"The impact of ESG risks on bank stability in Indonesia"

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THE IMPACT OF ESG RISKS ON BANK STABILITY IN INDONESIA

Abstract

The influence of Environmental, Social, and Governance (ESG) risks on bank stability has become a critical area of study in the banking sector. This study examines the influence of ESG risks on bank stability using unbalanced panel data from 134 commercial banks in Indonesia from 2003 to 2022. Employing a fixed effects model, the findings reveal a significant negative effect of ESG risks on bank stability, where higher ESG risks significantly reduce bank stability. Specifically, government-owned banks face a greater stability decline than private banks due to their often higher exposure to regulatory and reputational pressures. Smaller banks are more adversely affected than larger ones because they lack the resources and diversification to effectively mitigate ESG risks. Additionally, non-listed banks experience a larger decrease in stability than listed banks, as the latter tend to have stricter governance structures and more robust risk management practices. These findings underscore the need for tailored risk management strategies to address ESG risks, particularly for government-owned, smaller, and non-listed banks.

Keywords	ecological, uncertainty, sustainability, scale, threat, control, bankruptcy, vulnerability
JEL Classification	G21, G32, Q56, M14, C33

INTRODUCTION

Environmental, Social, and Governance (ESG) risks have emerged as critical factors influencing the stability and performance of the financial sector. These risks, encompassing issues such as climate change, social inequality, and governance inefficiencies, pose significant challenges to financial institutions. Left unaddressed, ESG risks can lead to regulatory sanctions, litigation, reputational harm, and financial losses. Consequently, understanding the implications of ESG risks has become essential for ensuring financial resilience and aligning business practices with evolving stakeholder expectations.

In Indonesia, the regulatory framework for sustainable finance has undergone significant transformation. The 2023 Law on Strengthening and Advancing the Financial Sector highlights the critical role of sustainable finance in fostering economic resilience and environmental sustainability. By incorporating mechanisms such as sustainable taxonomy guidelines and climate risk mitigation strategies, the law underscores the financial sector's responsibility to address ESG challenges while supporting national economic growth.

Bank stability is a cornerstone for economic progress, providing essential services like credit facilitation and risk management that underpin economic activities. However, instability in the banking sec-

tor – whether caused by external shocks or internal vulnerabilities – can have widespread economic consequences. ESG risks add a new dimension to these challenges, exposing banks to reputational damage, increased compliance costs, and evolving regulatory demands. This underscores the importance of integrating ESG considerations into banking practices to mitigate risks and enhance long-term stability.

Despite global uncertainties, Indonesia's banking sector has demonstrated remarkable resilience. This condition reflects robust performance and adaptability, positioning the sector as a key driver of sustainable economic development. However, the relationship between ESG risks and bank stability remains underexplored, highlighting the need for a comprehensive analysis to inform effective policy-making.

This study addresses a critical gap in the literature by examining the impact of ESG risks on bank stability in Indonesia. It aims to provide insights into how ESG factors influence financial resilience, with a particular focus on the differential effects across bank ownership structures, sizes, and listing statuses. By doing so, this study contributes to the growing discourse on sustainable finance and offers practical implications for strengthening the banking sector's capacity to navigate ESG-related challenges.

1. LITERATURE REVIEW AND HYPOTHESES

Risk's effects on the stability and performance of banks have garnered significant attention from researchers. For instance, Chi and Li (2017) investigated the impact of China's uncertain economic policies on bank lending, while Chen et al. (2015) explored the more extensive influence of risk factors. Meanwhile, during the global financial crisis, bank performance was disrupted, as indicated by a decline in performance. A similar effect was observed in time of the COVID-19 health crisis, which led to a decrease in bank stability. A study conducted in African countries by Oyetade and Muzindutsi (2023) found that country risk diminishes bank stability. Additionally, Yudaruddin et al. (2023) demonstrated how financial technology positively impacts bank stability. Bank stability is significantly impacted by economic freedom as well (Defung & Yudaruddin, 2022).

Indeed, the crisis period significantly contributes to increased bank risk, which in turn affects bank performance. A similar effect was observed in Islamic banks, exacerbated by competition with fintech peer-to-peer lending companies (Wahyuni et al., 2024). Likewise, COVID-19 and other health crises negatively impacted banks. Other financial sectors, such as insurance, also experienced adverse effects (Paminto et al., 2023). Additionally, COVID-19 did not moderate the relationship between bank performance and stability (Fakhrunnas & Nahda, 2023).

Recently, the examination of ESG risks on bank stability has emerged as a crucial area of financial research. ESG risks encompass potential negative impacts arising from ESG factors that may affect a bank's financial performance and stability. This literature review synthesizes existing research on how ESG risks influence bank stability, with a particular focus on differences between private and government banks, small and large banks, and listed and non-listed banks.

Prior research has demonstrated the importance of integrating ESG variables into risk management to support bank stability. ESG performance is becoming more widely acknowledged as a critical factor in determining financial stability. For instance, a significant correlation is shown between financial performance indicators and ESG. Aydoğmuş et al. (2022) found that ESG has driven increased company value. Cantero-Saiz et al. (2024) found that stability will be maintained due to ESG, especially supported by high profits. Similarly, Saliba et al. (2023) found that enhanced ESG practices reduce credit risk, particularly in emerging economies like the BRICS nations, by mitigating the negative effects of political, economic, and financial instability on NPLs. Conversely, Atan et al. (2018) discovered that ESG and return on assets did not have a substantial impact.

Several studies emphasize the protective role of strong ESG frameworks in maintaining credit quality and promoting sustainable banking operations. Martiny et al. (2024) and Chiaramonte

et al. (2021) found that effective ESG management enhances financial stability and asset quality by promoting responsible banking practices. Galletta and Mazzù (2023) confirmed that strong ESG performance reduces credit risk, as robust ESG risk management improves financial stability and asset quality. Furthermore, Liu et al. (2023) documented that in U.S. commercial banks, higher ESG ratings are adversely connected with loans that are not performing. Velte (2017) found that ESG helps boost bank profits in Germany

The literature also suggests that methodological and regional differences have the potential to affect the observed relationship between ESG performance and bank stability. El Khoury et al. (2021) noted that financial performance and ESG have a nonlinear relationship, where ESG investments are advantageous until a specific threshold is reached, beyond which additional investments may not proportionally enhance asset quality or financial returns. This indicates that the benefits of ESG investments may taper off, necessitating a strategic balance of ESG efforts to optimize asset quality (Martiny et al., 2024). Additionally, Nollet et al. (2016) observed both positive and negative correlations between social and financial performance in S&P 500 companies, suggesting that the impact of ESG can differ based on the measurement model used. Di Tommaso and Thornton (2020) posited that discrepancies in findings across studies might stem from differing methodologies and sources of ESG data, emphasizing the need for consistent measurement and reporting standards. Finally, sectoral differences play a role in how ESG risks affect bank stability. The degree to which ESG performance impacts asset quality and financial stability might vary depending on the industry (Bătae et al., 2021; Athari & Bahreini, 2023).

Regional factors also play a critical role in shaping the impact of ESG risks on bank stability. For instance, Yu et al. (2024) highlighted that banks in Asia-Pacific countries face different ESG-related challenges than those in Europe or North America. The effectiveness of ESG practices in enhancing bank stability varies depending on the regional regulatory environment, market conditions, and socioeconomic factors (Gao et al., 2024).

Furthermore, the regulatory environment significantly affects how ESG risks influence bank stability. Al-Amosh et al. (2023) and Lee and Lee (2019) revealed that banks in countries with stringent ESG regulations often experience more pronounced impacts on their asset quality compared to those in countries with looser regulations. Neitzert and Petras (2022) similarly found that banks in regions with strong ESG regulatory frameworks are more likely to benefit from positive effects on asset quality. Conversely, banks in countries with weaker ESG regulations may not derive the same benefits from ESG practices, as the absence of regulatory pressure can lead to less effective ESG implementation (Landi & Sciarelli, 2019). The effectiveness of ESG integration often depends on the strength and enforcement of local regulations, which can vary significantly across jurisdictions.

A study by Phan et al. (2021) indicates that highly profitable banks are better equipped to invest in effective ESG practices, subsequently enhancing their asset quality by lowering NPLs. In contrast, it might be difficult for banks with reduced profitability to fund and execute ESG programs, negatively affecting their asset quality (Fatnassi et al., 2014; Shakil et al., 2019). Bhaskaran et al. (2020) examined how ESG affects financial results, finding that companies excelling in the pillars of governance, social, and environmental issues provide more market value. Athari (2021) and Al-Shboul et al. (2020) showed that more profitable banks tend to perform better in ESG-related metrics, thereby enhancing their stability and asset quality. Conversely, banks with lower profitability may struggle to integrate ESG practices effectively, resulting in weaker financial stability and asset quality (El Khoury et al., 2021; Chiaramonte & Casu, 2017).

The impact of ESG risks on bank stability exhibits notable differences between government-owned and private banks. In contrast to those in the private sector, government-owned banks frequently have more structured ESG policies and better resources for efficient implementation (El Khoury et al., 2021; Athari & Bahreini, 2023). Al-Amosh et al. (2023) found that government-owned banks are more adept at managing ESG risks, leading to enhanced financial stability and improved asset

quality. Conversely, private banks may encounter greater challenges in consistently integrating ESG practices, which can adversely affect their asset quality (Al-Gasaymeh & Samarah, 2023). Athari and Bahreini (2023) further argue that government-owned banks are better positioned to enforce internal ESG regulations, thereby achieving stable asset quality. In contrast, private banks may struggle with ESG integration due to competing financial priorities and less regulatory pressure. This assertion is supported by Al-Gasaymeh and Samarah's (2023) study, which indicates that government-owned banks typically have more comprehensive ESG management practices, resulting in better financial stability compared to private banks.

The size of a bank also influences how ESG risks impact its stability. Larger banks generally possess more resources to implement comprehensive ESG policies, thereby improving asset quality and reducing credit risk (Athari et al., 2023). Additionally, the effect of ESG risks on bank stability varies significantly according to the bank size. Large banks typically possess more resources to comprehensively implement and monitor ESG policies, which can enhance their asset quality and financial stability (Athari et al., 2023). According to Gao et al. (2024), bigger banks with higher ESG ratings often exhibit better asset quality when contrasted with smaller banks. This is further supported by findings from Liu et al. (2023) and Yu et al. (2024), which suggest that Major banks get more advantages from ESG practices owing to their superior capacity to absorb and handle ESG-related risks efficiently. In contrast, small banks may encounter difficulties in effectively applying ESG practices, potentially leading to declines in asset quality (Athari & Irani, 2022). These challenges are exacerbated by limited resources and lower economies of scale, which can impede the implementation of comprehensive ESG policies (Chiaramonte & Casu, 2017). Bătae et al. (2021) emphasize that larger banks with robust ESG programs generally exhibit better asset quality, reflecting their greater capacity to manage ESG-related risks and comply with ESG standards.

Additionally, listed and non-listed banks have different effects of ESG risks on bank stability. Listed banks often have better access to resources and

technologies for effective ESG management, owing to higher transparency and market pressures. Whelan et al. (2021) found that listed banks with robust ESG policies tend to have superior asset quality compared to non-listed banks. This is attributed to the increased scrutiny and pressure from investors and regulatory bodies faced by listed banks (Neitzert & Petras, 2022; Al-Amosh et al., 2023). Non-listed banks, in contrast, may not experience the same level of market pressure to adhere to strict ESG standards, which can adversely affect their asset quality (Bătae et al., 2021; Chiaramonte & Casu, 2017). The lack of investor scrutiny and regulatory oversight in non-listed banks can result in less stringent ESG practices and potentially lower asset quality (Wu & Chen, 2024; El Khoury et al., 2021). This distinction is crucial for understanding how different banking environments influence the correlation between bank stability and ESG hazards.

This study investigates the influence of ESG risks on bank stability in Indonesia, with a specific focus on examining how these risks impact stability and whether their effects differ based on ownership structure, bank size, and listing status. The following hypotheses are proposed to evaluate the impact of ESG risks on bank stability and investigate these potential variations:

H1: *Bank stability is negatively correlated with ESG risk.*

H2: *The correlation between ESG risks and bank stability differs between government-owned and private banks.*

H3: *There are differences between large and small banks in the link between ESG risks and bank stability.*

H4: *There are differences between listed and non-listed banks in the link between ESG risks and bank stability.*

2. DATA AND METHODOLOGY

The analysis further explores potential variations in impact across government-owned versus private banks, large versus small banks, and listed

versus non-listed banks. Utilizing unbalanced panel data analysis, the study incorporates data from 134 commercial banks in Indonesia over the period from 2003 to 2022. This sample was chosen to ensure a comprehensive analysis of the Indonesian banking sector, capturing variations in bank size, ownership structure, and listing status over time. The Indonesia Financial Services Authority (OJK) provided bank financial statistics, while the Indonesian Central Bureau of Statistics (BPS) provided macroeconomic data. Additionally, the ESG Sovereign Risk Scores were sourced from CountryRisk.io.

The variables used in this study include dependent, independent, and control variables as outlined in Table 1. Following the methodologies of Riadi et al. (2022), Yudaruddin (2022), Maria et al. (2022), Yudaruddin et al. (2024), and Athari et al. (2023), bank stability (Z-Score) is employed as the dependent variable, calculated for bank i in year t using the following formula (1):

$$ZSCORE = \frac{ROA_i + EQTA_{i,t}}{SDROA_i}, \tag{1}$$

where $ZSCORE$ represents bank stability for bank i from 2003 to 2022. A higher $ZSCORE$ indicates a higher level of bank soundness, while a lower $ZSCORE$ suggests greater exposure to insolvency risks. ROA represents the return on assets, $SDROA$ is the standard deviation of ROA over the same period. The ratio of total equity to total assets is known as EQTA.

For the key explanatory variable, this study uses ESG Risk Scores, which reflect the estimated degree of sovereign credit risk for every nation, as determined by twelve parts of risk determinants. These rankings classify nations based on their propensity and capacity to fulfill their commitments under foreign exchange government bonds, while explicitly considering environmental and social indicators. The control variables in this investigation consist of: bank size (SIZE), loan-to-deposit ratio (LDR), bank efficiency (OEOI), bank concentration (CR_5), inflation (INF), and economic growth (GDP).

Bank size (SIZE) represents total assets, indicating a bank's scale. Larger banks may have more diver-

sified portfolios, potentially offering greater resilience to ESG risks, but could also face significant exposure due to their size. The Loan-to-Deposit Ratio (LDR) measures liquidity, and a higher ratio indicates potential liquidity risks, which could be exacerbated under ESG-related stress, such as environmental disasters or social unrest. Bank Efficiency (OEOI), the ratio of operating expenses to income, reflects resource management; higher efficiency can help banks better adapt to ESG risks by minimizing costs and improving resilience. Bank Concentration (CR5) indicates market share concentration, where a high concentration of assets in a few institutions may lead to systemic risks if large banks face ESG-related crises. Inflation (INF) erodes purchasing power and can undermine bank profitability, particularly when ESG risks, like climate change or social instability, affect the broader economy. Economic Growth (GDP) signals overall economic health, where stronger growth supports bank stability, increasing credit demand and profitability, while weaker growth, especially amid ESG challenges, can negatively affect banks.

The econometric methodology involves a two-stage regression analysis. In the first stage, the equation is estimated with ESG Risk and a set of control variables as shown in equation (2). In the second stage, the analysis is repeated, segmenting the sample into government-owned and private banks, small and large banks, as well as listed and non-listed banks. Bank stability is predicted using the following model:

$$\begin{aligned}
ZSCORE_{i,t} &= \beta_0 + \beta_1 ESG_t + \beta_2 SIZE_{i,t} \\
&+ \beta_3 LDR_{i,t} + \beta_4 OEOI_{i,t} + \beta_5 CR_t \\
&+ \beta_6 INF_t + \beta_7 GDP_t + \varepsilon_{i,j},
\end{aligned} \tag{2}$$

where i denotes an individual bank, t denotes the year, and bank stability ($ZSCORE$) is the dependent variable. ESG risk is the independent variable, with $SIZE$, LDR, $OEOI$, CR_5, INF, and GDP acting as control variables. The error term is symbolized by $\varepsilon_{i,t}$. This study adopts a panel data regression technique, integrating both cross-sectional and time-series data to address concerns like heteroscedasticity, estimation bias, and multicollinearity (Baltagi, 2008; Wooldridge, 2010). A fixed effects model (FEM) is employed, applying

the least squares method. The Hausman test is utilized to determine whether a fixed effects model is more appropriate than a random effects model. By employing panel data, the fixed effects model produces unbiased and reliable coefficient estimates (Wooldridge, 2010).

3. RESULT

Before conducting the regression analysis, the results of descriptive statistics are presented first, followed by an analysis addressing multicollinearity concerns. An overview of the descriptive statistics is provided in Table 1, while Table 2 demonstrates that none of the independent variables included in the study exhibit strong correlations.

Subsequently, Table 3 displays the baseline regression results, which emphasize the correlation between bank stability and ESG risk. The results indicate that ESG risk has a statistically significant and adverse effect on bank stability across all models (Models 1-3). Specifically, bank stability is correlated with increased ESG risk. In columns 1-3, the coefficients on ESG are negative (–0.0876, –0.0361, and –0.0189) and significant at the 0.01 level for bank stability (*ZScore*). Overall, the negative and significant coefficients in columns 1-3 support *H1*.

Table 3. ESG risk and bank stability; baseline regressions

Explanatory variables	Zscore (Dependent Variable)		
	(1)	(2)	(3)
ESG	−0.0876***	−0.0361***	−0.0189***
	(−22.84)	(−6.80)	(−3.05)
SIZE	−	0.1785***	0.0977***
	−	(7.24)	(3.52)
LDR	−	−0.1515**	−0.1423***
	−	(−2.53)	(−2.36)
OEOI	−	−0.0314***	−0.0307***
	−	(−24.06)	(−23.63)
CR5	−	−0.0306***	−0.0489***
	−	(−5.34)	(−7.52)
INF	−	−	−0.0177***
	−	−	(−3.09)
GDP	−	−	−0.0169***
	−	−	(−4.98)
Constant	5.5529***	4.8249***	6.5381***
	(33.76)	(7.77)	(9.66)
Rsquare	0.2022	0.4031	0.4144
F. Stat	521.61	277.20	207.28
Prob.F	0.0000	0.0000	0.0000
Obs.	2193	2191	2191

Note: Significance: *** (1%), ** (5%), and * (10%), respectively.

Table 4 shows the impact of ESG risk on bank stability based on bank ownership, specifically comparing government-owned and privately-owned banks. The findings suggest that ESG risk has a substantial and adverse effect on the stability of

Table 1. Descriptive statistics

Variables	Measurement	Mean	St. Dev.	Obs.
ZSCORE	Z-score = (ROA + EQTA)/ SDROA	1.8179	1.5334	2193
ESG	ESG Risk Score	42.594	4.9448	2193
SIZE	The logarithm of total assets bank	15.804	1.7912	2193
LDR	The ratio of total loan to total deposit (%)	0.8807	0.3798	2192
OEOI	The ratio of operating expenses to operating income (%)	83.309	16.952	2192
CR5	5-firm banking sector concentration ratio (%)	49.983	3.2683	2193
INF	Inflation rate (%)	6.1051	3.8470	2193
GDP	Growth of Gross Domestic Product (%)	12.727	6.8234	2193

Table 2. Matrix correlation

Variables	ESG	SIZE	LDR	OEOI	CR5	INF	GDP
ESG	1.0000	−	−	−	−	−	−
SIZE	−0.4661	1.0000	−	−	−	−	−
LDR	−0.2216	0.0972	1.0000	−	−	−	−
OEOI	0.1717	−0.2750	−0.1578	1.0000	−	−	−
CR5	0.5586	−0.2889	−0.0853	0.1045	1.0000	−	−
INF	0.6180	−0.3338	−0.0925	0.1215	0.0820	1.0000	−
GDP	0.6213	−0.4214	−0.2011	0.1569	0.1884	0.5616	1.0000

banks, with this effect being more pronounced in government-owned banks. In column 1, government-owned banks show a coefficient of -0.0261, which is significant at the 0.10 level. Meanwhile, in column 2, privately owned banks exhibit a coefficient of −0.0075, which is not significant. These findings support Hypothesis 2, which suggests a difference in the impact of ESG risk on the stability of government-owned versus privately-owned banks.

Table 4. ESG risk and bank stability; private vs government

Explanatory variables	Zscore (Dependent Variable)	
	Government	Private
	(1)	(2)
ESG	−0.0261*	−0.0075
	(−1.90)	(−1.07)
SIZE	0.4524***	0.0708**
	(5.44)	(2.45)
LDR	−0.0298	−0.1891***
	(−0.14)	(−3.04)
OEOI	−0.0494***	−0.0301***
	(−11.59)	(−22.36)
CR_5	−0.0163	−0.0551***
	(−1.27)	(−7.38)
INF	−0.0063	−0.0187***
	(−0.56)	(−2.86)
GDP	−0.0073	−0.0148***
	(−1.03)	(−3.84)
Constant	1.2539	6.5024***
	(0.62)	(9.18)
R square	0.5111	0.4124
F. Stat.	82.74	149.17
Prob. F	0.0000	0.0000
Obs.	592	1599

Note: Private: bank owned by private; Government: bank owned by the government. Significance: *** (1%), **(5%), and *(10%), respectively.

In Table 5, this study examines the impact of ESG risk on the stability of large and small banks. The results indicate that ESG risk has a substantial and adverse effect on the stability of banks, particularly for small banks. In column 1, the coefficient for the ESG variable in large banks is 0.0100, which is not significant. In contrast, for small banks, the ESG coefficient is −0.0202, which is significant at the 0.01 level. These results indicate that the negative impact

of ESG risk is more pronounced in small banks. This also supports Hypothesis 3, which suggests a difference in the impact of ESG risk on the stability of large versus small banks.

Table 5. ESG risk and bank stability; small vs large

Explanatory variables	Zscore (Dependent Variable)	
	Large	Small
	(1)	(2)
ESG	0.0100	−0.0202***
	(0.48)	(−3.13)
SIZE	0.6135***	0.0924***
	(4.78)	(3.17)
LDR	−0.5426***	−0.0685
	(−3.10)	(−1.05)
OEOI	−0.0374***	−0.0311***
	(−8.99)	(−22.80)
CR_5	−0.0799***	−0.0388***
	(−4.78)	(−5.46)
INF	−0.0366**	−0.0123**
	(−1.99)	(−2.08)
GDP	−0.0134	−0.0141***
	(−1.36)	(−3.90)
Constant	−1.5652	6.0735***
	(−0.50)	(8.58)
R square	0.4564	0.4122
F. Stat.	40.19	167.93
Prob. F	0.0000	0.0000
Obs.	379	1812

Note: Large = Banks are classified into Bank Groups (BUKU III and BUKU IV) Based on Core Capital. Small = Banks are classified into Bank Groups (BUKU I and BUKU II) Based on Core Capital. Significance: *** (1%), ** (5%), and * (10%), respectively.

Finally, in Table 6, this study investigates the influence of ESG risk on the viability of both listed and non-listed institutions. The results indicate that ESG risk has a detrimental impact on the stability of banks. The ESG coefficient for listed banks is −0.0094 and is not statistically significant in column 1. In contrast, the ESG risk coefficient for non-listed banks is −0.0231, which is statistically significant at the 0.01 level. This information is presented in column 2. These findings suggest that the influence of ESG risk on bank viability is more pronounced in non-listed banks. Hypothesis 4, which asserts that the impact of ESG risk on bank stability differs between listed and non-listed banks, is corroborated by this discovery.

Table 6. ESG risk and bank stability; non-listed vs listed

Explanatory variables	Zscore (Dependent Variable)	
	Listed	Non–Listed
	(1)	(2)
ESG	−0.0094	−0.0231***
	(−0.80)	(−3.20)
SIZE	0.1891***	0.0853**
	(3.13)	(2.48)
LDR	−0.1462	−0.1394**
	(−1.00)	(−2.06)
OEOI	−0.0250***	−0.0334***
	(−10.04)	(−21.57)
CR_s	−0.0670***	−0.0336***
	(−6.02)	(−4.22)
INF	−0.0356***	−0.0102
	(−3.14)	(−1.55)
GDP	−0.0089	−0.0181***
	(−1.39)	(−4.49)
Constant	4.7599***	6.4626***
	(3.16)	(8.09)
R square	0.3784	0.4147
F. Stat.	54.70	140.62
Prob. F	0.0000	0.0000
Obs.	685	1506

Note: Significance: *** (1%), ** (5%), and * (10%), respectively.

4. DISCUSSION

The baseline regression results in this study underscore the relationship between ESG risk and bank stability. The analysis indicates that ESG risk has a statistically significant and adverse effect on bank stability. Specifically, an increase in ESG risk is linked to a decrease in the stability of banks. These findings align with the theoretical understanding that increased exposure to ESG risks can compromise financial stability, potentially due to the costs involved in managing such risks or adverse market perceptions affecting bank performance. This outcome is in line with Cantero-Saiz et al. (2024), El Khoury et al. (2021), Saliba et al. (2023), Martiny et al. (2024), Chiaramonte et al. (2021), Galletta and Mazzù (2023), and Liu et al. (2023).

Further analysis explores the impact of ESG risks on bank stability based on bank ownership, distinguishing between government-owned and privately-owned banks. The findings suggest that ESG risks have a substantial and adverse impact on the stability of banks, with the impact being more pronounced for government-owned banks. This implies that government-owned banks may face more substantial challenges in managing ESG risks compared to their privately-owned counterparts, potentially due to reduced operational flexibility or reliance on government support that might otherwise mitigate the adverse effects of ESG risks. This is similar to the results of previous investigations (e.g. Athari & Bahreini, 2023; Al-Gasaymeh & Samarah, 2023; Al-Amosh et al., 2023; and Shakil et al., 2019).

The study also examined the differential effect of ESG risks on the stability of large and small banks. The results indicate that ESG risk has a substantial and adverse impact on the stability of banks, with a particular emphasis on smaller banks. This outcome implies that smaller banks may be less equipped to manage ESG risks effectively compared to larger banks, resulting in greater vulnerability to instability. This is in line with the results of prior research conducted by Yu et al. (2024), Liu et al. (2023), and Bătae et al. (2021).

Finally, the study examines the impact of ESG risk on the stability of listed versus non-listed banks. The findings indicate that ESG risk has a detrimental impact on the stability of banks, with a more pronounced impact observed in non-listed banks. This indicates that non-listed banks may experience more severe consequences from ESG risks, possibly due to lower levels of transparency and oversight that could otherwise mitigate these risks, thereby heightening their susceptibility to stability issues. This result is consistent with Neitzert and Petras (2022), Whelan et al. (2021), Al-Amosh et al. (2023), and Wu and Chen (2024).

CONCLUSION

The purpose of this study was to assess the impact of Environmental, Social, and Governance (ESG) risks on bank stability in Indonesia. The findings reveal a significant negative relationship between ESG risks and bank stability, indicating that higher ESG risks contribute to lower stability. Specifically, government-owned banks, smaller banks, and non-listed banks are more vulnerable to ESG risks than their private, larger, and listed counterparts.

These results highlight the varying degrees of exposure to ESG risks across different types of banks, with implications for risk management strategies. The novelty of this study lies in its identification of how ESG risks disproportionately affect certain categories of banks, which has not been widely addressed in existing research.

From a practical perspective, the findings suggest that policymakers should implement more stringent regulations, particularly for government-owned, smaller, and non-listed banks. This would help strengthen the resilience of the banking sector and mitigate the negative impact of ESG risks. Additionally, future research could explore the effectiveness of specific regulatory measures and risk management practices in reducing ESG risk exposure and investigate the long-term effects of ESG risks on bank performance across different regions.

AUTHOR CONTRIBUTIONS

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