



Financial Determinants of Bond Ratings in Emerging Markets: Evidence from Indonesian Industrial Firms

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Abstract. This study investigates the determinants of bond ratings in Indonesian industrial companies during the period 2019–2022, a time marked by the covid-19 pandemic and subsequent economic turbulence. Bond ratings serve as a critical measure of creditworthiness for investors and issuing firms, yet empirical evidence on their financial determinants in the industrial sector remains limited. Guided by signaling theory, this study examines how profitability, leverage, liquidity, and firm size affect bond ratings.

The research employs a quantitative associative design with a saturated sampling method, covering all 28 industrial firms listed on the Indonesia stock exchange (IDX) and rated by Pefindo, resulting in 112 firm-year observations. Secondary data were obtained from audited financial statements and rating reports. Data analysis was conducted using multiple linear regression, supported by classical assumption tests to ensure model validity.

The findings reveal that profitability has a significant positive effect on bond ratings, indicating that higher earnings strengthen investor and rating agency confidence in firms' repayment ability. Leverage shows a significant negative effect, suggesting that excessive debt reduces financial flexibility and increases default risk. Interestingly, liquidity also exhibits a significant negative effect, contrary to conventional expectations, which may reflect the low quality of current assets during inflationary pressures. Firm size, however, is not found to significantly influence bond ratings. Overall, the model explains only 9.2% of the variation in bond ratings, suggesting that external factors such as macroeconomic shocks and governance play a larger role. These results provide practical insights for companies, investors, and rating agencies in strengthening credit assessment practices in emerging markets.

Keywords: Bond Ratings, Profitability, Leverage, Indonesia Stock Exchange

INTRODUCTION

Firms require external funding to sustain operations and finance growth. Among various investment instruments available in Indonesia, bonds have become increasingly attractive due to their relative safety compared to stocks and their fixed periodic returns[1]. Bond ratings, issued by credit rating agencies, are crucial for both investors and issuing companies. For investors, ratings serve as a benchmark to evaluate the level of risk associated with investing in bonds. For firms, higher ratings indicate financial soundness and enhance credibility in the capital market [2].

The Indonesian economy experienced severe shocks during the COVID-19 pandemic, which disrupted corporate performance, particularly in industrial firms outside the financial sector. Declining profitability, rising raw material costs, and high inflation further increased operational expenses, reducing firms' ability to service debt. Consequently, bond ratings fluctuated significantly between 2019 and 2022. PEFINDO reported a slight decline in 2020, a partial recovery in 2021, and another drop in 2022, illustrating the sector's vulnerability to external shocks[3].

Compared to financial firms, industrial companies appeared more fragile. PEFINDO highlighted that financial service companies demonstrated stronger resilience, owing to their experience in navigating crises and their access to liquidity buffers[4]. In contrast, industrial firms faced sharper rating adjustments, reflecting heightened credit risks. A notable case was PT Waskita Beton Precast Tbk, whose rating was downgraded to “idD” in 2022 after entering debt standstill status, signaling default risk.

These circumstances underscore the importance of understanding financial determinants of bond ratings. Previous studies, such as Anandia and Nur (2019), examined profitability, leverage, liquidity, and firm size as predictors of bond ratings for non-financial firms between 2013 and 2017. However, little evidence exists regarding the industrial sector during the crisis and post-crisis years of 2019–2022. This study seeks to fill that gap by focusing exclusively on Indonesian industrial firms listed on the Indonesia Stock Exchange (IDX) and rated by PEFINDO[5].

The findings are expected to provide both theoretical and practical contributions. Theoretically, this study extends the application of signaling theory by analyzing how financial indicators transmit information to investors through bond ratings. Practically, it offers insights for companies to strengthen

strategies that enhance creditworthiness and for investors to make more informed decisions, thereby reducing exposure to default risk.

METHODS

Research Design

This study adopts a **quantitative descriptive-associative design**, which aims to test the relationship between financial ratios and bond ratings of industrial firms listed on the Indonesia Stock Exchange (IDX) during 2019–2022. The associative design is appropriate since it allows the identification of causal relationships between independent and dependent variables[6].

The independent variables used are profitability, leverage, liquidity, and firm size, while the dependent variable is bond rating as assessed by PEFINDO (the Indonesian Securities Rating Agency). This approach is consistent with previous empirical studies that examined financial ratios as predictors of bond ratings[7] [8].

Population and Sample

The study population comprises all industrial companies listed on the IDX that issued bonds and received ratings from PEFINDO during the observation period. A total of 28 firms met the criteria of having complete financial statements for 2019–2022. Due to the relatively small population, the study employed a **saturated sampling technique**, where all eligible firms were included as the research sample. Thus, the dataset consists of 112 firm-year observations. This sampling method ensures comprehensiveness by avoiding sampling bias and is commonly applied when the population is limited in size[9].

Data Sources and Types

This research relies on **secondary data**, which includes audited financial statements retrieved from the IDX database and bond rating reports issued by PEFINDO. Secondary data is widely used in financial research as it ensures reliability, comparability, and accessibility (Kothari, 2004). All variables were operationalized as follows:

1. **Bond Rating (Y)**: ordinal scale from idD (default) to idAAA (highest credit quality).
2. **Profitability (X1)**: measured by Return on Assets (ROA), representing the firm's ability to generate profit relative to total assets.
3. **Leverage (X2)**: measured by Debt-to-Equity Ratio (DER), indicating the extent of debt financing relative to equity.
4. **Liquidity (X3)**: measured by Current Ratio (CR), representing short-term solvency.
5. **Firm Size (X4)**: measured by the natural logarithm of total assets (LnAssets).

Data Collection

Data were collected using **documentation techniques**, namely by gathering financial reports, rating information, and supporting documents from PEFINDO and the IDX official websites. The use of archival financial data provides a robust basis for empirical testing in capital market studies[8], [9].

Data Analysis

The study employs several stages of statistical testing:

1. Descriptive Statistics

Descriptive statistics were conducted to summarize the characteristics of each variable, including minimum, maximum, mean, and standard deviation. This analysis provides an overview of data distribution and variations[8].

2. Classical Assumption Tests

To ensure the validity of the regression model, several diagnostic tests were performed:

- a. **Normality Test**: using Kolmogorov–Smirnov with Monte Carlo (2-tailed). A significance value above 0.05 indicates normally distributed residuals.
- b. **Multicollinearity Test**: measured by tolerance (> 0.10) and Variance Inflation Factor ($VIF < 10$). Low multicollinearity ensures independent predictors.
- c. **Heteroscedasticity Test**: using Spearman's rho correlation test. A significance value above 0.05 indicates homoscedasticity.
- d. **Autocorrelation Test**: using Durbin–Watson (DW). Values between -2 and $+2$ indicate no autocorrelation[7], [10].

3. Multiple Linear Regression

The core analysis uses **multiple regression** to test the effect of the independent variables on bond ratings. The general regression model is as follows: $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$

Where:

- Y = Bond rating
- a = Constant
- b = Regression coefficients
- X1 = Profitability (ROA)
- X2 = Leverage (DER)
- X3 = Liquidity (CR)
- X4 = Firm Size (LnAssets)
- e = Error term

4. Hypothesis Testing

Two types of tests were conducted:

- a. **F-Test (Simultaneous Test):** to determine whether all independent variables jointly influence bond ratings. Significance at $p < 0.05$ indicates a valid model.
- b. **T-Test (Partial Test):** to evaluate the individual impact of each independent variable. Significance at $p < 0.05$ confirms partial influence.
- c. **Coefficient of Determination (R²):** to measure the explanatory power of independent variables in predicting bond ratings. A higher R² indicates stronger explanatory capacity.
- d. This statistical procedure follows standard methodologies in financial and accounting research, ensuring the robustness of the findings[11].

RESULTS AND DISCUSSION

Descriptive Statistics

Table 1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Profitability	112	-0,83	2,26	0,0211	0,43976
Leverage	112	-3,64	8,24	1,8060	1,59759
Liquidity	112	-0,16	12,86	1,5978	1,65534
Firm Size	112	12,11	32,77	24,3646	6,27851
Bond Ratings	112	1,00	8,00	6,4464	1,09741
Valid N (listwise)	112				

Source: Authors' calculation based on secondary data, 2024

Based on the descriptive statistics presented in Table 1, this study analyzed 112 observations with five variables: profitability, leverage, liquidity, firm size, and bond ratings. The results reveal several important insights.

The average profitability is 0.0211, with a minimum of -0.83 and a maximum of 2.26, indicating that some firms still experience negative earnings, while others generate relatively high returns. The standard deviation (0.4397) is much higher than the mean, reflecting considerable variation in profitability across the sample. Leverage shows an average value of 1.8060, ranging from -3.64 to 8.24. This wide gap indicates that while some firms are highly leveraged, others even report negative leverage values due to accumulated losses exceeding their equity base. The high standard deviation (1.5976) further suggests that capital structure decisions vary significantly among industrial firms. Liquidity has an average of 1.5978, with extreme variation from -0.16 to 12.86. The negative minimum value implies that some firms face severe liquidity constraints, whereas others hold substantial liquid assets. The standard deviation of 1.6553, which exceeds the mean, highlights that short-term financial flexibility differs sharply among the firms. Firm size, measured by total assets in logarithmic form, averages 24.3646 with values ranging between 12.11 and 32.77. This reflects the inclusion of both relatively small-scale firms and very large corporations within the industrial sector, resulting in a wide dispersion (standard deviation of 6.2785).

Finally, bond ratings have an average score of 6.4464 on a scale from 1.00 to 8.00, suggesting that most industrial firms achieve a relatively high rating, though some remain at the lower end of the credit quality spectrum. The moderate standard deviation (1.0974) indicates that while there is some variation, the majority of firms are clustered around the mean rating.

Overall, these results imply that the sample firms exhibit substantial heterogeneity in financial performance, capital structure, liquidity management, and firm scale, which may in turn explain differences in bond ratings assigned by PEFINDO.

Classical Assumption Tests

Prior to regression analysis, several diagnostic tests were conducted to ensure the validity of the model.

Table 2 Normality Test

		Unstandardized Residual	
N		112	
Normal Parameters ^{a,b}	Mean	0,0000000	
	Std. Deviation	0,96526233	
Most Extreme Differences	Absolute	0,097	
	Positive	0,091	
	Negative	-0,097	
Test Statistic		0,097	
Asymp. Sig. (2-tailed)		,011 ^c	
Monte Carlo Sig. (2-tailed)	Sig.	,224 ^d	
		99% Lower Bound	0,213
	Confidence Interval	Upper Bound	0,235
		Lower Bound	

Source: Authors' calculation based on secondary data, 2024

Normality Test: Kolmogorov–Smirnov with Monte Carlo significance showed a p-value of 0.224 (> 0.05), confirming that the residuals were normally distributed.

Table 3 Multicollinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
Profitability	0,850	1,177
Leverage	0,871	1,149
Liquidity	0,819	1,221
Firm Size	0,868	1,153

Source: Authors' calculation based on secondary data, 2024

Multicollinearity Test: All tolerance values were above 0.10 and VIF values below 10, indicating no multicollinearity among independent variables.

Table 4 Heteroscedasticity Test

			Profitability	Leverage	Liquidity	Firm Size
Spearman's rho	Profitability	Sig. (2-tailed)		0,000	0,000	0,953
	Leverage	Sig. (2-tailed)	0,000		0,0986	0,020
	Liquidity	Sig. (2-tailed)	0,000	0,986		0,001
	Firm Size	Sig. (2-tailed)	0,963	0,020	0,001	
	Unstandardized Residual	Sig. (2-tailed)	0,588	0,220	0,517	0,974

Source: Authors' calculation based on secondary data, 2024

Heteroskedasticity Test: Spearman's rho correlation results revealed significance values greater than 0.05 for all variables, suggesting homoscedasticity.

Table 5 Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,353 ^a	0.125	0,092	0,60115	1,336

Source: Authors' calculation based on secondary data, 2024

Autocorrelation Test: The Durbin–Watson value was 1.336, within the acceptable range of –2 to +2, indicating no autocorrelation.

These results confirm that the regression model satisfies the classical assumptions and is suitable for further analysis (Gujarati & Porter, 2009).

Multiple Regression Analysis

Table 6 Multiple Linear Regression Analysis Test

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	0,679	0,229		2,961	0,004
Profitability	0,433	0,141	0,850	3,073	0,003
Leverage	-0,104	0,038	0,871	-2,712	0,008
Liquidity	-0,094	0,038	0,819	-2,481	0,015
Firm Size	0,015	0,010	0,868	1,587	0,115

Source: Authors' calculation based on secondary data, 2024

The regression model obtained is as follows: $Y=0.679+0.433X1-0.104X2-0.094X3+0.015X4+e$

Where Y = bond rating, X1 = profitability, X2 = leverage, X3 = liquidity, X4 = firm size.

The coefficients indicate that profitability positively affects bond ratings, while leverage and liquidity negatively affect them. Firm size shows a positive but insignificant coefficient.

Hypothesis Testing

- **Partial Test (T-Test):**

- Profitability ($p = 0.003$) has a significant positive effect, supporting H1.
- Leverage ($p = 0.008$) has a significant negative effect, supporting H2.
- Liquidity ($p = 0.015$) has a significant negative effect, supporting H3, though the direction contradicts theoretical expectations.
- Firm size ($p = 0.115$) has no significant effect, leading to the rejection of H4.

Table 7 F Test

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	5,519	4	1,380	3,818	,006 ^b
Residual	38,668	107	0,361		
Total	44,187	111			

Source: Authors' calculation based on secondary data, 2024

- **Simultaneous Test (F-Test):** The F-statistic was 3.818 with a significance level of 0.006 (< 0.05), confirming that profitability, leverage, liquidity, and firm size jointly influence bond ratings.

Table 8 R² Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,353 ^a	0,125	0,092	0,60115

Source: Authors' calculation based on secondary data, 2024

- **Coefficient of Determination (R²):** The adjusted R² value was 0.092, indicating that the independent variables explained only 9.2% of the variation in bond ratings, with 90.8% explained by other factors not included in the model.

Discussion

The findings of this study reveal how financial indicators shape bond ratings in Indonesian industrial firms during a turbulent period (2019–2022). The discussion below provides a deeper interpretation by linking results to Signaling Theory, previous empirical studies, and the unique macroeconomic context.

Profitability and Bond Ratings

Profitability shows a significant positive effect on bond ratings, confirming H1. This supports **Signaling Theory** [12], which posits that firms send positive signals to investors through strong financial performance. Higher profitability reflects operational efficiency and earnings stability, signaling the firm's ability to service debt obligations. This result is consistent with **Presti & Lestari (2023)** and

Elsani et al (2025), who found that profitable firms are more likely to maintain investment-grade ratings[13], [14].

In the Indonesian industrial context, profitability becomes particularly crucial because firms face fluctuating input costs and supply chain disruptions. Even modest profitability can reassure investors that the firm has financial resilience. This suggests that rating agencies such as **PEFINDO** weigh profitability as the most credible indicator of repayment ability [15].

Leverage and Bond Ratings

Leverage has a significant negative influence, supporting H2. High debt ratios increase financial risk, reduce repayment flexibility, and heighten the probability of default. This aligns with prior studies such as Sri Mendari (2024), Arifman (2013) dan Felicia et al (2018), which consistently showed leverage as a key determinant of rating downgrades[16][17], [18]. During the COVID-19 pandemic, many Indonesian industrial firms relied on debt financing to sustain operations amid revenue declines. However, excessive leverage amplified their vulnerability, as reflected in rating downgrades by **PEFINDO**[19]. The findings suggest that capital structure optimization is critical for firms to maintain favorable bond ratings in volatile environments.

Liquidity and Bond Ratings

Contrary to theoretical expectations, liquidity demonstrated a significant negative effect, partially rejecting H3. Conventionally, a high Current Ratio should enhance solvency and reduce default risk[20]. However, in this study, higher liquidity correlated with lower ratings. One possible explanation is the **quality of current assets** during inflationary pressures. Industrial firms often held large inventories and receivables that were difficult to liquidate, thus inflating liquidity ratios without improving actual repayment capacity[21]. **Ansila (2024)** argued that liquidity's effect on bond ratings can be ambiguous, as rating agencies may discount current assets that lack immediate convertibility into cash[22].

This anomaly highlights the importance of analyzing liquidity composition rather than absolute levels, particularly in emerging markets where working capital management is vulnerable to macroeconomic shocks [22]

Firm Size and Bond Ratings

Firm size had no significant effect, rejecting H4. This suggests that a large asset base does not automatically translate into higher creditworthiness. While traditional literature argues that large firms benefit from economies of scale and greater stability, the current findings indicate that during crisis periods, size alone does not guarantee resilience[23].

For Indonesian industrial firms, asset-heavy structures may even be a liability when revenues decline, as fixed costs remain high. Rating agencies likely prioritize profitability and leverage over firm size, as these directly reflect a company's repayment ability[24]. This aligns with **Sihombing (2015)**, who also reported no significant impact of firm size on bond ratings[25].

Theoretical and Practical Implications

The results reinforce **Signaling Theory**, demonstrating that profitability and leverage provide clearer signals to investors and rating agencies than liquidity or firm size. This suggests that financial ratios carry different signaling power under crisis conditions[26].

Practically, the findings imply that for companies, maintaining profitability and managing leverage are essential strategies to sustain favorable bond ratings, as merely increasing asset size or liquidity levels may not be sufficient to convince rating agencies. For investors, bond ratings should be interpreted alongside profitability and leverage indicators to provide a more accurate assessment of credit risk, particularly in volatile conditions. Meanwhile, for policymakers and rating agencies, these results emphasize the need for more comprehensive and nuanced evaluation frameworks that take into account macroeconomic shocks and asset quality when assessing credit risk in emerging markets.

CONCLUSIONS

This study examined the influence of profitability, leverage, liquidity, and firm size on bond ratings of industrial firms listed on the Indonesia Stock Exchange and rated by PEFINDO during the period 2019–2022. The findings demonstrate that profitability has a positive and significant effect on bond ratings, indicating that higher profitability strengthens investor and rating agency confidence in the company's ability to fulfill its obligations. Leverage, on the other hand, shows a negative and significant effect, meaning that a higher debt burden increases financial risk and lowers creditworthiness. Interestingly, liquidity also exhibits a negative and significant effect, which is contrary to conventional expectations. This anomaly suggests that during the study period, high liquidity ratios did not necessarily guarantee repayment capacity, as they were influenced by inflationary pressures and the relatively low quality of current assets. Meanwhile, firm size is found to have no significant impact on bond ratings,

highlighting that asset scale alone does not ensure stronger creditworthiness, particularly in times of economic turbulence. Overall, the four variables were able to explain only 9.2% of the variations in bond ratings, suggesting that external factors such as macroeconomic conditions, corporate governance, and market sentiment play a dominant role.

The results of this study have several important implications. For companies, the findings emphasize the need to maintain sustainable profitability and prudent debt management, since bond ratings are more strongly influenced by earnings and capital structure than by asset size or liquidity levels. For investors, the study provides valuable insights into credit risk assessment, highlighting that profitability and leverage should receive greater attention when evaluating bond investment opportunities. For rating agencies, the results underline the importance of adopting more nuanced evaluation frameworks, particularly in assessing the quality of liquidity and the impact of macroeconomic disruptions such as the COVID-19 pandemic and inflationary shocks. Finally, for academics and future researchers, this study enriches the literature on bond ratings in emerging markets and opens the door for further investigations that consider additional variables such as corporate governance practices, industry cycles, or broader macroeconomic indicators.

Despite its contributions, this study has several limitations. First, it focuses only on four financial ratios, which account for a relatively small proportion of the variation in bond ratings, leaving room for other important determinants. Second, the research is limited to industrial firms, which may not fully represent the dynamics of other sectors such as financial services, infrastructure, or consumer goods. Third, the study period coincides with the COVID-19 pandemic and subsequent recovery, which may have introduced extraordinary conditions not applicable to normal economic cycles. Future research is therefore encouraged to expand the scope by including additional explanatory variables such as governance quality, ownership structure, and macroeconomic indicators. Extending the analysis to multiple industries and longer time horizons would also provide a more comprehensive understanding of the determinants of bond ratings in emerging markets.

In conclusion, this research highlights that profitability and leverage provide stronger signals to bond rating agencies compared to liquidity and firm size. The findings underline the critical role of financial resilience in maintaining investor confidence and ensuring the sustainability of corporate financing through the bond market.

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