation Matrix

Variable	Tobin's Q	ROA	ESG	SIZE	AGE	LEV	LIQ
Tobin's Q	1.000						
ROA	0.363***	1.000					
ESG	-0.077	0.055	1.000				
SIZE	-0.286***	-0.342***	0.107	1.000			
AGE	-0.163*	0.134	0.025	0.261***	1.000		
LEV	0.286***	-0.285***	-0.070	0.330***	0.088	1.000	
LIQ	-0.039	-0.052	-0.065	-0.250***	-0.236***	-0.397***	1.000

Source: *Processed data (Stata 17). Note: ***p < 0.01, **p < 0.05, *p < 0.10*

4.1.2 Model Selection Test

Table 4 presents the outputs of the model selection diagnostic tests. The Hausman test yields $\chi^2(7)$ = 4.66 (p = 0.702), so it does not rule out the possibility of a systematic difference between the FE and RE coefficients. This confirms that RE is preferred over FE on efficiency grounds, which is also practically appropriate given that Fixed Effects would eliminate the 48 single-observation firms (57.14% of the sample). The Breusch-Pagan Lagrange Multiplier test yields chibar^2(01) = 48.31 (p = 0.000), rejecting the null of zero cross-sectional variance and confirming that RE is superior to Pooled OLS. Therefore, RE-

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GLS with Robust Standard Errors clustered at the firm level is used to estimate all models (Wooldridge, 2010).

Table 4. Model Selection Test

Test	Statistic	p-value	Decision
Hausman Test	4.66	0.702	Random Effects preferred over Fixed Effects.
Breusch-Pagan LM Test	48.31	0.000	Random Effects preferred over Pooled OLS.
VIF Diagnostics (Mean / Max)	1.27 / 1.40	-	No critical multicollinearity (threshold < 10)

Source: *Processed data (Stata 17)*

4.1.3 Regression Results

Table 5 shows the baseline RE model (Model 1) and the full MRA model with the ROA × ESG interaction (Model 2). Model 2 improves R^2 from 0.4172 to 0.4564, confirming that the moderation specification adds explanatory power. In Model 1, Tobin's Q is positively and significantly affected by ROA (β = 11.159; p = 0.042). This outcome is consistent with prior studies (Jonnius, 2021; Lutfi & Panuntun, 2024; Nico & Widyastuti, 2025; Rahayu & Susanto, 2023; Amrotun *et al.,* 2025). Studies indicate that a higher market value for a company is linked to greater profitability. Accordingly, hypothesis 1, which posits a positive correlation between ROA and firm value, is empirically supported. In model 2, ROA remains positively associated with Tobin's Q, albeit with marginal statistical significance (β = 24.9518; p = 0.059). Although the level of significance slightly weakens, the direction of the relationship remains consistent. This further reinforces the argument that profitability is a key determinant of firm value.

The interaction term between ROA and ESG risk had a negative coefficient (β = -0.5450) but was not statistically significant (p = 0.110). Based on this outcome, there is insufficient evidence to conclude that ESG risk directly moderates the correlation between ROA and Tobin's Q in a linear specification.

Therefore, the second hypothesis, which proposes that sustainability risk weakens the positive effect of ROA on firm value, has no basis in the direct interaction (omnibus test). However, despite the lack of statistical significance, the negative sign of the interaction term aligns with theoretical assumptions, suggesting that ESG risk may still dampen the market's sensitivity to firm profitability, even though this effect is not statistically confirmed in this model.

Leverage (LEV) is the dominant control variable in both models (β ≈ 3.02–3.15, p < .001). A common metric for assessing a company's worth in corporate finance is its debt-to-equity ratio, or LEV. According to Modigliani and Miller (1963), debt can increase firm value through the tax shield effect under corporate taxation by lowering the cost of capital. Thus, leverage may enhance firm value when efficiently used to finance productive investments, although its effect remains context-dependent, particularly across industries and risk environments.

Firm Age (AGE) shows a consistently significant negative effect (β ≈ = −0.498 to −0.541, p < .01), suggesting that younger firms tend to command higher Tobin's Q, reflecting stronger growth expectations and valuation premiums (Ramadhan *et al.,* 2023).

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Table 5. Regression Results — Dependent Variable: Tobin's Q

Variable	Baseline RE		MRA Model	
	Coefficient	p-value	Coefficient	p-value
ROA	11.159	0.042**	24.9518	0.059*
ESG	-0.006	0.709	0.0330	0.228
ROA x ESG	-	-	-0.5450	0.110
SIZE	-0.240	0.020**	-0.2059	0.063*
AGE	-0.479	0.010**	-0.5409	0.004***
LEV	3.021	0.000***	3.0201	0.000***
LIQ	0.013	0.432	0.0209	0.284
Constant	5.277	0.008***	3.8541	0.129
Overall R^2	0.4172		0.4564	

Source: *Processed data (Stata 17). Note: * p<0.10; ** p<0.05; *** p<0.01. All models: RE-GLS, Robust S.E. clustered at the firm level*

4.1.4 Simple Slope Analysis

As far as Aiken and West (1991) go, for different values of the moderator, one may quantify the predictor's effect on the dependent variable in multiple regression using basic slope analysis. thus probing interaction effects. Even if the interaction term is not statistically significant, we still conduct a basic slopes analysis to examine how the relationship varies across moderator levels.

Table 6 presents the marginal effects of ROA on Tobin's Q conditional on ESG Risk Rating at three levels corresponding to Sustainalytics risk categories (Sustainalytics, 2023). The results show a monotonic decrease as sustainability risk increases. At Negligible ESG Risk (ESG = 10), ROA generates a 19.502-unit increase in Tobin's Q (p = 0.048). At Medium ESG Risk (ESG = 25, near the sample mean), the marginal effect remains significant but is reduced by 42% to 11.328 (p = 0.025). At High ESG Risk (ESG = 40), the marginal effect collapses to 3.153 and becomes statistically indistinguishable from zero (p = 0.203).

Table 6. Marginal Effects (Moderation Analysis)

ESG Risk Level	Effect of ROA on Tobin's Q	Std. Error	z	p-value	Description
Low (10)	19.502	9.865	1.98	0.048**	Significant
Medium (25)	11.328	5.055	2.24	0.025**	Significant
High (40)	3.153	2.476	1.27	0.203	Not Significant

Source: *Processed data (Stata 17). Note: ** p<0.05.*

Table 7. Summary of Hypothesis Testing Results

H	Hypothesis Statement	Key Evidence	Description
H1	Profitability (ROA) ➔ Firm Value (Tobin's Q)	β_2 = 11.159, p = 0.042	Significant
H2	Sustainability Risk moderates Profitability ➔ Firm Value	β_3 = −0.5450, p = 0.110	Not Significant

4.2 Discussion

The empirical results presented in Table 5 provide evidence that firm profitability, sustainability risk, and Tobin's Q, a measure of a firm's value, account for financial structure. The baseline REM and the

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extended MRA model show an increase in explanatory power from R^2 = 0.4172 to R^2 = 0.4564 after the inclusion of the interaction term, suggesting that sustainability-related factors provide additional explanatory power to the firm value model.

In relation to hypothesis 1, the findings confirm that ROA is positively associated with Tobin's Q. This result is theoretically consistent with firm value maximization principles, in which higher profitability signals stronger operational efficiency and future cash flow generation. Profitability, from a signaling standpoint, reduces information asymmetry between companies and investors and signals management's success. Since successful enterprises are expected to be valued higher in capital markets, the observed positive link between profitability and company value is both statistically consistent and economically relevant.

This result is in line with what we expected from prior empirical studies (Jonnius, 2021; Lutfi & Panuntun, 2024; Nico & Widyastuti, 2025; Rahayu & Susanto, 2023; Amrotun *et al.,* 2025), which consistently document that profitability serves as a key determinant of firm valuation in emerging markets. The stability of the coefficient across both models further reinforces the robustness of this relationship, indicating that profitability remains an important driver of market-based firm value even after controlling for sustainability risk and other firm characteristics.

However, when sustainability risk is introduced as a moderating variable, the interaction term between profitability and sustainability risk shows a negative but statistically weak effect. This suggests that sustainability risk does not systematically alter the profitability–firm value relationship in a linear framework. From a theoretical standpoint, sustainability risk is expected to influence investor perception by increasing uncertainty regarding future cash flows, regulatory exposure, and reputational risk. In this context, a moderating effect would imply that higher sustainability risk weakens the relationship between profitability and market valuation.

Although the direct interaction effect does not provide strong statistical confirmation, its negative direction remains consistent with theoretical expectations derived from risk-adjusted valuation frameworks. This implies that sustainability risk may still play a conditional role in shaping market perceptions of profitability, even if the effect is not strong enough to be captured by a standard linear specification.

Turning to the control variables, leverage emerges as the most dominant and stable determinant of firm value across both models. The positive correlations between leverage and Tobin's Q support the trade-off theory of capital structure, particularly the tax shield argument proposed by Modigliani and Miller (1963). Debt financing can enhance firm value by reducing taxable income and lowering the cost of capital, especially when it is allocated to productive investments. However, this effect is not universal and may depend on how efficiently firms manage financial risk, suggesting that leverage functions as a value-enhancing mechanism only under optimal capital structure conditions.

While company value is positively correlated with younger firms, the reverse is true for older firms. Market value premiums are larger for younger enterprises than for older ones, according to this research. This pattern can be explained by growth expectations, in which investors assign higher valuations to firms perceived to have greater future expansion potential. In contrast, older firms may be viewed as more mature with limited growth opportunities, leading to relatively lower Tobin's Q values. This interpretation is consistent with growth-stage valuation theory and empirical evidence from emerging market studies (Ramadhan *et al.,* 2023).

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The regression findings suggest that profitability and capital structure efficiency are the main drivers of business value, with sustainability risk playing a more indirect, conditional role rather than being a direct determinant. The absence of a strong moderating effect in the linear model does not necessarily contradict sustainability theory; rather, it suggests that the impact of sustainability risk may be more nuanced and potentially nonlinear, warranting further exploration through marginal effect analysis.

A basic slope analysis is conducted in accordance with Aiken and West (1991) to delve further into this conditional pattern. Despite the lack of statistical significance for the interaction term, the research illustrates descriptively how profitability's impact on company value varies with the degree of sustainability risk. The findings show a declining trend: at low sustainability risk, profitability has a large marginal effect on firm value; at medium sustainability risk, it is smaller; and at high sustainability risk, it becomes statistically insignificant. This trend indicates that the sensitivity of business value to profitability decreases as sustainability risk increases. However, given the insignificance of the interaction term in the baseline model, these results should be interpreted as indicative rather than confirmatory evidence of moderation.

5. Concluding Remarks and Recommendation

This study examines whether sustainability risk moderates the relationship between profitability and firm value among IDX-listed firms. The analysis is motivated by the question of whether ESG-related risk affects how the market translates profitability signals into firm valuation. Using unbalanced panel data of 84 firms over the period 2022–2024, the study employs REM Generalized Least Squares with robust standard errors and moderated regression analysis. Tobin's Q measures firm value, ROA measures profitability, and ESG Risk Ratings measure sustainability risk, all adjusted for business size, firm age, liquidity, and leverage. Profitability is still a major factor in determining a company's market value, as shown by empirical results that demonstrate a positive correlation between profitability and firm value across all model settings. The interaction between profitability and sustainability risk is negative but not statistically strong under a linear moderation framework, suggesting that sustainability risk does not significantly alter the profitability–firm value relationship in a direct interaction model. However, a conditional (simple slopes) analysis indicates that the effect of profitability on firm value varies across sustainability risk levels, with a stronger relationship at lower sustainability risk and a weaker relationship at higher sustainability risk. This suggests that sustainability risk may influence the strength of profitability signaling in a conditional manner rather than directly moderating it.

The outcomes suggest that profitability is the primary driver of company value in the Indonesian market, with sustainability risk playing a more contextual role in shaping profitability's valuation rather than being the sole determinant of firm value. These findings are consistent with value relevance theory, which emphasizes that market responses to accounting information may vary depending on firm-specific risk conditions. Rather than radically altering the correlations between profitability and firm value in developing markets, the research contributes to our theoretical understanding of how sustainability risk could condition these correlations. It extends prior literature by highlighting that ESG-related factors may serve as contextual variables that influence the strength of financial performance signals. In terms of applications, the results indicate that managers should pay attention to sustainability risk management as it may affect how investors interpret profitability signals, even if its direct effect on

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firm value is limited. For investors, sustainability risk may serve as a supplementary indicator when evaluating the reliability of profitability-based valuation signals.

Several limitations should be acknowledged. First, the relatively short observation period (2022–2024) may limit the ability to capture long-term dynamics. Second, sustainability risk is treated as a composite measure, without separating Environmental, Social, and Governance dimensions, which may mask heterogeneous effects. Future research is encouraged to extend the time horizon, incorporate sectoral or industry-specific analysis, and explore alternative methodological approaches to capture better the conditional role of sustainability risk in firm valuation.

Statement of Use of Generative AI

During the preparation of this work, the author used ChatGPT to assist in improving clarity and readability of the text. The author reviewed and edited the output and takes full responsibility for the content of the publication.

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