

The Effect of Credit Risk, Profitability, and ESG Performance on Bond Ratings, with Company Size as a Moderating Variable: A Case Study of the Banking Subsector Listed on the Indonesia Stock Exchange for the Period 2019–2024

Revina Inelda Nivirawati*, Andam Dewi Syarif

Universitas Mercu Buana, Indonesia

Email: revinapangemanan@gmail.com*, andeta2024@gmail.com

Keywords:	Abstract
credit risk; profitability; ESG Performance; company size; bond ratings.	Bond ratings are important indicators of corporate creditworthiness because they reflect investors' perceptions of a company's ability to fulfill debt obligations. In the banking sector, conventional financial indicators such as credit risk and profitability are not always sufficient to explain changes in bond ratings, while non-financial factors such as Environmental, Social, and Governance (ESG) performance have gained increasing attention in credit assessment. This study aims to examine the effects of credit risk, profitability, and ESG performance on bond ratings and to analyze the moderating role of company size in the relationship between these variables in banking subsector companies listed on the Indonesia Stock Exchange during 2019–2024. The study employed a quantitative causal research design using secondary panel data from 14 banking companies with 84 observations. Data analysis was conducted using panel data regression with the Fixed Effect Model and Moderated Regression Analysis (MRA). The results indicate that credit risk does not significantly affect bond ratings, while profitability has a significant negative effect and ESG performance has a significant positive effect on bond ratings. Company size does not have a direct significant effect and does not moderate the relationship between credit risk and bond ratings. However, company size strengthens the effect of profitability and weakens the effect of ESG performance on bond ratings. The findings highlight that bond rating assessments should consider both financial and sustainability-related factors, with ESG performance becoming an important determinant of credit quality in the banking sector.

INTRODUCTION

In recent years, global geopolitical dynamics have increased uncertainty in international financial markets. Geopolitical tension, economic fragmentation, and shifting global policy have heightened investors' perception of risk, making debt instruments such as bonds increasingly sensitive to changes in risk, so that bond ratings serve as an important indicator of a company's creditworthiness and probability of default. In Indonesia, the banking subsector plays a strategic role in the national financial system given its scale of assets, operational complexity, and contribution to economic financing; from a financial-intermediation perspective, banks reduce information asymmetry and improve the efficiency of resource allocation (Mishkin, 2019). According to the Financial Services Authority's (OJK) Indonesian Banking Statistics, national bank lending grew from approximately IDR 5.48 quadrillion in 2020 to more than IDR 7.57 quadrillion in early 2025, while industry profitability has remained

relatively healthy and the gross Non-Performing Loan (NPL) ratio declined to approximately 2.22% by mid-2025, indicating that national banking credit risk is increasingly under control.

Fundamental factors such as credit risk and profitability are principal determinants in bond-rating assessment. Credit risk reflects the likelihood of debtor default, which can disrupt a company's financial stability, so that rising credit risk should, in theory, lower credit quality and bond ratings; profitability reflects a company's ability to generate profit and meet its financial obligations, so that higher profitability should indicate a stronger ability to service debt (Fabozzi, 2013; Eugene F. Brigham & Joel F. Houston, 2021). However, empirical observation of Indonesian banking data for 2019–2024 shows that this relationship is not always linear: Gross NPL rose significantly in 2020 amid the COVID-19 pandemic, yet bond ratings did not fall and in fact improved, while NPL trended downward in 2023 without a corresponding increase in bond ratings. This indicates that other factors, beyond conventional financial indicators, also shape how rating agencies and investors assess bank credit quality (Altman, 2018; Jagtiani & Lemieux, 2019; Li et al., 2020; Oliver Yébenes, 2024; Wali, 2018).

In the development of modern financial literature, non-financial factors such as Environmental, Social, and Governance (ESG) performance have become a growing focus in corporate risk assessment. Companies with strong ESG performance tend to exhibit lower risk and lower cost of debt (Fiorillo et al., 2025; Goss & Roberts, 2011). Banks are increasingly required to play an active role in supporting sustainable development by directing financing toward environmentally friendly projects and improving transparency in sustainability-risk disclosure; recent research shows that strong ESG performance can enhance financial stability and reduce credit risk, thereby positively affecting investor confidence and financial performance (Broadstock et al., 2021; Li et al., 2022). Fiorillo et al. (2025) found that companies with high ESG performance obtain bond yields roughly 10 basis points lower than companies with low ESG performance, indicating that investors perceive ESG-strong companies as lower risk; theoretically, good ESG performance can also reduce information asymmetry and increase transparency, strengthening investor confidence in issuer credit quality (Dhaliwal et al., 2011; Goss & Roberts, 2011; Attig et al., 2013).

The effect of ESG performance, profitability, and credit risk on bond ratings is not always direct, but may be shaped by company characteristics, one of which is firm size. In signaling theory and agency theory, firm size reflects the level of resources, business diversification, and a company's ability to access external funding; larger companies generally exhibit greater transparency, better risk-management systems, and stronger reputations with investors and rating agencies. Firm size may therefore act as a moderating variable that strengthens or weakens the relationship between credit risk, profitability, and ESG performance on the one hand and bond ratings on the other. Prior studies also report inconsistent findings: some find that profitability and firm size positively affect bond ratings (Erishka & Yuli, 2023), while others find a negative effect of firm size (Anita Erari, 2024) or no effect of profitability at all (Rindi Kumala Sari et al., 2018); credit-risk findings are similarly mixed, with some studies reporting a negative NPL effect (Stevanie & Harsono, 2022) and others a positive effect (Erin & Indah, 2020). Direct empirical evidence on ESG performance and bond ratings, particularly in Indonesia's banking subsector, also remains limited. These inconsistencies motivate the present study, which analyzes the effect of credit risk, profitability, and ESG

Performance on bond ratings and examines the moderating role of firm size in the context of Indonesia's listed banking subsector for 2019–2024.

Based on the background above, this study identifies the following issues: (1) an empirical mismatch between profitability (ROA) and bond ratings, in which rising ROA is not accompanied by rising bond ratings, contrary to theoretical expectation; (2) a declining trend in banking credit risk (NPL) over the past five years that, in 2023, was not followed by an improvement in bond ratings but instead coincided with a rating decline; (3) the still-unclear and under-researched role of ESG performance in shaping bond ratings, particularly in Indonesia's banking subsector; (4) the underexplored moderating role of firm size in strengthening or weakening these relationships; and (5) an empirical literature gap, with inconsistent findings on how profitability and credit risk relate to bond ratings across prior studies.

This study aims to: (1) analyze the effect of credit risk (X1) on bond ratings (Y); (2) analyze the effect of profitability (X2) on bond ratings (Y); (3) analyze the effect of ESG Performance (X3) on bond ratings (Y); (4) analyze the effect of firm size (Z) on bond ratings (Y); (5) analyze the moderating role of firm size (Z) on the effect of credit risk (X1) on bond ratings; (6) analyze the moderating role of firm size (Z) on the effect of profitability (X2) on bond ratings; and (7) analyze the moderating role of firm size (Z) on the effect of ESG performance (X3) on bond ratings, for banking sector companies listed on the Indonesia Stock Exchange during 2019–2024.

METHOD

Research Design

This study used causal, quantitative research with secondary panel data a combination of time-series and cross-sectional data covering banking sector companies listed on the Indonesia Stock Exchange for 2019–2024. The independent variables are credit risk (X1, proxied by NPL), profitability (X2, proxied by ROA), and ESG performance (X3, proxied by the ESG Disclosure Index); the dependent variable is the bond rating (Y); and firm size (Z, proxied by Ln Total Assets) is the moderating variable hypothesized to strengthen or weaken the relationship between the independent and dependent variables. Table 3 presents the operational definition of each variable.

Table 3. Operational Definition of Variables

No.	Variable	Definition	Indicator	Scale
1	Bond Rating (Y)	Bond ratings provide information about the company's credit quality to investors and are used as a consideration in assessing the risk of investing in bonds	Categorical: 8 for idAAA, 7 for idAA, 6 for idA, 5 for idBBB, 4 for idBB, 3 for idB, 2 for idCCC, and 1 for idD	Ratio
2	Credit Risk (X1)	Risk of loss arising from a debtor's failure to meet payment obligations	$\text{NPL} = \frac{\text{Non-performing loans}}{\text{Total loans}} \times 100\%$	Ratio

No.	Variable	Definition	Indicator	Scale
3	Profitability (X2)	Ability to generate profit through the use of company resources	$ROA = \text{Net profit} \div \text{Total assets} \times 100\%$	Ratio
4	ESG Performance (X3)	Reflects the quality of a company's sustainability practices, built from POJK No. 51/POJK.03/2017 disclosure items	$ESG \text{ Disclosure Index} = \text{Items disclosed} \div \text{Total ESG items} \times 100\%$	Ratio
5	Firm Size (Z)	Reflects operational capacity, stability, and ability to access funding sources	$\text{Firm Size} = \text{Ln (Total Assets)}$	Ratio

Source: authors' compilation, based on Kasmir (2019) and Eugene F. Brigham & Joel F. Houston (2021)

Population and Sample

The population comprises all banking subsector companies listed on the Indonesia Stock Exchange, totaling 48 companies. The sample was determined using purposive sampling with the following criteria: (1) the company's bonds are listed on the Indonesia Stock Exchange during 2019–2024; (2) the company's bonds are rated by PT Pemeringkat Efek Indonesia (PEFINDO) during 2019–2024; (3) the company presents complete financial statements for 2019–2024; and (4) the company presents complete sustainability reports for 2019–2024.

Table 4. Sample Selection Process

No.	Criteria	Number of Companies
1	Banking subsector companies with bonds listed on the IDX, 2019–2024	48
2	Companies whose bonds are not rated by PEFINDO, 2019–2024	26
3	Companies not presenting complete financial statements, 2019–2024	4
4	Companies not presenting complete sustainability reports, 2019–2024	4
	Final sample	14

Source: Indonesia Stock Exchange, processed by the authors (2026)

The resulting sample of 14 banking companies, observed over six years (2019–2024), yields 84 panel observations. Table 5 lists the sampled companies.

Table 5. List of Sampled Banking Subsector Companies

No.	Bank Code	Company Name
1	BBCA	Bank Central Asia Tbk.
2	BBNI	Bank Negara Indonesia (Persero) Tbk.
3	BBRI	Bank Rakyat Indonesia (Persero) Tbk.

No.	Bank Code	Company Name
4	BMRI	Bank Mandiri (Persero) Tbk.
5	BBTN	Bank Tabungan Negara (Persero) Tbk.
6	BDMN	Bank Danamon Indonesia Tbk.
7	BNGA	Bank CIMB Niaga Tbk.
8	BNII	Bank Maybank Indonesia Tbk.
9	BNLI	Bank Permata Tbk.
10	MEGA	Bank Mega Tbk.
11	NISP	Bank OCBC NISP Tbk.
12	PNBN	Bank Pan Indonesia Tbk.
13	MAYA	Bank Mayapada Internasional Tbk.
14	BTPN	Bank SMBC Indonesia Tbk.

Source: Indonesia Stock Exchange, processed by the authors (2026)

Data were collected using a documentation technique, gathering historical data on bond ratings, financial statements, and sustainability reports from the official websites of the Indonesia Stock Exchange, the sampled banks, and PT Pemeringkat Efek Indonesia.

Data Analysis Technique

Descriptive statistics (mean, median, maximum, minimum, and standard deviation) were first used to characterize the distribution of each variable. Panel data regression was then applied because it combines cross-sectional and time-series variation, improving estimation efficiency and controlling for unobserved heterogeneity across banks, thereby minimizing omitted-variable bias (Basuki, 2021). The best of the three panel estimators Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) was selected through the Chow test (CEM vs. FEM), the Hausman test (FEM vs. REM), and the Lagrange Multiplier test (CEM vs. REM), each evaluated at the 5% significance level.

Moderated Regression Analysis (MRA) was used to test whether firm size strengthens or weakens the effect of the independent variables on bond ratings, by forming interaction terms between each independent variable and the moderator. MRA is appropriate here because credit risk, profitability, ESG performance, and firm size are all directly measured (observed) numerical variables rather than latent constructs, and because firm size, proxied by a continuous variable (Ln total assets), is better retained in continuous form than split into categories, which would discard information and reduce statistical power (MacCallum, Zhang, Preacher, & Rucker, 2002). The MRA equation, estimated within the selected Fixed Effect Model, is:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 Z + \beta_5 (X_1 \times Z) + \beta_6 (X_2 \times Z) + \beta_7 (X_3 \times Z) + \varepsilon$$

where Y is the bond rating; α is the constant; β_1 – β_7 are regression coefficients; X_1 – X_3 are the independent variables; Z is the moderating variable (firm size); and ε is the error term. An interaction term's coefficient with a probability below 0.05 indicates that the moderating variable significantly moderates the relationship, with the sign of the coefficient indicating whether the moderation strengthens or weakens the effect. Following Sharma, Durand, and

Gur-Arie's classification, a moderating variable is a pure moderator if it interacts with an independent variable without itself being a significant independent predictor of the dependent variable; a quasi-moderator if it interacts with an independent variable while also being a significant independent predictor; a homologizer moderator if it affects the strength of a relationship without a significant direct or interactive effect; and a predictor moderator if it functions only as an independent variable. Hypothesis testing used the simultaneous F-test, the partial t-test, and the Adjusted R-squared, each evaluated at the 5% significance level.

RESULTS AND DISCUSSION

Descriptive Statistics

The 84 panel observations from 14 banking companies over 2019–2024 are summarized in Table 6. The bond rating variable ranges from a minimum of 0 to a maximum of 8, with a mean of 5.71 and a standard deviation of 2.76, indicating that most sampled banks carry relatively strong ratings with limited dispersion. NPL ranges from 0.80% to 4.78%, with a mean of 2.60% well within the regulatory 5% health threshold. ROA ranges from 0.02% to 3.78%, with a mean of 1.50%. The ESG Disclosure Index ranges from 70.00% to 100.00%, with a mean of 95.27%, indicating a generally high level of ESG disclosure among sampled banks following the introduction of POJK No. 51/POJK.03/2017. Firm size (Ln Total Assets) ranges from 18.34 to 21.61, with a mean of 19.71, reflecting variation in scale across the sampled banks.

Table 6. Descriptive Statistics of Research Variables

Statistic	Bond Rating	Credit Risk (NPL, %)	Profitability (ROA, %)	ESG Performance (%)	Firm Size
Mean	5.714286	2.598214	1.496190	95.26786	19.71262
Median	6.000000	2.740000	1.370000	97.50000	19.32500
Maximum	8.000000	4.780000	3.780000	100.0000	21.61000
Minimum	0.000000	0.800000	0.020000	70.00000	18.34000
Std. Dev.	2.757559	0.912232	0.888676	6.744228	0.940429
Observations	84	84	84	84	84

Source: EViews-13 data processing, 2026

Panel Data Model Selection

The Chow test compares the Common Effect Model (CEM) against the Fixed Effect Model (FEM); a cross-section F probability below 0.05 leads to rejection of CEM in favor of FEM.

Table 7. Chow Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	6.086178	(13,63)	0.0000
Cross-section Chi-square	68.337295	13	0.0000

Source: EViews-13 data processing, 2026

Both probabilities are below 0.05, so the Fixed Effect Model is preferred over the Common Effect Model, indicating a significant individual (bank-specific) intercept effect. The Hausman test was then used to compare FEM against the Random Effect Model (REM).

Table 8. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	23.649556	7	0.0013

Source: EViews-13 data processing, 2026

The probability of 0.0013 is below 0.05, so FEM is preferred over REM, indicating that the individual bank effects are correlated with at least some explanatory variables in the model. The Lagrange Multiplier (LM) test was used to compare CEM against REM.

Table 9. Lagrange Multiplier Test Results

Test	Cross-Section	Time	Both
Breusch-Pagan	9.623292 (0.0019)	0.097818 (0.7545)	9.721110 (0.0018)

Source: EViews-13 data processing, 2026

The cross-section Breusch-Pagan probability of 0.0019 is below 0.05, so REM is preferred over CEM, again confirming that a Common Effect Model that ignores individual bank effects is inadequate for this data set. Because both the Chow and LM tests reject the Common Effect Model, and the Hausman test favors FEM over REM, the Fixed Effect Model was selected as the final estimator used for hypothesis testing.

Moderated Regression Analysis

Moderated Regression Analysis (MRA) was estimated within the selected Fixed Effect Model to test whether firm size moderates the effect of credit risk, profitability, and ESG performance on bond ratings. Table 10 presents the estimation results.

Table 10. Moderated Regression Analysis (MRA) Results Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C (Constant)	-388.5932	166.8734	-2.328670	0.0231
X1 (Credit Risk)	3.942975	2.816126	1.400142	0.1664
X2 (Profitability)	-29.65581	8.622382	-3.439398	0.0010
X3 (ESG Performance)	95.59716	36.16271	2.643529	0.0103
Z (Firm Size)	3.667034	2.364364	1.550960	0.1259
X1_Z (Credit Risk × Firm Size)	-0.083120	0.061682	-1.347557	0.1826
X2_Z (Profitability × Firm Size)	1.440501	0.425823	3.382859	0.0012
X3_Z (ESG Performance × Firm Size)	-0.059167	0.021589	-2.740666	0.0080

Source: EViews-13 data processing, 2026

Table 11 summarizes the model's overall fit.

Table 11. Model Fit: F-Test and Coefficient of Determination

Statistic	Value
R-squared	0.727170
Adjusted R-squared	0.640557
F-statistic	8.395645
Prob(F-statistic)	0.000000

Source: Eviews-13 data processing, 2026

The Prob(F-statistic) of 0.000000 is well below 0.05, so credit risk, profitability, ESG performance, firm size, and the three interaction terms jointly and significantly affect bond ratings, confirming that the regression model is a good fit. The Adjusted R-squared of 0.640557 indicates that 64.06% of the variation in bond ratings is explained by the model, including the individual bank effects captured by the Fixed Effect Model, while the remaining 35.94% may be explained by factors outside the model, such as capital adequacy, liquidity, leverage, bond collateral, and bond maturity structure, as suggested by prior studies (Darmawan, al Fayed, Bagis, & Pratama, 2020).

Hypothesis Testing

Table 12 summarizes the partial t-test results for each direct and interaction effect, forming the basis for accepting or rejecting each hypothesis.

Table 12. Hypothesis Testing Summary

Hypothesis	Relationship	Coefficient	Prob.	Conclusion
H1	Credit risk → Bond rating	3.942975	0.1664	Not supported: no significant effect
H2	Profitability → Bond rating	-29.65581	0.0010	Rejected as hypothesized: significant, but negative (opposite of the predicted positive direction)
H3	ESG performance → Bond rating	95.59716	0.0103	Supported: significant positive effect
H4	Firm size → Bond rating	3.667034	0.1259	Not supported: no significant direct effect
H5	Firm size moderates credit risk → Bond rating	-0.083120	0.1826	Not supported: no significant moderation
H6	Firm size moderates profitability → Bond rating	1.440501	0.0012	Supported: significant positive moderation (strengthens the relationship)
H7	Firm size moderates ESG performance → Bond rating	-0.059167	0.0080	Supported: significant negative moderation (weakens the relationship)

Source: EViews-13 data processing, 2026

Credit risk (NPL) shows a positive but statistically insignificant coefficient ($p = 0.1664$), so H1 is not supported. Although the observed NPL range (0.80–4.78%) never approaches the 5% regulatory threshold, indicating that sample banks kept credit risk within a controlled range, this alone does not explain the lack of significance: bond ratings are comprehensive assessments that also weigh capital, liquidity, business position, governance, and shareholder or government support, so that a controlled NPL level can be offset by adequate capital, liquidity, and risk management (Murthy & Al-Muharrami, 2020). This result is consistent with Livia et al. (2024), who likewise found no NPL effect on Indonesian bank bond ratings, though it contrasts with Arpadika and Lutfi (2017), who found a significant negative effect, and with Wijayanti and Yuliana (2020), who found a significant positive effect.

Profitability (ROA) has a statistically significant but negative effect on bond ratings ($p = 0.0010$), so H2, which hypothesized a positive effect, is not supported as directed. This finding departs from signaling theory's expectation that higher profitability signals financial strength, but may reflect the specific 2019–2024 observation window, which spans the COVID-19 pandemic and its recovery: when banks raised loan-loss provisioning in response to pandemic-era credit risk, reported profit and ROA could decline in the short run even as this reflected a more conservative, loss-absorbing risk-management stance rather than weaker fundamentals. This result is consistent with Darmawan (2020) and Anom (2021), who also report a negative profitability effect, but differs from Wibowo and Linawati (2020), who found no effect, and from Saputri et al. (2025), who found a significant positive effect.

ESG performance has a significant positive effect on bond ratings ($p = 0.0103$), supporting H3. Better ESG disclosure reflects a bank's capacity to manage non-financial risk environmental, social, legal, reputational, and governance risk which, even though banking operations do not generate direct environmental impact on the scale of mining or manufacturing, remains material through credit-portfolio exposure to ESG-sensitive borrowers and through the bank's own governance and social conduct. This finding is consistent with Nuha and Ratmono (n.d.), who found a positive ESG-credit-rating relationship, and with related evidence that ESG disclosure functions as a positive signal of governance and sustainability commitment (Raimo et al., 2021).

Firm size (Ln Total Assets) has no significant direct effect on bond ratings ($p = 0.1259$), so H4 is not supported. This indicates that scale of assets alone is not a primary determinant of bond ratings for the sampled banks; rating agencies appear to assess banks more holistically asset quality, credit risk, profitability, liquidity, leverage, capital adequacy, cash-flow generation, and business prospects rather than asset size in isolation, so a larger bank does not automatically receive a higher rating if its fundamentals are weaker, while a smaller bank can achieve a strong rating through sound financial performance. This result is consistent with Febriani (2017) and with Hafiz, Yetty, and Miftah (2021), but contrasts with Prayudha et al. (2021), Mahfudhoh and Cahyonowati (2014), and Suharmadi and Suripto (2021), who found a significant positive firm-size effect.

The interaction between credit risk and firm size ($X1_Z$) is not significant ($p = 0.1826$), so H5 is not supported; firm size therefore neither strengthens nor weakens the effect of NPL on bond ratings for the sampled banks, in the classification of Sharma, Durand, and Gur-Arie functioning as a homologizer (potential) moderator, since firm size is neither a significant direct predictor of bond ratings nor a significant moderator of the NPL relationship. This

suggests that larger banks are not necessarily better able to contain the rating impact of credit risk; asset scale reflects the breadth of operations but does not directly reflect lending quality or the effectiveness of problem-loan management.

The interaction between profitability and firm size (X2_Z) is significant and positive ($p = 0.0012$), supporting H6; because firm size itself has no significant direct effect on bond ratings while this interaction is significant, firm size functions here as a pure moderator, meaning that the positive effect of ROA on bond ratings becomes stronger as firm size increases consistent with the view that larger, more closely monitored banks send more credible profitability signals to rating agencies and investors.

The interaction between ESG performance and firm size (X3_Z) is significant and negative ($p = 0.0080$), supporting H7; firm size again functions as a pure moderator, but here it weakens rather than strengthens the ESG–rating relationship, meaning that the positive effect of ESG performance on bond ratings is stronger among smaller banks in the sample and comparatively weaker among larger ones. A plausible explanation is that for larger banks, whose already-high ESG disclosure levels are close to the observed ceiling (Table 6), incremental ESG improvement carries comparatively less new informational value to rating agencies than the same improvement would for a smaller, less-established bank.

CONCLUSION

Based on Fixed Effect Model panel data regression and Moderated Regression Analysis on 84 observations from 14 banking subsector companies listed on the Indonesia Stock Exchange for 2019–2024, credit risk (NPL) has no significant effect on bond ratings (H1 rejected), profitability (ROA) has a significant negative effect on bond ratings, contrary to the hypothesized positive direction (H2 rejected as directed), and ESG Performance has a significant positive effect on bond ratings (H3 accepted). Firm size has no significant direct effect on bond ratings (H4 rejected) and does not moderate the effect of credit risk (H5 rejected), but it significantly strengthens the positive effect of profitability (H6 accepted) and significantly weakens the positive effect of ESG performance on bond ratings (H7 accepted), with the model explaining 64.06% of bond-rating variation (Adjusted R-squared = 0.6406; $F = 8.395645$, $p = 0.000000$). These findings indicate that bond-rating assessment in Indonesia's banking subsector reflects a holistic evaluation in which non-financial ESG performance plays a material role, particularly decisive for smaller banks, while the profitability signal strengthens with bank scale. It is recommended that banking companies manage profitability sustainably prioritizing earnings quality and loss-absorption capacity over short-term ROA maximization while strengthening ESG performance through tangible practices with measurable targets, particularly since this signal matters more for smaller institutions; investors are advised to weigh profitability and ESG performance jointly with firm size when assessing banking bonds; and future research should extend the observation period, broaden the sample to non-banking issuers, incorporate additional determinants such as capital adequacy, liquidity, leverage, and bond collateral, and consider alternative ESG measures to build a more comprehensive explanation of bond-rating determinants.

REFERENCES

- Altman, E. I. (2018). Applications of distress prediction models: What have we learned after 50 years from the z-score model? Altman, Edward I. 2018. "Applications of Distress Prediction Models: What Have We Learned after 50 Years from the z-Score Models?" *International Journal of Financial Studies*, 6(3), 70.
- Altman, E. I. (2018). Applications of distress prediction models: What have we learned after 50 years from the z-score model? *International Journal of Financial Studies*, 6(3), 70.
- Anom, M. F. (2021). Pengaruh likuiditas, profitabilitas, dan leverage terhadap peringkat obligasi. *Jurnal Ekobis Dewantara*, 4.
- Attig, N., El Ghouli, S., Guedhami, O., & Suh, J. (2013). Corporate social responsibility and credit ratings. *Journal of Business Ethics*, 117(4), 679–694.
- Basuki, A. T. (2021). *Analysis data panel dalam penelitian ekonomi dan bisnis* (1st ed.).
- Broadstock, D. C., Chan, K., Cheng, L. T. W., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, 38.
- Darmawan, A., Al Fayed, Y. F., Bagis, F., & Pratama, B. C. (2020). Pengaruh profitabilitas, likuiditas, leverage, umur obligasi, dan ukuran perusahaan. *Derivatif: Jurnal Manajemen*, 99–114.
- Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review*, 86(1), 59–100.
- Erari, A. (2024). The influence of liquidity, leverage and company size on manufacturing company bond ratings listed on the Indonesian Stock Exchange. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, 8.
- Fiorillo, P., Meles, A., Ricciardi, A., & Verdoliva, V. (2025). ESG performance and the cost of debt: Evidence from the corporate bond market. *International Review of Financial Analysis*, 102, 104097.
- Goss, A., & Roberts, G. S. (2011). The impact of corporate social responsibility on the cost of bank loans. *Journal of Banking & Finance*, 35(7), 1794–1810.
- Jagtiani, J., & Lemieux, C. (2019). The roles of alternative data and machine learning in fintech lending: Evidence from the LendingClub consumer platform. *Financial Management*, 48(4), 1009–1029.
- Kasmir. (2019). *Analisis laporan keuangan* (12th ed.). PT RajaGrafindo Persada.
- Li, Z., Tang, Y., Wu, J., Zhang, J., & Lv, Q. (2020). The interest costs of green bonds: Credit ratings, corporate social responsibility, and certification. *Emerging Markets Finance and Trade*, 56(12), 2679–2692.
- Market, J., Author, S., & Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3).
- Mishkin, F. S. (2019). *The economics of money, banking, and financial markets* (12th ed.). Pearson.
- Nuha, A. K., & Ratmono, D. (n.d.). Peran moderasi external assurance dalam hubungan antara ESG disclosure dan credit rating di Indonesia. *Diponegoro Journal of Accounting*, 14(3), 1–13.
- Oliver Yébenes, M. (2024). Climate change, ESG criteria and recent regulation: Challenges and opportunities. *Eurasian Economic Review*, 14(1), 87–120.
- Raimo, N., Caragnano, A., Zito, M., Vitolla, F., & Mariani, M. (2021). Extending the benefits of ESG disclosure: The effect on the cost of debt financing. *Corporate Social Responsibility and Environmental Management*, 1412–1421.
- Saputri, F. E., Cahyo, H., & Koesoemasari, D. S. P. (2025). The effect of profitability, company growth, liquidity, maturity, and collateral on bond ratings in the financial sector rated

- on PEFINDO. *Proceeding of International Conference on Economics, Technology, Management, Accounting, Education, and Social Science (ICETEA)*, 1, 832–849.
- Wali, R. M. (2018). Analysis of financial ratios and credit risk ratings in the banking industry: Insights and findings. *Journal of Business and Economic Options*, 1(2), 52–58.
- Wibowo, A. E., & Linawati. (2020). Pengaruh likuiditas, profitabilitas dan leverage terhadap peringkat obligasi perusahaan di Indonesia. *Jurnal Riset Manajemen*, 7, 143–152.
- Wijayanti, E., & Yuliana, I. (2020). Risk profile, secure bond, and bond rating in banking industry. *The Winners*, 21(1), 49.