

# ESG and Credit Risk: Evidence from Indonesian and Malaysian Banks

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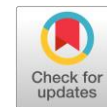
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## ABSTRACT

This study investigates the impact of Environmental, Social, and Governance (ESG) scores on credit risk, specifically Non-Performing Loans (NPL), in Indonesian and Malaysian banks, including both Islamic and conventional institutions. The study employs an unbalanced panel dataset from 12 Indonesian and 10 Malaysian banks over the period 2010-2023. Using fixed-effects regression models, the analysis explores whether higher ESG scores are associated with lower NPL levels. The results reveal that while overall ESG scores and their components—environmental, social, and governance—do not show significant impacts on NPL, bank size and economic growth are positively associated with credit risk. This research contributes to the understanding of ESG's role in financial stability within the banking sector, offering insights for policymakers, regulators, and stakeholders. By addressing a gap in the literature on ESG performance in banks, particularly in developing countries, the study underscores the importance of sustainable banking practices for enhancing financial stability and managing credit risk.



## KEYWORDS

ESG

Credit risk

NPL

Banks



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## Introduction

In recent years, sustainability has gained significant traction, driven by growing awareness among stakeholders of corporate activities' negative social and environmental consequences. This awareness has prompted organizations across industries to adopt a more forward-thinking approach, incorporating sustainable business practices into their operations (Salim et al., 2023). The banking industry, crucial for a nation's economic growth (Beck et al., 2000), plays a pivotal role in sustainable development (Nizam et al., 2019). Sustainable banking is underpinned by a commitment to ESG (Environmental, Social, and Governance) principles (Izcan & Bektas, 2022). However, banks face inherent risks due to their high leverage, limited creditor oversight, and ability to increase asset risk without adequate transparency rapidly. ESG-related activities can introduce additional risk, especially when bank management prioritizes short-term financial gains over long-term sustainability concerns (Di Tommaso & Thornton, 2020). Embracing ESG-based bank governance aligns with Freeman's (1984) "stakeholder" perspective on ESG activities, suggesting that these activities should enhance stakeholder satisfaction, financial performance, and overall firm value.

Research on ESG activities and firm risk relates to the non-financial sector and has produced inconsistent findings, demonstrating positive and negative correlations. Studies by Lee and Faff (2009), Oikonomou et al. (2012), Jo and Na (2012), Kim et al. (2014), Harjoto and Laksmana (2018), Gangi et al. (2020) and Hassan et al. (2021, 2023) suggest that ESG engagement may lower systematic, idiosyncratic,

future stock price crash risks, improve corporate reputation, and reduce funding costs. However, Menz (2010), Goss and Roberts (2011), and Magnanelli and Izzo (2017) found evidence that ESG engagement may increase risk by raising risk premiums, bank loan spreads, and the cost of external finance. In the financial sector, ESG engagement has been linked to lower risk-taking, insolvency risk, and default risk in banks (Gangi et al., 2020). Liu et al. (2023) and Salim et al. (2023) found that higher ESG performance leads to lower non-performing loan (NPL) ratios, indicating improved loan quality.

Extensive academic research has investigated the relationship between corporate social responsibility (CSR), often measured using ESG scores, and various risk metrics, primarily in non-financial companies. A substantial body of literature has found a negative relationship between CSR and firm risk, with studies by Becchetti et al. (2015), Cheung (2016), Gangi et al. (2020), Harjoto and Laksmana (2018), Hassan et al. (2021, 2023), Jo and Na (2012), Kim et al. (2014), Lee and Faff (2009), and Oikonomou et al. (2012) providing supporting evidence. However, a few studies, such as Menz (2010), Goss and Roberts (2011), and Magnanelli and Izzo (2017), have reported a positive relationship between CSR and firm risk, suggesting that the impact of CSR on firm risk is complex and may vary depending on specific contexts and risk measures.

This study extends recent research (Liu et al., 2023; Salim et al., 2023) by examining the relationship between ESG (Environmental, Social, and Governance) scores and banks' credit risk, with a focus on Indonesian and Malaysian banks. It includes Islamic and conventional banks and utilizes Non-Performing Loans (NPL) to measure credit risk (Delis & Kouretas, 2011; Liu et al., 2023). This research stands out by concentrating on financial institutions instead of non-financial firms, addressing a critical gap in the current literature.

The growing emphasis on sustainability and corporate responsibility underscores the importance of this study. ESG scores have become pivotal for evaluating financial institutions' performance and risk profiles. However, the impact of ESG scores on banks' credit risk, especially in developing economies such as Indonesia and Malaysia, remains underexplored. The main objective of this study is to investigate the relationship between ESG scores and banks' credit risk. This research aims to assess whether a higher ESG score lowers NPL in Indonesian and Malaysian banks. Indonesia and Malaysia are key players in Southeast Asia, with their rapidly evolving banking sectors playing a significant role in regional economic dynamics. Investigating the impact of ESG scores on bank risk in these countries provides valuable insights for policymakers, regulators, and stakeholders. Understanding how ESG performance influences bank risk in these contexts can help formulate policies promoting sustainability and financial stability.

This research contributes to the literature by expanding upon previous studies (Brogi et al., 2022; Citterio & King, 2023; Di Tommaso & Thornton, 2020; Galletta et al., 2023; Hassan et al., 2021, 2023; Izcan & Bektas, 2022; Liu et al., 2023; Palmieri et al., 2023; Salim et al., 2023; Shakil, 2021) and addressing concerns about ESG data consistency raised by Brogi et al. (2022) and Salim et al. (2023). By utilizing Refinitiv ESG data, which includes ESG Score, Environmental Score, Social Score, and Governance Score, the study aims to align with and expand the CSR research stream, particularly stakeholder theory, offering a nuanced perspective on the role of ESG practices in enhancing financial stability within the banking sector.

## Literature Review

Environmental, Social, and Governance (ESG) criteria represent a set of standards for a company's operations that socially conscious investors use to screen potential investments. The Environmental component assesses how well a company manages risks and opportunities related to environmental challenges, including carbon emissions, resource depletion, and waste management (Akbar et al., 2017). The Social aspect focuses on a company's relationships with employees, suppliers, customers, and the communities where it operates, covering issues such as labor practices, diversity, and community engagement (Alsaadi et al., 2017). The Governance dimension evaluates the quality of a company's

leadership, management practices, and adherence to legal and ethical standards, including executive compensation, board diversity, and audit practices (Anginer et al., 2018).

Stakeholder theory posits that firms engage in Corporate Social Responsibility (CSR) activities to address stakeholder pressures and expectations (Freeman, 1984). This engagement influences firms' risk-taking behavior due to stakeholder pressure (McWilliams & Siegel, 2011). Socially responsible practices act as "moral capital," lowering firms' financial risks and signaling stability (Bouslah et al., 2013; Chiaramonte et al., 2022). Managers recognize the impact of CSR on financial performance, revenues, and risk, prompting them to modify their business strategies accordingly (Hassan et al., 2021).

Empirical research on ESG activities and firm risk has primarily focused on non-financial institutions and yielded inconsistent findings. Oikonomou et al. (2012) observed a weak negative association between ESG and systematic risk in S&P 500 firms. Lee and Faff (2009) reported significantly lower idiosyncratic risk among ESG leaders. Kim et al. (2014) linked ESG to reduced future stock price crash risk, while Jo and Na (2012) observed an inverse relationship between ESG and firm risk in controversial industries, including banking. Gangi et al. (2020) found a positive impact of corporate reputation, which can be enhanced by ESG engagement, on firms' risk-adjusted profitability and the Z-score indicator of firm risk.

The banking sector has also been the subject of studies investigating the impact of ESG on risk. Liu et al. (2023) and Salim et al. (2023) found that higher ESG performance leads to lower NPL ratios, indicating improved loan quality. Brogi et al. (2022), Citterio and King (2023), and Di Tommaso and Thornton (2020) consistently demonstrated a strong inverse relationship between ESG scores and Z-Score, suggesting that elevated ESG awareness fosters greater financial stability. Other studies suggest that ESG engagement lowers funding costs, potentially signaling reduced risk-taking (Ferrell et al., 2016; Goss & Roberts, 2011). The relationship between ESG engagement and financial stability is a critical area of research. Baselga-Pascual et al. (2015) highlighted that ESG activities could enhance a firm's reputation and trustworthiness, leading to better financial outcomes. Similarly, Chiaramonte et al. (2022) argued that ESG strategies enhance bank stability during financial turmoil.

Environmental risk management is another critical component of ESG. Companies that manage environmental risks effectively tend to have lower financial risks and better overall performance (Palmieri et al., 2023). Bhaskaran et al. (2023) found that sustainability initiatives in the banking sector positively impact performance and reduce risk. Menz (2010) argued that the corporate bond market rewards companies with strong environmental performance, indicating reduced perceived risk. Social performance, as part of ESG, also plays a significant role in determining firm risk. Bouslah et al. (2013) found that good social performance reduces firm risk by improving stakeholder relationships and trust. Becchetti et al. (2015) highlighted that social responsibility practices lead to lower idiosyncratic volatility, indicating reduced risk for firms. Harjoto and Laksmana (2018) showed that CSR activities positively influence firm value by lowering risk. Corporate governance is a key aspect of ESG that influences risk-taking behavior. Anginer et al. (2018) showed that strong corporate governance reduces risk-taking in banks, leading to greater financial stability. Chung et al. (2010) found that better governance practices improve liquidity and reduce the likelihood of financial distress. Laeven and Levine (2009) also demonstrated that robust governance mechanisms are crucial for mitigating risk in the banking sector.

According to stakeholder theory, CSR engagement influences firms' risk-taking behavior due to stakeholder pressure (McWilliams & Siegel, 2011). Socially responsible practices act as "moral capital," lowering firms' financial risks and signaling stability (Bouslah et al., 2018; Chiaramonte et al., 2022). Managers recognize the impact of CSR on financial performance, revenues, and risk (Hassan et al., 2021), prompting them to modify their business strategies accordingly. Based on stakeholder theory and previous studies, the hypothesis is formulated.

H1. ESG score negatively affects credit risk.

## Research Method

To empirically support the hypotheses, this study concentrates on banks that possess non-missing values for the crucial variables, specifically ESG scores, with a minimum of two observations over the 2010-2023 analysis period from the Refinitiv Eikon database. The samples that fit the criteria were 12 Indonesian banks and 10 Malaysian banks, which gave a total of 188 observations.

This study utilises an unbalanced panel dataset comprising Indonesian and Malaysian banks, with bank-specific and ESG data from the Refinitiv Eikon database. The Refinitiv Eikon database is one of the most comprehensive ESG databases and has been widely used in recent literature (Citterio & King, 2023; Liu et al., 2023). This database employs a combination of algorithmic and human processes, incorporating over 400 ESG metrics to determine company scores. Notably, it also includes negative media stories, such as ESG controversies, which are subtracted from the overall ESG scores. This approach reduces the bias associated with relying solely on data provided by the companies, as was done in some prior studies that used content analysis to determine ESG scores. The Refinitiv Eikon database employs distinct performance indicators and offers scores for environmental, social, and governance pillars (Izcan & Bektas, 2022). A comprehensive list of variable descriptions and their respective sources can be found in Table 1.

**Table 1. Variables, Descriptions, and Sources**

Variable (Abbreviation)	Definition	Source
<i>Dependent Variables</i>		
LnNPL	Natural logarithm of non-performing loans	Thomson Reuters' Refinitiv data
<i>Independent Variables</i>		
ESG Score (ESG)	Equal-weighted rating, based on the information in Refinitiv Eikon's economic, environmental, social, and corporate governance pillars at a given year	
Environment Score (EVN)	Environmental score is an overall company score based on the weighted average of self-reported information in the Resource Use score, Emissions score, and Environmental Innovation score.	
Social Score (SOC)	Social score is an overall company score based on the weighted average of self-reported information in the Workforce score, Human rights score, Community score, and Product Responsibility score.	Thomson Reuters' Refinitiv data
Governance Score (GOV)	Governance score is an overall company score based on the weighted average of self-reported information in the Management score, Shareholders score, and Corporate Social Responsibility (CSR) Strategy score.	
<i>Bank-Specific Variables</i>		
ASSET	Natural logarithm of the volume of total assets	
ROA	Return on Assets (%)	
CAR	Capital Asset Ratio (%)	Thomson Reuters' Refinitiv data
NIM	Net interest income divided by total earning assets (%)	
LTA	Total loans divided by total assets (%)	
<i>Country-Specific Variables</i>		
GDPG	GDP growth (annual, %)	
INFL	Inflation, consumer prices (annual, %)	World Bank

Liu et al. (2023) and Salim et al. (2023) utilised the non-performing loan (NPL) ratio to measure risk or bank stability. This study adopts NPL as a measure of credit risk. A high Non-Performing Loan (NPL)

ratio indicates that a significant portion of a bank's loan portfolio is in default or at risk of default, meaning that borrowers are failing to meet their repayment obligations. This suggests that the bank is exposed to higher credit risk, as the likelihood of financial loss due to unpaid loans is greater. A high NPL ratio can also signal potential issues with the bank's lending practices or the broader economic environment. Conversely, a low NPL ratio suggests that most of the bank's borrowers are meeting their repayment obligations, indicating effective credit risk management and a healthier loan portfolio. In this case, the bank faces lower credit risk, as the chances of significant financial losses from unpaid loans are minimized. A low NPL ratio is typically a sign of stability and sound financial health for the bank.

The benchmark estimation model is described in Equation (1).

$$RISK_{it} = c + \beta_1 ESG_{it} + \beta_2 X_{it} + \varepsilon_{it} \tag{1}$$

where  $c$  is the intercept;  $RISK$  is the dependent variable calculated for each bank ( $i$ ) and year ( $t$ );  $ESG$  is the independent variable calculated for each bank ( $i$ ) and year ( $t$ ),  $\beta$  is the coefficient,  $X_{it}$  is control variables, and  $\varepsilon_{it}$  is the error term.

## Results and Discussion

### Descriptive Statistics

The descriptive statistics in Table 2 provide an overview of the variables used in the study. The dependent variable, the natural logarithm of Non-Performing Loans (LnNPL), has an average value of 18.25 with a standard deviation of 4.11, ranging from 13.00 to 24.33. The independent variables include ESG scores, with a mean of 57.18 and a standard deviation of 17.15, and its components: Environmental (ENV), Social (SOC), and Governance (GOV), with average values of 44.32, 57.85, and 65.32, respectively. Bank-specific control variables such as LnAssets, ROA, CAR, NIM, and LTA show varied means and ranges, highlighting the diversity in bank size, profitability, capital adequacy, interest margins, and loan-to-asset ratios among the sampled banks. Country-specific variables like GDP growth and inflation (INF) have mean values of 4.58 and 2.90, respectively, indicating the macroeconomic conditions during the study period. The wide range of values across all variables suggests significant variability in both the financial performance and the economic environment of the banks studied.

**Table 2. Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Dependent Variables</i>					
LnNPL	188	18.251	4.110	13.00	24.33
<i>Independent Variables</i>					
ESG	188	57.183	17.152	17.29	87.47
ENV	188	44.319	23.526	5.39	87.06
SOC	188	57.849	22.272	8.23	93.9
GOV	188	65.317	17.281	17.49	95.66
<i>Bank-Specific Control Variables</i>					
LnAssets	188	22.631	3.896	17.27	28.31
ROA	188	1.6859	0.991	-3.24	3.85
CAR	188	16.916	5.999	8.37	71.93
NIM	188	4.0844	2.787	0.9	14.83
LTA	188	69.299	8.503	33.56	86.97
<i>Country-Specific Variables</i>					
GDP	188	4.580	2.750	-5.46	8.65
INF	188	2.897	1.715	-1.14	6.41

Source: Secondary Data Processed (2024)

For the dependent variable, LnNPL, the spread of values indicates substantial variability in non-performing loans across the banks studied. This variability suggests differing levels of credit risk, with some banks experiencing significantly higher default rates than others.

Looking at the independent variables, the ESG scores reveal a broad range of performance among banks. Environmental factors show more variability compared to Social and Governance components, which indicates that while some banks excel in governance, their environmental practices may lag behind. The wide range in ESG scores highlights the diversity in how banks address these crucial sustainability factors.

The bank-specific control variables reflect differences in bank size, profitability, capital adequacy, and interest income generation. For instance, the range of asset sizes and capital adequacy ratios suggests that banks in the sample operate with varying levels of financial strength and resilience. The spread in profitability and net interest margins further underscores the diversity in bank performance and business models.

The country-specific variables, such as GDP growth and inflation rates, indicate that the banks operate in diverse economic environments, ranging from periods of economic contraction to expansion. This diversity in macroeconomic conditions adds another layer of complexity to the analysis, as it influences the overall risk and performance of the banks. These descriptive statistics paint a picture of a varied and dynamic banking sector, with significant differences in how banks manage credit risk, perform in ESG metrics, and operate within different economic contexts.

### ***Choosing the Best Model and Diagnostic Checking***

The approach involved a two-stage testing process. Initially, the Breusch and Pagan Lagrangian multiplier test was used to compare the results of pooled least squares (PLS) and random effects (RE) models. If the initial test favored the RE model, the Hausman test was then conducted to evaluate and compare the random effects model with the fixed effects (FE) model.

Table 3 summarizes the results of panel data tests used to determine the best model for the analysis. The Breusch and Pagan Lagrangian Multiplier Test, with a value of 328.52 and significance at  $p < 0.01$ , indicates that the random effects model is preferred over the pooled ordinary least squares (PLS) model due to significant group-level variation. The Hausman Test, with a value of 39.11 and significance at  $p < 0.01$ , reveals systematic differences between the fixed effects and random effects models, suggesting that the fixed effects model is more appropriate. Therefore, based on these tests, the fixed effects model is deemed the best model for the data analysis.

**Table 3. Summary of Panel Data Tests**

Model	PLS and Random Effect	Random Effect and Fixed Effect	The Best
	Breusch and Pagan Lagrangian Test	Hausman Test	Model
NPL	328.52***	39.11***	Fixed Effect

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ;  $p < 0.1$

Source: Secondary Data Processed (2024)

### ***Regression Results and Discussion***

Table 4 presents the results of a regression analysis examining the impact of ESG scores on Non-Performing Loans (NPL). This analysis delves into how different dimensions of ESG—namely environmental (ENV), social (SOC), and governance (GOV) factors—affect the credit risk of banks, as indicated by their NPL ratios. Additionally, the table includes the effects of various control variables, such as bank size, profitability, capital adequacy, net interest margin, loan-to-asset ratio, GDP, and inflation, on NPL. The goal is to understand the broader implications of ESG practices on financial stability and risk management in the banking sector.

In Column (1), the ESG score does not show a statistically significant impact on NPL, suggesting that overall ESG performance is not strongly associated with changes in NPL in this context. The environmental (ENV), social (SOC), and governance (GOV) dimensions also do not exhibit significant effects on NPL across any of the models, indicating that these dimensions may not have a direct impact on credit risk within the scope of this study.

Among the control variables, bank size, measured by the logarithm of assets (LnAssets), is consistently positively associated with NPL across all models, indicating that larger banks tend to have higher credit risk. Economic growth, represented by GDP, has a positive and statistically significant effect on NPL, suggesting that economic conditions might influence credit risk. Conversely, higher inflation is consistently associated with lower NPL, reflecting complex interactions between inflation and the banking sector. Other variables, such as profitability (ROA), capital adequacy ratio (CAR), net interest margin (NIM), and loan-to-asset ratio (LTA), do not show significant effects on NPL in this analysis.

**Table 4. The Impact of ESG on NPL**

Variables	(1) LnNPL	(2) LnNPL	(3) LnNPL	(4) LnNPL
ESG	-0.003 (0.005)			
ENV		-0.001 (0.003)		
SOC			-0.004 (0.004)	
GOV				0.001 (0.004)
LnAssets	0.938*** (0.200)	0.879*** (0.194)	0.971*** (0.196)	0.829*** (0.213)
ROA	-0.092 (0.089)	-0.085 (0.086)	-0.090 (0.083)	-0.082 (0.093)
CAR	-0.007 (0.005)	-0.007 (0.005)	-0.006 (0.005)	-0.007 (0.005)
NIM	0.098 (0.079)	0.098 (0.076)	0.098 (0.081)	0.098 (0.074)
LTA	0.005 (0.008)	0.004 (0.008)	0.005 (0.008)	0.004 (0.008)
GDP	0.028*** (0.008)	0.028*** (0.008)	0.028*** (0.007)	0.029*** (0.008)
INF	-0.098*** (0.025)	-0.095*** (0.029)	-0.100*** (0.024)	-0.098*** (0.025)
Constant	-3.091 (4.925)	-1.903 (4.832)	-3.799 (4.904)	-0.874 (5.205)
Observations	188	188	188	188
R-squared	0.449	0.447	0.453	0.446
Number of bcode	22	22	22	22

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10

Source: Secondary Data Processed (2024)

The findings related to NPL in this study present a departure from the conclusions drawn by Liu et al. (2023) and Salim et al. (2023). Both studies identified a significant relationship between better

Environmental, Social, and Governance (ESG) performance and reduced NPL ratios, suggesting that improved ESG practices can lead to better loan quality and lower credit risk. In contrast, the results from this study indicate that the overall ESG score does not have a statistically significant impact on NPL. This lack of significance suggests that, contrary to the previous studies, there is no clear evidence that better ESG performance universally correlates with lower credit risk across the sample analyzed. Additionally, the individual ESG dimensions—environmental (ENV), social (SOC), and governance (GOV)—do not show significant effects on NPL. Based on this result, it can be concluded that H1 is not supported.

The results from Table 5, which examines the impact of ESG on Non-Performing Loans (NPL) in Indonesian banks, indicate that ESG scores and their sub-components (environmental, social, and governance) do not have a significant effect on NPL. Specifically, the overall ESG score, as well as the individual ENV, SOC, and GOV scores, do not demonstrate any meaningful influence on NPL. This suggests that within the context of Indonesian banks, ESG performance does not significantly affect credit risk as measured by NPL.

**Table 5. The Impact of ESG on NPL in Indonesian Banks**

Variables	LnNPL	LnNPL	LnNPL	LnNPL
ESG	0.015 (0.014)			
ENV		0.007 (0.005)		
SOC			0.012 (0.009)	
GOV				0.002 (0.007)
LnAssets	0.785** (0.276)	0.999*** (0.166)	0.790*** (0.223)	1.093*** (0.190)
ROA	-0.139 (0.134)	-0.127 (0.147)	-0.163 (0.135)	-0.100 (0.159)
CAR	-0.011 (0.010)	-0.009 (0.011)	-0.015 (0.010)	-0.007 (0.011)
NIM	0.093* (0.048)	0.081 (0.060)	0.106* (0.050)	0.092* (0.044)
LTA	0.014* (0.007)	0.019** (0.007)	0.009 (0.008)	0.013* (0.007)
GDP	0.004 (0.023)	-0.005 (0.022)	0.011 (0.022)	-0.005 (0.021)
INF	-0.080*** (0.020)	-0.096*** (0.021)	-0.076** (0.025)	-0.093*** (0.028)
Constant	-0.052 (6.955)	-5.414 (4.794)	0.245 (5.914)	-7.515 (5.585)
Observations	85	85	85	85
R-squared	0.666	0.666	0.664	0.649
Number of bcode	12	12	12	12

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10

Source: Secondary Data Processed (2024)

Other factors like bank size, represented by LnAssets, show a significant effect, implying that larger banks may have higher NPL. Additionally, economic indicators like GDP and inflation (INF) also play a



role. Inflation consistently shows a significant negative effect on NPL, suggesting that higher inflation is associated with lower levels of non-performing loans. This could imply that during periods of inflation, banks might adjust their lending practices, or the nominal value of loans could make repayments easier, thus reducing NPL. GDP, however, does not consistently affect NPL in Indonesian banks, indicating that economic growth does not have a clear impact on credit risk in this context.

Similarly, in Table 6, which analyzes Malaysian banks, the overall ESG score also does not significantly impact NPL, indicating no effect. However, the environmental (ENV) component shows a weakly significant negative effect, suggesting a potential, albeit minor, influence of environmental practices on reducing NPL. This finding hints that better environmental practices might help in managing credit risk, but the effect is not strong enough to be conclusive. The social (SOC) and governance (GOV) components, however, do not have any significant effect on NPL in Malaysian banks, indicating that these aspects of ESG are not influential in credit risk management. As with the Indonesian case, LnAssets is sometimes significant, indicating that larger banks might experience varying levels of NPL, but other economic indicators like GDP and inflation do not consistently affect NPL in Malaysian banks.

**Table 6. The Impact of ESG on NPL in Malaysian Banks**

Variables	LnNPL	LnNPL	LnNPL	LnNPL
ESG	-0.002 (0.004)			
ENV		-0.005* (0.002)		
SOC			-0.004 (0.002)	
GOV				0.003 (0.003)
LnAssets	0.219 (0.121)	0.254*** (0.061)	0.303* (0.152)	0.093 (0.104)
ROA	-0.014 (0.050)	-0.006 (0.047)	-0.020 (0.049)	0.018 (0.050)
CAR	-0.017 (0.016)	-0.014 (0.014)	-0.018 (0.016)	-0.019 (0.012)
NIM	-0.117 (0.207)	-0.153 (0.168)	-0.117 (0.198)	-0.095 (0.187)
LTA	0.000 (0.009)	0.001 (0.009)	-0.000 (0.010)	-0.001 (0.009)
GDP	-0.002 (0.008)	-0.006 (0.009)	-0.001 (0.007)	-0.004 (0.008)
INF	0.012 (0.019)	0.028 (0.021)	0.006 (0.017)	0.016 (0.016)
Constant	11.014*** (2.208)	10.377*** (1.263)	9.548** (3.097)	13.158*** (2.145)
Observations	103	103	103	103
R-squared	0.077	0.141	0.109	0.093
Number of bcode	10	10	10	10

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10

Source: Secondary Data Processed (2024)

When comparing these results to the combined sample of Indonesian and Malaysian banks in Table 4, the findings consistently show that ESG scores and their sub-components do not significantly affect NPL, reinforcing the conclusion that, across both countries, ESG performance does not have a clear or direct impact on credit risk as measured by NPL.

In the analysis of both Indonesian and Malaysian banks, as well as the combined sample, bank size—represented by the logarithm of total assets ( $\text{LnAssets}$ )—consistently shows a significant and positive effect on Non-Performing Loans (NPL). This indicates that larger banks tend to have higher levels of NPL compared to smaller banks. The positive relationship between bank size and NPL could be due to several factors. Larger banks may engage in more extensive lending activities, including to riskier borrowers, which could increase the likelihood of loans becoming non-performing. Additionally, larger banks might have more complex portfolios, making it challenging to manage credit risk effectively, thus leading to higher NPL levels. This pattern holds across the individual country analyses and the combined sample, highlighting that bank size is a critical factor in understanding credit risk, with larger banks generally facing greater challenges in managing non-performing loans.

In the combined sample, however, GDP shows a significant positive effect on NPL, suggesting that as the economy grows, NPL may increase slightly. This could be due to increased lending during periods of economic growth, which might carry higher credit risk, leading to more non-performing loans. Inflation continues to show a significant negative effect, indicating that higher inflation tends to reduce NPL. This consistent finding across the samples suggests that inflation might lead to adjustments in lending practices or make debt repayments easier, ultimately lowering the level of non-performing loans. Overall, the results indicate that while ESG practices do not have a significant impact on NPL, economic conditions, particularly inflation and, to some extent, GDP, play a more critical role in influencing credit risk in banks across Indonesia and Malaysia.

In the context of Indonesian and Malaysian banks, the lack of significant findings regarding the relationship between overall ESG scores and Non-Performing Loans (NPL) may reflect several contextual factors specific to these countries. First, the quality and consistency of ESG data in Indonesia and Malaysia might be less robust compared to other regions, potentially diluting the observed effects of ESG performance on credit risk. Variations in how ESG practices are implemented and reported across different banks in these countries could also contribute to the non-significant results. Additionally, the sample characteristics, such as the diversity of banks and economic conditions unique to Indonesia and Malaysia, may influence the effectiveness of ESG practices in managing credit risk. For instance, the economic environment in these countries might not amplify the impact of ESG practices on NPL, or other macroeconomic factors could overshadow the ESG effects. Moreover, the influence of ESG practices on credit risk might take longer to materialize, and the current analysis might not fully capture these delayed effects. Overall, these factors suggest that while ESG performance might be crucial for financial stability, its direct impact on NPL in the context of Indonesian and Malaysian banks might be complex and influenced by specific regional dynamics.

## Conclusion

This study investigates the impact of ESG (Environmental, Social, and Governance) scores on credit risk, focusing on Indonesian and Malaysian banks from 2010 to 2023. The findings reveal that overall ESG scores do not show a statistically significant impact on NPL. This suggests that while ESG performance may be an important factor in evaluating banks, it does not have a direct and significant effect on credit risk in this context. Similarly, the individual dimensions of ESG—environmental, social, and governance—also fail to exhibit significant effects on NPL across the models analyzed. This could imply that the influence of ESG practices on credit risk might be more nuanced or indirect than initially hypothesized.

Among the control variables, larger banks, as indicated by the logarithm of assets, consistently show a higher association with NPL, suggesting that larger banks might face higher credit risks. Economic growth,

measured by GDP, also exhibits a positive and statistically significant effect on NPL, indicating that broader economic conditions can influence credit risk. On the other hand, higher inflation is associated with lower NPL, reflecting complex interactions between inflation and credit risk in the banking sector. Other variables, such as profitability, capital adequacy, net interest margin, and loan-to-asset ratio, do not demonstrate significant effects on NPL.

The study acknowledges several limitations. Firstly, the lack of significant findings related to ESG scores and NPL might be due to the variability in ESG practices among banks or the specific characteristics of the banking sectors in Indonesia and Malaysia. Additionally, the study focuses on a limited time frame and specific countries, which may affect the generalizability of the results.

Future research could explore the impact of ESG scores on other risk indicators or financial performance metrics. Investigating how different aspects of ESG practices influence various risk dimensions across different banking environments could provide more comprehensive insights. Moreover, extending the research to other regions or incorporating a longer time horizon might offer a broader understanding of ESG's role in financial stability.

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