

The Effect of Liquidity, Solvability, Profitability, And Bond Age on Bond Ratings

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ABSTRACT

This study aims to analyze the effect of liquidity, solvency, profitability, and bond maturity on bond ratings in banking sub-sector companies listed on the Indonesia Stock Exchange (IDX) for the 2020-2024 period. Bond ratings are used as a basis for investors in assessing the level of default risk of a company. Liquidity is measured through the current ratio, solvency is measured through the Debt to Equity Ratio (DER), profitability is measured through Return On Assets (ROA), and bond maturity is measured through a dummy scale of 0 and 1. The location of this study includes two sources, namely the Indonesian Stock Exchange website and the official website of the Indonesian securities rating agency. There is a population of 47 banking sub-sector companies and uses a sampling technique, namely purposive sampling with 14 companies as samples multiplied by 5 years to 70 sample data. The type of data in this study uses quantitative data and the data source is secondary data. The data collection technique is documentation. The data analysis technique uses descriptive statistical tests, multicollinearity tests, and logistic regression tests. The results of the study indicate that liquidity (CR) and profitability (ROA) significantly influence bond ratings. Solvency (DER) and bond maturity do not significantly influence bond ratings. These findings demonstrate that in the banking industry, the ability to maintain liquidity stability is a crucial aspect in building investor and rating agency confidence. Therefore, banking companies need to pay greater attention to liquidity and profitability management to maintain and improve their bond ratings.

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I. INTRODUCTION

The capital market is a place where various financial instruments such as stocks, bonds, and mutual funds are traded. The function of the capital market is to connect parties that need funds (issuers) with those that have excess funds (investors). In capital market activities, one of the instruments that is of interest to investors is stocks and bonds, because they are considered to have a relatively lower level of risk and provide fixed income in the form of periodic interest (Ola et al., 2017). Bonds are securities traded to the general public, where various provisions are listed that explain things such as nominal value, interest rate, validity period, and name of the issuer (Fahmi, 2014). Although bonds are considered a relatively safe investment, they still carry risks. One such risk is when the bond-issuing company is unable to fulfil its obligations to investors. Investors who have invested in bonds need to be aware of the possibility of default. To anticipate this risk of default, investors need to understand the bond-issuing company's ability to meet or repay its obligations. Bond ratings can be used as a guideline for investors before deciding to purchase bonds. Indonesia has a bond rating agency, one of which is PT Pemeringkat Efek Indonesia, which plays a key role in providing objective and reliable ratings. Many factors can influence a company's bond rating, generally related to its financial condition and ability to meet its short-term and long-term obligations (Damayanti et al., 2017). Liquidity indicates a company's ability to meet its short-term obligations (debt). Solvency is the company's ability to meet all its short-term and long-term obligations. Profitability is the company's ability to generate profits and measures the efficiency of its operations. Bond maturity is the time or duration of maturity for the repayment of funds from the bond issuer to the bondholders of the same nominal value. Banking companies are collectors or distributors of public funds aimed at supporting national development in order to increase economic growth and national stability, leading to improved public welfare. On the other hand, banking profitability performance has not shown significant recovery. Net Interest Margin, as one of the main indicators, was at 4.45% as of May 2025; ROA also showed a decline at 2.51% as of May, and liquidity risk has also begun to become a concern, as several liquidity indicators also showed a decline (Abigail, 2025). Several empirical studies have found that liquidity, solvency, and profitability significantly influence bond ratings, including those by Sari et al. (2025) and Darmawan et al. (2020). However, another study by Christiaan & Karim (2024) showed inconsistent findings, where Maturity, Return on Equity, and Coupons influenced Bond Ratings, while Net Profit Margin and Liquidity did not. These inconsistent findings indicate that external conditions can influence the relationship between financial ratios and bond maturity. This research is expected to provide insight into the management of financial ratios that influence bond ratings in Indonesia.

Signaling Theory

Signaling theory, originally introduced by Michael Spence in 1973 under the framework of "job market signalling," posits that in situations of information asymmetry, the party possessing superior information (the information owner) can convey credible knowledge to the less-informed party (the recipient) through observable actions or "signals" (Spence, 1973). While Spence's foundational work focused on education as a signal of a worker's underlying productivity, the theory has since been extensively adapted to corporate finance and capital markets. In this context, company management inherently possesses more accurate information about the firm's true financial health and future prospects than external investors or creditors.

To bridge this information gap, firms utilize various mechanisms to signal their quality, one of the most prominent being third-party credit or bond ratings. A bond rating serves as a critical, independently validated signal that is expected to function as a reliable indicator of the company's financial condition and illustrate the opportunities and risks associated with its debt obligations. Because obtaining and maintaining a high credit rating requires consistent financial discipline, transparency, and rigorous evaluation by an external rating agency, it acts as a "costly-to-fake" signal, thereby enhancing its credibility in the eyes of the market.

As emphasized in financial literature, published bond ratings are expected to be a definitive indication of a company's financial condition and highlight the potential outcomes or probabilities related to the debt held (Raharja & Sari, 2008). When a reputable rating agency assigns a favorable rating, it signals to the market that the company has a strong capacity to meet its financial commitments. This positive signal can lower the firm's cost of capital, attract a broader base of institutional investors, and unlock strategic financial opportunities. Conversely, a poor or downgraded rating serves as a negative signal, prompting investors to reassess the risk of default and demand higher risk premiums. Ultimately, signaling theory explains why companies actively seek, maintain, and disclose high bond ratings: to mitigate information asymmetry, build market trust, and optimize their capital structure in a complex financial environment.

Bond

A bond is a long-term contract in which the borrower agrees to pay interest and principal to the bondholder on a specified date. This explanation suggests that bonds are a debt instrument issued by companies or governments to raise funds from investors. The issuer is obligated to pay interest regularly and repay the principal at the agreed-upon date. (Brigham & Houston, 2019) .

Bond Rating

A bond rating is an assessment given by a rating agency of a company or bond issuer's ability to meet its interest and principal payments on time. However, bond ratings are not solely based on this repayment capacity but also consider various financial and non-financial factors. The higher the bond rating, the lower the risk of default, while a lower bond rating indicates a higher risk of default (Tandelilin, 2017) .

Liquidity

Liquidity indicates a company's ability to meet its short-term obligations using its current assets. If a company has more current assets than current liabilities, it can meet its obligations on time (Fitriani et al., 2020) . Research conducted by Sari et al. (2025) and Nggelan et al. (2024) suggests that high liquidity indicates a company's inability to convert its current assets into revenue. In other words, the company's current asset turnover tends to be slow. This condition is considered unfavorable for bond buyers, resulting in a downgrade in bond ratings.

H1: Liquidity affects Bond Ratings

Solvency

Solvency shows the ability company in fulfilling all both short-term and long-term obligations. A high solvency level is unfavorable because it burdens the company with high debt interest costs (Purba & Mahendra, 2023) . Research conducted by Aluman et al. (2022) and Darmawan et al. (2020) suggests that a company with a low solvency level is considered to be managing its obligations well. This means the company is able to repay its debts or bonds effectively. This condition increases investor confidence in the company's bonds, which ultimately can raise the company's bond rating.

H2: Solvency affects bond ratings

Profitability

Profitability indicates a company's ability to generate profits from its resources, both to creditors and to bond ratings (Kurnianto, 2016) . A high profit margin indicates a company's ability to generate profits effectively. Research by Sari et al. (2025) and Rivandi & Gustiyani (2021) suggests that if a company's profitability increases, it will boost investor confidence, which can lead to an increase in bond ratings.

H3: Profitability affects Bond Rating

Bond Life

Bonds with shorter maturities are considered safer than bonds with longer maturities. The longer the bond's maturity, the greater the interest the company must pay (Ismatuddini et al., 2023) . Research conducted by

Hasan & Dana (2017) states that a short bond maturity will result in a high bond rating for a company because the longer the maturity of a bond, the higher the risk of default, or the risk of failure to pay principal or interest by the company, thus discouraging investors.

H3: Bond Age affects Bond Rating

II. MATERIAL AND METHODS

This study uses a quantitative approach. The data used are secondary data obtained from the annual financial reports of banking companies listed on the Indonesia Stock Exchange and bond rating reports issued by PT Pemeringkat Efek Indonesia (PEFINDO). The population in this study is all banking subsector companies listed on the Indonesia Stock Exchange for the 2020–2024 period. The sampling technique used purposive sampling with the following criteria: (1) banking companies that issued bonds during the study period, (2) companies that have complete financial report data, and (3) companies that have bond ratings from PEFINDO. Based on these criteria, 14 companies were obtained with a total of 70 observation data. The dependent variable in this study is the bond rating measured using an ordinal scale. The independent variables include liquidity proxied by the Current Ratio (CR), solvency by the Debt to Equity Ratio (DER), profitability by Return on Assets (ROA), and bond age measured using a dummy variable. The data analysis technique uses descriptive statistics, Multicollinearity Test, and ordinal logistic regression with a significance level of 5 percent

III. RESULTS AND DISCUSSION

The results of the descriptive statistical analysis show that the number of data used in this study was 70 observations (Valid N). The data was processed using SPSS version 25. The information presented includes the minimum, maximum, average (mean), and standard deviation values of each variable.

Table 1. Descriptive Statistical Test

	N	Minimum	Maximum	Mean	Standard Deviation
Liquidity	70	0.65	1.46	1.1653	0.17164
Solvency	70	2.41	16.08	6.5040	2.89217
Profitability	70	0.00	.04	0.0142	0.00889
Bond Life	70	0	1	0.94	0.234
Bond Rating	70	5	8	6.96	1,122

The analysis results show that bond ratings have an average value of 6.96 with a standard deviation of 1.122, indicating variations in the level of confidence of rating agencies in the financial condition and credit risk of each company. Liquidity has an average value of 1.1653 with a standard deviation of 0.17164, indicating how much liquidity varies between companies, which means the company's ability to meet short-term obligations is relatively safe. Solvency has an average value of 6.5040 with a standard deviation of 2.89217, indicating that some companies have significantly higher debt compared to their capital. This reflects different funding strategies and unequal levels of financial risk among companies in the sample. Profitability has an average value of 0.0142 with a standard deviation of 0.00889, indicating that most companies have similar and low levels of profitability, although there are some companies that are more efficient in generating profits from their assets. Bond maturity has a mean value of 0.94 with a standard deviation of 0.234, indicating little variation because the majority of bonds are short-term. The smaller the standard deviation of the dummy variable, the more similar the data, so the variation between short-term and long-term bonds is relatively small.

Multicollinearity Test

The assessment is carried out by referring to the predetermined criteria, namely if the tolerance value is more than 0.10 and the VIF value is less than 0.10, it is said that multicollinearity does not occur.

Table 2. Multicollinearity Test

		Collinearity Statistics	
Model		Tolerance	VIF
1	Liquidity	.894	1,119
	Solvency	.853	1,172
	Profitability	.826	1,210
	Bond Life	.944	1,059

The results of the multicollinearity test indicate that all independent variables do not have multicollinearity problems. Where the liquidity variable has a tolerance value greater than 0.10, namely 0.894 and

a VIF value smaller than 10, namely 1.119. The solvency variable has a tolerance value greater than 0.10, namely 0.853 and a VIF value smaller than 10, namely 1.172. The profitability variable has a tolerance value greater than 0.10, namely 0.826 and a VIF value smaller than 10, namely 1.210. The bond age variable has a tolerance value greater than 0.10, namely 0.944 and a VIF value smaller than 10, namely 1.059. So it can be concluded that in this study there is no multicollinearity and is declared good.

Logistic Regression Test

The ordinal logistic regression test was used in this study because the dependent variable is a bond rating, which has an ordinal scale. The ordinal logistic regression test assesses whether a financial variable can increase or decrease a company's risk, thus impacting the quality of the bond rating. Therefore, the test in this study uses the ordinal logistic regression test:

$$\text{Logit } [P(Y \leq j)] = \alpha_j + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

During the data processing, the values β of each variable were found. The following are the results β of the ordinal logistic regression test:

$$Y = \alpha_j + 4,046 X_1 + 0,064 X_2 + 126,163 X_3 + -1,251 X_4 + e$$

1. The regression coefficient of the liquidity variable of 4.046 indicates that increasing liquidity will increase the company's chances of obtaining a higher bond rating.
2. The regression coefficient of the solvency variable of 0.064 indicates that increasing solvency tends to increase the chance of obtaining a higher bond rating, but the effect is relatively small.
3. The regression coefficient of the profitability variable of 126.163 indicates that an increase in profitability strongly increases the company's chances of obtaining a higher bond rating.
4. The regression coefficient of the bond age variable (X_4) of -1.251 indicates that the longer the bond age, the less likely the company is to obtain a higher bond rating.

a. Model Feasibility Test Analysis

To assess suitability, goodness-of-fit tests such as the Pearson chi-square and deviance chi-square are typically used. If the p-value is > 0.05 , the model is deemed fit, and if the p-value is < 0.05 , the model is deemed unfit.

Table 3. Goodness-Of-Fit Test

	Chi-Square	df	Sig.
Pearson	182,969	203	0.840
Deviance	152,001	203	0.997

This indicates that the model's feasibility values are both greater than the significance value of 0.05. Therefore, it can be concluded that the ordinal regression model used fits the data.

b. Overall Model Test Analysis

The overall assessment of this model is done by comparing the value between -2 Log Likelihood (-2LL) at the beginning, where the model only includes constants, with a value of -2 Log Likelihood (-2LL) at the end, where the model includes all variables. If the significance value is < 0.05 , it means that the overall model is significant and the independent variables are suitable for use.

Table 4. Overall Fit Model Test

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	179,000			
Final	152,001	27,000	4	0.000

This indicates that the p-value = 0.000 < 0.05 , meaning the model with the independent variables is significantly better overall than the model without them. In other words, the four variables included in the model collectively improve model fit and demonstrate a better regression model.

c. Analysis of the Determination Coefficient Test

Table 5. Pseudo R-Square Test

<i>Cox and Snell</i>	0.320
<i>Nagelkerke</i>	0.347
<i>McFadden</i>	0.151

In ordinal logistic regression, the Nagelkerke value is often used as the main reference, so it can be interpreted that the model in this study explains around 34.7% of the variation in bond ratings, while the remainder is influenced by other factors outside the model, such as company conditions and other external factors.

d. Wald Test Analysis

Table 1. Wald Test Results

		Estimate	Std. Error	Wald	df	Sig.
Threshold	[Y = 5]	3,445	2,569	1,809	1	0.179
	[Y = 6]	5,206	2,638	3,896	1	0.048
	[Y = 7]	6,094	2,654	5,274	1	0.022
Location	Liquidity (X1)	4,046	1,657	5,962	1	0.015
	Solvency (X2)	0.064	0.084	0.585	1	0.444
	Profitability (X3)	126,163	33,936	13,821	1	0.000
	Bond Age (X4)	-1.251	1,273	0.966	1	0.326

The results of the interpretation of the proposed research hypotheses (H1, H2, H3, and H4) can be seen as follows:

1. Based on the results of the Wald test, the liquidity variable showed a significance value of 0.015. This significance value is lower than the established significance level of 0.05, thus concluding that the liquidity variable has a significant effect on bond ratings.
2. The Wald test results for the solvency variable show a significance level of 0.444. This significance value is greater than 0.05, so it can be concluded that the solvency variable does not significantly influence bond ratings.
3. Based on the results of the Wald test, the profitability variable has a significance level of 0.000. This significance value is lower than the established significance level of 0.05, thus concluding that the profitability variable has a significant effect on bond ratings.
4. The results of the Wald test on the bond age variable show a significance level of 0.326. This significance value is greater than 0.05, so it can be concluded that the bond age variable does not significantly influence bond ratings.

Discussion

This study shows that liquidity, as proxied by the current ratio, has a p-value of 0.015 at a significance level of 0.05, indicating that the liquidity variable has a significant effect on bond ratings. Therefore, it can be concluded that the first hypothesis (H1) that liquidity affects bond ratings is accepted. Liquidity, as proxied by the current ratio, aims to measure a company's ability to meet its short-term obligations. A higher liquidity ratio indicates a company's ability to demonstrate good short-term debt repayment capacity. A high value will signal a company's ability to repay its obligations within a relatively short period of time. This indicates that a company's ability to meet short-term obligations is an important consideration for bond rating agencies. This finding indicates that the higher a company's liquidity level, the higher the bond rating it assigns. This finding is consistent with research conducted by (Zandika, 2022).

This study shows that solvency, as proxied by the Debt to Equity Ratio (DER), has a p-value of 0.228 at a significance level of 0.05, indicating that the solvency variable does not significantly influence bond ratings. Therefore, it can be concluded that the second hypothesis (H2) that solvency does not influence bond ratings is rejected. This condition indicates that bond rating agencies do not use DER as a primary indicator in assessing credit risk in the banking sector. Thus, the use of DER as a proxy for solvency in the banking sector has limitations in explaining variations in bond ratings, so the results of this study need to be interpreted according to the characteristics of the banking industry. This finding is consistent with research conducted by (Saromah & Woestho, 2021).

This study shows that profitability, proxied by Return on Assets (ROA), has a p-value of 0.000 at a significance level of 0.05, indicating that the profitability variable has a significant effect on bond ratings. Therefore, it can be concluded that the third hypothesis (H3) that profitability affects bond ratings is accepted. While profitability levels are positive or profitable, the bond ratings obtained tend not to experience significant changes from year to year. This condition indicates that differences in the level of profit generated by companies are not always followed by differences in bond ratings. This finding is consistent with research conducted by (Sudarmin et al., 2024).

This study shows that bond age has a p-value of 0.378 at a significance level of 0.05, indicating that the bond age variable does not significantly influence bond ratings. Therefore, it can be concluded that the fourth hypothesis (H4) that bond age does not influence bond ratings is rejected. The results of the study indicate that differences in bond age are not followed by significant differences in bond ratings. Both bonds with a maturity of

more than 5 years and bonds with a maturity of 5 years or less tend to obtain relatively stable bond ratings. This indicates that bond rating agencies focus more on the company's fundamental financial condition than the bond age factor. This finding is consistent with research conducted by (Ni'mah et al., 2024) .

IV. CONCLUSION

indicates that a company's ability to pay short-term obligations is a key factor in assessing bond ratings. Solvency, as measured by the Debt to Equity Ratio (DER), does not significantly influence bond ratings. This indicates that the level of debt used by banking companies is not yet a primary factor in determining bond ratings. Profitability, as measured by Return on Assets (ROA), significantly influences bond ratings. This indicates that a company's ability to generate profits reflects financial performance, which plays a role in assessing bond ratings. Bond maturity, as measured using a dummy variable, does not significantly influence bond ratings. This indicates that differences in bond maturity are not yet a determining factor in bond ratings.

Suggestions and Limitations

Based on the research results and limitations that have been described, the researcher provides several suggestions that are expected to be useful for further researchers: 1. Further researchers are advised to use a longer research period to obtain more comprehensive results. 2. The research object can be expanded not only to the banking subsector, but also to include other sectors so that the research results are more representative. 3. Further researchers are advised to add other variables that have the potential to affect bond ratings, such as company size, bond collateral, ownership structure, and macroeconomic conditions. 4. Further researchers are advised to consider using other analysis methods besides ordinal logistic regression that are adjusted to the characteristics of the data and the objectives of the research.

This study has several limitations that need to be considered in understanding the research results: 1. The research object is only focused on the banking sub-sector companies listed on the Indonesia Stock Exchange, so the results of this study may not be able to describe the condition of bond ratings in other industrial sectors. 2. The research period only covers 2020 to 2024. This period coincides with the COVID-19 pandemic and the economic recovery period, so the company's financial condition during that period experienced quite significant changes. 3. The bond age uses a dummy variable, further research can use the remaining life of the bond. 4. Companies that experienced losses during the research period were excluded from the sample, so the research results more reflect companies with relatively good financial conditions and do not fully describe the condition of all banking sub-sector companies.

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