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When Risk-Taking Meets ESG: Implications for Firm Performance in Indonesia

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ABSTRACT
This study explores the relationship between firm risk-taking and financial performance, with a particular focus on the moderating role of Environmental, Social, and Governance (ESG) practices. Using panel data from 86 firms listed on the Indonesia Stock Exchange over the 2018–2023 period, Ordinary Least Squares (OLS) regression with year fixed effects was employed. The results show that risk-taking has a positive and significant effect on firm performance, supporting the risk–return trade-off perspective. However, the interaction term reveals a negative moderation, meaning that ESG weakens the relationship between risk-taking and firm performance. This suggests that firms with stronger ESG commitments adopt more cautious strategies, which may reduce short-term financial gains but reinforce long-term stability and stakeholder trust. The findings contribute to the literature by clarifying the dual role of ESG as both a performance enhancer and a risk-control mechanism in emerging markets. Managers should integrate ESG principles into their strategic risk management frameworks to ensure that risk-taking decisions are aligned with sustainability objectives. Future studies should adopt broader risk-taking measures (R&D investment or leverage), extend the scope to cross-country settings, and integrate qualitative approaches for deeper insights.

Keywords: ESG, Firm Risk-Taking, Firm Performance, ROA.
JEL Code: G32, G34, M14, Q56

I. Introduction

The current debate surrounding environmental, social, and governance (ESG) performance is multifaceted. Some critics argue that the lack of standardized ESG assessments creates confusion that can hinder genuine sustainability efforts, while others maintain that these assessments are crucial for driving improved ESG performance, based on the principle of "what gets measured gets done" (Ademi & Klungseth, 2022). However, companies continue to face pressure from stakeholders and society to address sustainability issues and improve ESG performance (Dakhli, 2021). Building trusting relationships with stakeholders is a key to competitive advantage, as ESG practices such as resource and risk management directly influence management decision-making. Firms that implement robust ESG measures often experience long-term benefits, including improved efficiency, enhanced customer loyalty, a stronger corporate reputation, better access to capital, cost savings, and increased innovation capacity (Rahi et al., 2022). ESG integrates elements of Corporate Social Responsibility (CSR) and Good Corporate Governance (GCG), emphasizing firms' responsibilities to protect the environment, strengthen social relationships, and uphold effective governance.

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By embedding ESG principles into business operations and strategic goals, companies seek to ensure long-term sustainability. Growing environmental challenges increasingly threaten business continuity, making ESG practices essential not only for corporate reputation but also for financial performance (Utami et al., 2025).

In emerging markets such as Indonesia, the adoption of ESG practices is growing, yet it faces unique challenges. The Financial Services Authority (OJK) and the Indonesia Stock Exchange (IDX) have introduced guidelines and, in some cases, mandatory disclosure requirements for sustainability reporting. However, the level of compliance and quality of ESG disclosure varies widely among firms, reflecting differences in resources, industry characteristics, and managerial commitment (Prihandono & Yuniarti, 2023). These disparities create an interesting context for analyzing how ESG interacts with traditional corporate strategies, particularly risk-taking, to influence financial outcomes. Academic literature has extensively explored the relationship between ESG and firm performance. Numerous studies suggest that the three dimensions of ESG are interconnected, and their combination strengthens management practices and boosts company performance (Hesniati et al., 2019; Tarmuji et al., 2016). Voluntary disclosure or integrated reporting is a good way to communicate a company's performance, strategy, and governance to stakeholders, which in turn can increase the company's value over time (Hsiao & Kelly, 2018; Itan et al., 2024). Currently, major companies, both listed and unlisted, are starting to engage in ESG disclosure, which is also a tool that managers can use to maximize the relationship between company value and sustainable growth (Popa et al., 2021).

Previous studies have widely documented the role of risk-taking in enhancing firm performance. High-ability managers are more willing to take risks and effectively channel them into productive strategies that increase firm value, whereas low-ability managers tend to avoid risks, often resulting in declining performance (Mirza et al., 2019; Yung & Chen, 2018). These findings are consistent with agency theory and the risk–return trade-off theory, both of which argue that optimal levels of risk-taking are necessary for maximizing firm value and ensuring efficient resource utilization. Firms that engage in calculated risk-taking may achieve superior performance, as reflected in traditional financial metrics such as return on assets (Hesniati et al., 2024; Simamora, 2023). At the same time, some studies suggest that strong ESG performance can constrain risk-taking by enhancing corporate transparency and promoting more cautious decision-making (Du & Azman, 2024; He et al., 2023). While at the same time, ESG practices are generally associated with higher profitability (Ho et al., 2024; Nguyen, 2024). This dual effect indicates that ESG may act as a moderating factor in the risk-taking–performance relationship, potentially weakening or amplifying the impact of risk-taking on firm performance depending on the balance between transparency-induced caution and value-enhancing effects. This study addresses this gap by investigating the interplay between firm risk-taking, ESG, and profitability in the context of an emerging market. While risk-taking has traditionally been associated with higher returns, as suggested by the risk–return trade-off theory and agency theory, the integration of ESG may alter this relationship by introducing additional governance and sustainability considerations. Examining whether ESG amplifies or dampens the impact of risk-taking on firm performance, therefore, offers important contributions to both theory and practice, providing insights for academics, managers, investors, and policymakers seeking to balance profitability with long-term sustainability.

II. Literature Review and Hypothesis Development

2.1. Agency Theory

Agency theory explains the conflict of interest between managers (agents) and shareholders (principals). Managers may avoid risky projects to protect their positions, while shareholders typically prefer strategies that maximize returns, even with higher risk. Prior studies suggest that risk-taking can be an instrument for aligning managerial incentives with shareholder interests, as higher returns compensate for increased risk exposure (Jensen & Meckling, 1976). In this study, agency theory provides a foundation for understanding why risk-taking is positively associated with firm performance (ROA). However, when ESG

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practices are introduced, they impose additional monitoring and governance mechanisms that may limit managerial discretion, leading to a reduction in aggressive risk-taking behavior.

2.2. Risk–Return Trade-off Theory

The risk–return trade-off is a fundamental concept in finance, positing that higher risk is generally associated with higher expected returns (Markowitz, 1952). In line with this theory, the study confirms that firms engaging in risk-taking achieve higher profitability. However, the presence of ESG as a moderating factor modifies this traditional trade-off. High ESG performance introduces non-financial constraints that encourage more prudent risk management, thereby reducing the magnitude of financial gains from risky strategies. This adjustment reflects the evolving nature of corporate decision-making, where firms must balance profitability with sustainability commitments.In this modern era, companies are not only required to generate profits but also must pay attention to sustainability aspects in their business operations. Implementing Environmental, Social, and Governance (ESG) has become a necessity for companies in their efforts to create sustainable value. Companies that implement good ESG practices have advantages in terms of reducing operational risks, ease of access to capital, and harmonious relationships with stakeholders, which ultimately contribute positively to increasing company value. Through optimal ESG implementation, companies can build a strong foundation for long-term growth while providing positive benefits to the environment and society at large (Nurachman & Soeratin, 2025).

In the context of company operations, the successful implementation of business strategies is inseparable from the role of human resources and an effective management system. Research shows that a conducive work environment, a competitive reward system, and adequate management support have a significant impact on employee job satisfaction and achievement motivation. When employees are satisfied with the working conditions provided by the company, this will encourage them to deliver their best performance and contribute positively to the achievement of company goals. A good management system also includes optimal financial risk management as an effort to maintain the company's economic stability in the face of competition in the global market (Febriyanti & Mon, 2025; Siwi et al., 2024).

2.3. The relationship between firm risk-taking and firm performance

Managerial risk-taking can enhance firm performance, particularly when managers possess strong capabilities. Greater managerial competence equips leaders with the expertise and judgment needed to transform risk-taking into better organizational outcomes (Simamora, 2023). High-ability managers are more willing to take risks and can channel them into productive strategies, which ultimately enhances firm value. In contrast, low-ability managers tend to avoid risk-taking, leading to a decline in firm value (Yung & Chen, 2018). Mirza et al. (2019) highlight that high managerial ability can encourage productive risk-taking behavior, which increases company profitability. Theoretically, these results are supported by agency theory and risk-return trade-off theory, which assert that optimal risk-taking is a strategy for maximizing company value and creating efficient asset utilization. Therefore, it can be concluded that:

H1: Firm risk-taking has a significant positive effect on firm performance.

2.4. The relationship between ESG as a moderator of firm risk-taking and firm performance

ESG performance is typically found to have a significant negative association with corporate risk-taking. Companies with stronger ESG ratings are inclined to adopt more cautious strategies, resulting in improved efficiency and more effective risk management (Du et al., 2024). ESG performance significantly reduces corporate risk-taking, with the effect being more pronounced in firms with lower information transparency, weaker governance, and limited external monitoring (He et al., 2023). However, Teng et al.

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(2023) suggest a U-shaped relationship between ESG practices and corporate risk-taking, indicating that both low and high levels of ESG engagement can influence risk-taking differently. ESG performance is integral to sustainable development, helping firms manage risks and achieve long-term growth (Chang et al., 2025). Therefore, it can be concluded that:

H2: ESG moderates the relationship between firm risk-taking and firm performance

2.5. Firm Size and Firm Age as Control Variables

In empirical corporate finance and sustainability research, firm size and firm age are widely employed as control variables because both characteristics influence a firm's risk-taking capacity, reporting practices, and financial outcomes. Firm size reflects the scale of a company's operations and resource availability. Larger firms generally have better access to capital markets, stronger bargaining power, and more structured governance systems (Dang et al., 2018). They are also more visible to stakeholders and under greater public scrutiny, which may affect their disclosure practices and ESG performance (Velte, 2020). Company size can serve as a proxy for a firm's financial characteristics. Larger, well-established firms typically have easier access to capital markets compared to smaller companies, providing them with greater financial flexibility (Windi Ar et al., 2025). Firm age represents the maturity of an organization. Older firms are typically more experienced, stable, and better equipped with established networks and reputation advantages (Mallinguh et al., 2020). They may also have accumulated resources that enable stronger ESG adoption (Yustin & Suhendah, 2023). Accordingly, both firm size and firm age are included in this study as control variables to ensure that the observed relationships between risk-taking, ESG, and firm performance are not biased by firm-specific structural characteristics.

2.6. Research Model

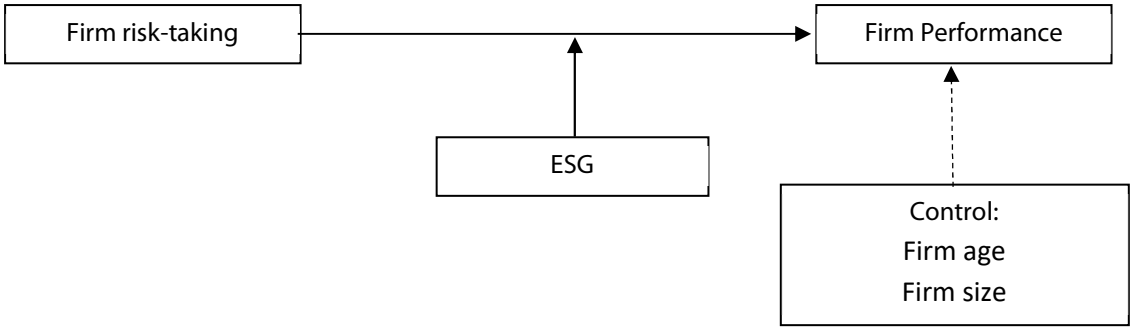

Figure 1. Conceptual Framework

III. Research Method

This study employs a quantitative research design to investigate the effect of firm risk-taking on financial performance and the moderating role of ESG in Indonesian public companies. The research covers the period 2018–2023, which is considered particularly relevant because ESG reporting has gained increasing regulatory attention in Indonesia following initiatives by the Financial Services Authority (OJK) and the Indonesia Stock Exchange (IDX). The sample consists of 86 firms listed on the IDX that consistently disclosed both annual and sustainability reports and were included in the Refinitiv ESG database during the observation period. A purposive sampling method was applied, as not all listed firms provide ESG data or publish complete reports. Compared with random sampling, purposive selection ensures the availability and reliability of the required data (López, 2023). The final panel comprises 296 firm-year observations after excluding incomplete cases.

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The study relies on secondary data obtained from multiple sources. ESG scores were collected from Refinitiv, which provides standardized and internationally recognized measures across environmental, social, and governance dimensions (Pulino et al., 2022; Velte, 2020). Financial and non-financial data, including total assets, net income, and firm age, were extracted from annual reports, sustainability reports, and the IDX database. The use of multiple sources reduces the risk of single-source bias and strengthens the validity of the dataset. Firm performance was measured using Return on Assets (ROA), calculated as net income divided by total assets, a common indicator of profitability that captures the efficiency of asset utilization. Firm risk-taking (FRT) was proxied by the three-year rolling standard deviation of ROA, reflecting earnings volatility as a measure of ex-post risk behavior. (Dissanayake et al., 2025). This proxy has been widely used in prior literature and is considered suitable for emerging markets where alternative indicators such as R&D expenditures or market-based risk measures are often unavailable.

The moderating variable, ESG, was represented by the Refinitiv ESG score, which aggregates firm-level performance across environmental, social, and governance pillars. The advantage of Refinitiv data lies in its comparability across firms and years, providing a consistent benchmark for evaluating sustainability performance. Two control variables were included: firm size (FSIZE), measured by the natural logarithm of total assets, and firm age (FAGE), defined as the number of years since incorporation. These controls account for structural differences in scale and maturity that may influence profitability and risk behavior.

Table 1. Variable Measurement

Variable Name	Measurement	Source
ESG	Company ESG scores based on data from Refinitiv ESG Score	Pulino et al. (2022)
Firm risk-taking (FRT)	Standard deviation of ROA over 3 years	Dissanayake et al. (2025)
Firm performance (ROA)	Net income / Total assets	Dissanayake et al. (2025)
Firm age (FA)	Number of years since the company was founded	Alrobai & Albaz (2025)
Firm size (FS)	Natural logarithm of total assets	Erisa & Sundari (2025); Hesniati et al. (2024)

The empirical analysis was conducted using the Ordinary Least Squares (OLS) regression technique with year fixed effects. OLS was chosen for its ability to provide clear interpretations of direct effects and interaction terms (Wooldridge, 2013). Alternative approaches such as Generalized Method of Moments (GMM) or Generalized Least Squares (GLS) were considered, but given the relatively short time frame and limited sample size, OLS was deemed more appropriate. Year fixed effects were included to ensure that the results reflect firm-specific variations rather than temporal distortions. The analysis was structured in two stages. Model (1) tested the direct effect of firm risk-taking on ROA, while Model (2) introduced ESG and the interaction term (FRT × ESG) to examine the moderating effect. This stepwise approach allows for comparison of explanatory power across models and assessment of whether ESG significantly alters the relationship between risk-taking and financial performance.

a. Model 1: Basic Regression (without moderation)

$$ROA_t = \beta_0 + \beta_1 FRT_t + \beta_2 FAGE_t + \beta_3 FSIZE_t + \varepsilon_t$$

b. Model 2: Regression with ESG Moderation

$$ROA_t = \beta_0 + \beta_1 FRT_t + \beta_2 ESG_t + \beta_3 (FRTxESG)_t + +\beta_4 FAGE_t + \beta_5 FSIZE_t + \varepsilon_t$$

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Information:

ROA: Return on Assets
FRT: Firm Risk-Taking
ESG: Environmental, Social, and Governance scores
FRT×ESG: The interaction between risk-taking and ESG as a form of moderation
FAGE: Company age
FSIZE: Firm size (log of total assets)
e: error term

IV. Results and Discussion

Table 2. Descriptive Statistics Test

	Mean	Standard Deviation	Minimum	Maximum
ROA	0.084	0.232	-0.183	2.168
FRT	0.084	0.413	0.000	3.953
ESG	49.269	19.807	13,760	87.070
FAGE	44.311	21.652	0.000	125.000
FSIZE	31.473	1.551	26.690	35.230

The average ROA is 0.084 with a standard deviation of 0.232, ranging from –0.183 to 2.168. This indicates modest average profitability among Indonesian listed firms, but with wide dispersion. While some firms reported losses (negative ROA), others achieved exceptionally high returns of over 200%, reflecting either aggressive profit strategies or extraordinary performance in certain periods. FRT shows the same mean of 0.084 but with a much larger standard deviation (0.413), ranging from 0.000 to 3.953. This suggests substantial heterogeneity in firms' risk profiles. Some firms adopt highly conservative approaches with minimal volatility, while others exhibit pronounced risk-taking that generates large earnings fluctuations. The ESG score averages 49.269 with a relatively high standard deviation of 19.807, ranging from 13.760 to 87.070. This highlights uneven ESG adoption across firms: some remain at an early stage of implementing sustainability practices, while others have embedded ESG principles more comprehensively into governance and operations.

Firm age averages 44.311 years, ranging from newly established firms to companies over a century old. This reflects a diverse corporate landscape, combining younger firms pursuing rapid expansion and mature firms with established market positions. Firm size averages 31.473 with limited variation (SD = 1.551) and values between 26.690 and 35.230. This suggests that IDX-listed firms are generally large-scale entities with relatively comparable asset bases. Overall, the descriptive statistics reveal two key insights. First, Indonesian listed firms display considerable variation in profitability, risk-taking behavior, and ESG practices.

Table 3. Pearson Correlation Test

	ROA	**FRT**	**ESG**	**FAGE**	**FSIZE**
ROA	1.000				
FRT	0.722***	1.000			
	(0.000)				
ESG	-0.023	-0.121**	1.000		
	(0.695)	(0.038)			
FAGE	0.029	-0.009	0.398***	1.000	
	(0.624)	(0.881)	(0.000)		
FSIZE	-0.149**	-0.216***	0.492***	0.320***	1.000
	(0.010)	(0.000)	(0.000)	(0.000)	

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Based on the Pearson correlation results, several relationships between the key variables can be identified. The correlation between ROA and FRT is positive and highly significant (r = 0.722, p = 0.000), suggesting that firms with more timely financial reporting tend to achieve higher profitability. This finding supports the notion of information efficiency, where timely disclosure reflects effective management practices that contribute positively to financial performance. In contrast, ROA shows no meaningful association with ESG (r = –0.023, p = 0.695) or firm age (r = 0.029, p = 0.624), indicating that sustainability performance and organizational maturity do not directly translate into profitability within this sample. Interestingly, ROA is negatively correlated with firm size (r = –0.149, p = 0.010), implying that larger firms may experience lower returns, possibly due to scale-related inefficiencies or higher administrative costs.

The results also reveal that FRT and ESG are negatively associated (r = –0.121, p = 0.038), suggesting that firms with stronger ESG performance tend to report less promptly, potentially because of the complexity of sustainability disclosures or the cautious preparation of financial statements. Moreover, ESG is positively related to both firm age (r = 0.398, p = 0.000) and firm size (r = 0.492, p = 0.000), which aligns with the view that older and larger firms have greater resources and face higher public scrutiny, motivating stronger commitments to sustainability. Finally, firm age and firm size are positively correlated (r = 0.320, p = 0.000), reflecting the tendency of older firms to expand and accumulate larger asset bases over time. Although these correlations are statistically significant, none exceed the conventional threshold of 0.80, which is often considered problematic for multicollinearity.

Table 4. Regression and Moderation Test

	(1)	**(2)**
	ROA	ROA
FRT	0.405***	0.874***
	(2.76)	(4.23)
ESG		0.001**
		(2.53)
FRTxESG		-0.007**
		(-2.56)
FAGE	0.000	0.000
	(1.03)	(0.49)
FSIZE	-0.001	-0.004
	(-0.18)	(-0.46)
_cons	0.096	0.138
	(0.44)	(0.52)
Year FE	Yes	Yes
r2	0.528	0.690
r2_a	0.515	0.679
N	296	296

4.1. H1: Firm risk-taking has a significant positive effect on firm performance.

The regression analysis demonstrates that firm risk-taking has a positive and significant effect on firm performance, with a coefficient of 0.405 (p < 0.01). This suggests that firms with a greater willingness to assume risks tend to achieve higher profitability. The finding is consistent with decision-making theory under uncertainty, which posits that firms engaging in well-measured strategic risks can capture greater returns. The finding is consistent with previous studies. (Mirza et al., 2019; Simamora, 2023). From a theoretical perspective, these findings are in line with agency theory and the risk–return trade-off framework, both of which argue that optimal risk-taking is a key mechanism for maximizing firm value and ensuring efficient asset utilization.

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4.2. H2: ESG moderates the relationship between firm risk-taking and firm performance.

In Model (2), the introduction of ESG and the interaction term (FRT × ESG) improves the explanatory power of the model, as indicated by the increase in R^2 from 0.528 to 0.690. The results show that FRT remains positive and significant, with a larger coefficient (0.874, $p < 0.01$), while ESG itself also exerts a positive and significant effect on firm performance (0.001, $p < 0.05$). However, the interaction between FRT and ESG is negative and significant (–0.007, $p < 0.05$), suggesting that ESG weakens the positive impact of risk-taking on firm performance. This implies that firms with stronger ESG commitments benefit from risk-taking to a lesser extent, likely because ESG-oriented firms adopt more cautious and conservative business practices. The moderating effect of ESG implies that managers in firms with stronger ESG commitments must carefully balance financial ambitions with sustainability responsibilities. While risk-taking can increase profitability, excessive or poorly managed risks may undermine stakeholder trust and damage the firm's long-term reputation. In practice, managers should integrate ESG principles into their strategic risk management frameworks to ensure that risk-taking decisions are aligned with sustainability objectives. For example, when evaluating investment projects, managers need to assess not only the financial return but also the potential environmental and social impacts.

V. Conclusion

This study investigates the effect of firm risk-taking on financial performance and the moderating role of ESG practices in publicly listed companies in Indonesia. Using panel data covering 2018–2023, the results provide several key insights. First, risk-taking is found to have a strong and positive effect on firm profitability, suggesting that Indonesian firms that are willing to engage in calculated risks are more likely to enhance their returns on assets. This finding is consistent with the risk–return trade-off theory and agency theory, both of which posit that optimal levels of risk-taking are essential for maximizing firm value and ensuring efficient resource allocation. Second, ESG practices are shown to exert a positive and direct influence on firm performance. This supports the argument from stakeholder theory that companies adopting stronger sustainability measures are better positioned to gain legitimacy, build trust, and secure long-term advantages. However, the study also reveals that ESG weakens the positive association between risk-taking and profitability. This suggests that while ESG creates long-term benefits, it also imposes governance constraints that reduce the financial gains typically associated with aggressive strategies. Firms that are highly committed to ESG tend to adopt more cautious business practices, reflecting a balance between financial performance and social responsibility.

This study makes several theoretical contributions. First, it reinforces the relevance of agency theory and the risk–return trade-off theory by confirming that risk-taking is positively associated with firm performance in an emerging market context. At the same time, it extends these frameworks by showing that ESG practices reshape the traditional risk–return dynamic. ESG functions as a governance and accountability mechanism that limits excessive managerial discretion, thereby reducing the short-term financial benefits of aggressive strategies. Second, the findings enrich both stakeholder theory and legitimacy theory, as they highlight that ESG should not be viewed merely as an outcome variable but also as an active moderating factor that influences corporate decision-making. Third, this research contributes to the literature on sustainability in developing economies, where institutional settings and disclosure standards differ from those in advanced markets. By focusing on Indonesia, the study provides contextual insights into how ESG interacts with risk-taking to shape firm outcomes.

From a managerial perspective, the results emphasize the importance of balancing profitability with sustainability commitments. While calculated risk-taking can drive higher returns, firms with stronger ESG commitments tend to adopt more prudent approaches, which safeguard long-term value creation and maintain stakeholder trust. Managers are therefore encouraged to embed ESG principles into their strategic risk management frameworks, ensuring that investment decisions consider not only financial returns but also

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potential environmental and social consequences. For investors, the findings suggest that high-ESG firms are likely to deliver more stable but less volatile returns, making them suitable for long-term investment portfolios. For policymakers, the evidence underscores the need to strengthen ESG disclosure requirements and to promote alignment between risk-taking behavior and sustainable development objectives. This research is limited by its reliance on secondary data, a sample restricted to listed firms in Indonesia, and the measurement of risk-taking based solely on ROA volatility. The relatively short observation period may also limit the generalization of long-term effects. Future studies should adopt broader risk-taking measures (R&D investment or leverage), extend the scope to cross-country settings, and integrate qualitative approaches for deeper insights. For practice, firms are advised to embed ESG into risk management policies, while regulators should strengthen ESG reporting standards to improve transparency and comparability.

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