

THE EFFECT OF EARNINGS MANAGEMENT, DEBT TO EQUITY RATIO, FIRM SIZE, AND CURRENT RATIO ON BOND RATINGS IN INDUSTRIAL SECTOR COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE

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Abstract. This study aims to analyze the effect of earnings management, debt to equity ratio (DER), firm size, and current ratio on the bond ratings of companies listed on the Indonesia Stock Exchange. The method used is an associative study with logistic regression techniques because the dependent variable is bond rating categories (investment grade and non-investment grade). The research sample consists of 62 industrial sector companies that meet the purposive sampling criteria. The analysis results show that earnings management and DER have a significant influence on bond ratings, with earnings management having the strongest influence. Conversely, firm size and current ratio do not have a significant partial effect on bond ratings. The logistic regression model is deemed fit based on the Hosmer and Lemeshow test ($p=0.225$), and the simultaneous model fit test indicates that the variables influence bond ratings collectively. The Nagelkerke coefficient of determination of 76.5% indicates that the variation in bond ratings can be explained by the independent variables, while the remainder is influenced by other factors outside the model. These findings emphasize the importance of earnings management and capital structure as key indicators in determining bond rating quality and provide a basis for investors and stakeholders in making more informed investment decisions.

Keywords: earnings management; debt to equity ratio; firm size; current ratio; bond ratings

I. INTRODUCTION

In the ever-evolving world of investment, capital markets and stock exchanges play an increasingly important role in reshaping the investment landscape in Indonesia. Capital markets are where various long-term financial instruments are traded. These instruments include debt securities (bonds), stocks, mutual funds, derivatives, and other financial instruments. For risk-averse investors, bonds can be an attractive option as they offer a fixed income in the form of coupons during their term.

Bonds are generally defined as documents that serve as evidence of debt or a promissory note. These documents are issued by the borrower to the lender. Upon issuance, bonds include an agreement to repay the principal amount of the debt along with interest (coupon) at a specified time. Bonds can be issued by companies or countries. Currently, companies and entrepreneurs often see bonds as an appropriate option for obtaining funds to develop their businesses or meet their financial obligations. However, investing in bonds also carries risks. One of the risks that investors may face is bond default risk. To understand the level of risk in bond investments, investors need to pay attention to bond ratings, which are routinely assigned by bond rating agencies.

Bond ratings can be a key factor for investors before investing their funds in bonds to reduce bond risk. In general,

bonds are divided into two rating categories: investment-grade ratings (AAA, AA, A, BBB) and non-investment-grade ratings (BB, B, CCC, and D). Investment-grade ratings refer to companies that are able to pay their obligations well, while non-investment-grade ratings refer to companies that are unable to do so or are in doubt. Therefore, there is a difference in ability between companies with AAA-rated bonds and other issuers with CC ratings.

Bonds with an AAA rating are considered the safest investments and are usually issued by companies with good reputations. Conversely, bonds with a C rating carry much higher risk. Investors pay close attention to the possibility of default, which is the risk that a company will be unable to pay its debts on time. For this reason, bond ratings are one of the main benchmarks for assessing the level of investment risk. In addition, earnings management, which reflects how a company manages its income and expenses, also provides important insight into the quality of financial statements and risks that may affect bond ratings.

According to [1], bond ratings signal a company's profitability and default risk, which are typically conducted by independent rating agencies at both the national and

international levels. [2] adds that these ratings indicate how safe the bond is by measuring the company's ability to pay interest and principal when due. [3] mentions that bond ratings help investors predict a company's ability to meet its obligations, making them an important tool in investment decision-making. The higher the bond rating, the lower the risk, making it a key guide for investors [4]. These ratings are an objective assessment of a company's ability to pay its bond obligations, with high ratings indicating good ability [5].

Earnings management refers to actions taken by a company in preparing financial statements with the intent to influence the reported profit figures [6]. This can involve selecting specific accounting methods or deferring the recognition of revenues and expenses. Managers often engage in earnings management to meet profit targets or fulfill certain contractual requirements [7]. Simply put, earnings management can be viewed as a deviation in reporting that affects the company's reported earnings.

Additionally, companies use earnings management to present better performance to rating agencies in hopes of obtaining higher credit ratings. A favorable rating increases investor confidence and facilitates easier access to funding. According to [8] and [9], earnings management is also related to a company's ability to meet short-term debt obligations. Therefore, this practice influences how investors and rating agencies assess the company's financial stability and management. Financial management itself is an effort aimed at achieving business objectives through fund collection, management, and reduction of operational costs.

The Debt to Equity Ratio (DER) is a financial metric that measures the proportion of a company's total debt to its total equity, reflecting the company's leverage level and capital structure [8]; [9]; [10]. This ratio provides insight into how much a company relies on debt financing to run its operations and helps assess the financial risks faced. A higher DER indicates greater risk borne by shareholders and other stakeholders.

In bond rating evaluations, DER is an important variable used to assess how a company's capital structure affects the quality of its issued bonds. Investors and analysts use this ratio to evaluate the company's financial stability and potential investment risks. Additionally, company size plays a significant role, as larger firms tend to have greater financial stability, potentially leading to higher bond ratings.

Firm size is a crucial factor that describes the scale of a business and impacts various aspects, including operations, finances, and corporate policies. Typically, firm size is measured by total assets or total sales [8]. According to [11], size can be gauged through several indicators, one of which is total assets. In finance and accounting research, company size is often used as a control variable to address differences among companies that might affect performance and valuation [12]. Moreover, [13] highlights that firm size is essential for analyzing risk and potential returns for investors, creditors, and management. Firm size may be measured by total assets, sales, number of employees, or market value [14].

The current ratio is a key liquidity measure indicating a company's ability to meet short-term obligations using its available current assets. It is calculated by dividing current assets by current liabilities. A higher current ratio shows that a company is more capable of paying its short-term debts, which in turn influences investors' risk perception and the bond ratings assigned.

Liquidity ratios such as current ratio, quick ratio, and cash ratio are indicators of a company's healthy financial position, reflecting its ability to meet short-term financial obligations [15]. [16] emphasizes that the current ratio is a primary indicator for assessing a company's capacity to settle short-term liabilities, with higher values indicating stronger ability. Similarly, [17] notes that a high current ratio means the company is better positioned to fulfill its short-term obligations. The current ratio also serves as a predictive tool for investors and creditors in evaluating the company's ability to meet upcoming financial commitments [18].

Investors must pay close attention to bond ratings assigned by rating agencies. Higher bond ratings signal lower default risk, increasing investor confidence. Furthermore, bond ratings affect a company's borrowing costs and influence investment decisions by financial institutions, which often limit purchases to bonds with specific ratings. Therefore, understanding bond ratings is critical for managing financial risk and maximizing investment returns.

II. RESEARCH METHODS

This study uses an associative research design to determine the relationship and influence of earnings management, debt to equity ratio, company size, and current ratio on bond ratings. Associative research is research that aims to determine the relationship between two or more variables [19]. The data used are secondary data obtained through documentation and document analysis techniques, such as financial statements and bond rating data taken from the official websites of the Indonesia Stock Exchange (IDX) and Pefindo [20]. The population in this study consists of industrial sector companies that issue bonds and are listed on the Indonesia Stock Exchange, totaling 66 issuers. The sample was selected using purposive sampling with criteria of companies having bond ratings categorized as Investment Grade and Non-Investment Grade (idAAA to idD), resulting in 62 companies as the research sample [20]. Data analysis was conducted using logistic regression because the dependent variable is categorical (bond rating), with 0 representing low investment grade and 1 representing high investment grade. Logistic regression was chosen because it does not require a multivariate normal distribution and can accommodate both metric and nominal independent variables [21]. The logistic regression model is stated as follows: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$. Where Y is the bond rating, α is the constant, β_1 to β_4 are the regression coefficients for the variables of profit management (X_1), debt to equity ratio (X_2), company size (X_3), and current ratio (X_4), and e is the error term. The model's validity was tested using Hosmer and Lemeshow's Goodness of Fit Test with a p-value criterion > 0.05 , indicating that the

model fits the data [21];[22]. The overall model fit is evaluated using the Likelihood Ratio Test (-2 Log Likelihood) to measure the improvement in model fit [21]. The coefficient of determination was measured using Cox and Snell's R^2 and Nagelkerke's R^2 , which provide interpretations similar to R^2 in multiple regression [21]. The regression coefficient test was performed using t-statistics at a significance level of 0.05 to determine the partial effect of each independent variable on the dependent variable [22].

III. RESULT AND DISCUSSION

Assessing the Suitability of Regression Models

The regression model was assessed using Hosmer and Lemeshow's Goodness of Fit Test, with the following results:

TABLE 3.1 FEASIBILITY TEST RESULTS

Step	Chi-square	df	Sig.
1	10,601	8	,225

Source: SPSS output, 2025

The significance value is 0.225, which means $>$ than 0.05. This means that there is no significant difference between the model and the data, so the overall logistic model prediction adequately reflects the actual data.

Overall Model Fit

Overall model fit is used to determine whether all independent variables influence the dependent variable. The test results are as follows:

TABLE 3.2. OVERALL TEST RESULTS

Iteration		-2 Log likelihood	Coefficients			
			Constant	MANAJEMEN LABA	DER	UKURAN PERUSAHAAN
Step 1	1	49,352	-,375	,958	,638	,000
	2	36,456	-,902	2,151	1,306	,000
	3	30,261	-1,389	3,787	1,918	,000
	4	28,265	-1,662	5,469	2,347	,000
	5	27,968	-1,735	6,501	2,540	,000
	6	27,958	-1,741	6,736	2,577	,000
	7	27,958	-1,741	6,745	2,578	,000
	8	27,958	-1,741	6,745	2,578	,000

Source: SPSS output, 2025

The test criteria are a value of $-2\text{Log Likelihood} < \text{Chi Square}$, which concludes that the model before the independent variables were entered already met the test requirements. The formula for calculating the Chi-Square value is $DF = N - K - 1$, which in this study is $62 - 4 - 1 = 57$. The value 57 can be matched using the Chi-Square table (attached), which shows that the Chi-Square value is 75.623.

The test results above indicate that the value of $-2\text{Log Likelihood} < 75.623$, thus fulfilling the test requirements for this study.

3.3 SIMULTANEOUS LOGISTIC REGRESSION TEST RESULTS

		Chi-square	df	Sig.
Step 1	Step	48,455	4	,000
	Block	48,455	4	,000
	Model	48,455	4	,000

Source: SPSS output, 2025

The results above indicate that $0.000 < 0.05$, therefore the logistic regression model is simultaneously significant. Together, the independent variables (earnings management, DER, firm size, current ratio) have a significant effect on the dependent variable (bond rating).

Logistic Regression Analysis

Logistic regression analysis is a statistical method used to analyze the relationship between one or more independent variables and a dependent variable that is dichotomous (binary), meaning it only has two possible outcomes. The equation for logistic regression analysis in this study is as follows:

TABLE 3.4 LOGISTIC REGRESSION TEST RESULTS

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	MANAJEMEN LABA	6,745	2,671	6,377	1	,012	849,639
	DER	2,578	1,265	4,151	1	,042	13,172
	UKURAN PERUSAHAAN	,000	,000	,271	1	,603	1,000
	CR	,919	,637	2,082	1	,149	2,506
	Constant	-1,741	1,640	1,127	1	,288	,175

a. Variable(s) entered on step 1: MANAJEMEN LABA, DER, UKURAN PERUSAHAAN, CR.

Source: SPSS output, 2025

$$Y = -1,741 + 6,745 \cdot X_1 + 2,578 \cdot X_2 + 0,000 \cdot X_3 + 0,919 \cdot X_4 + e$$

- Earnings management (X_1): Has a regression coefficient of 6.745 with a significance value of 0.012, which means that this variable has a significant effect on the likelihood of the observed event occurring, at a significance level of 5%. The B value of 6.745 indicates that a one-unit increase in earnings management can increase the bond rating by 6.745 times, assuming that other variables remain constant. This indicates that earnings management practices have a statistically and economically strong influence on investment grade.
- DER (X_2): Has a coefficient of 2.578 and a significance value of 0.042, which also indicates that this variable has a significant effect on the likelihood of the event occurring. The B value of 2.578 indicates that a one-unit increase in DER can increase the bond rating by 2.578 times. This means that the higher the company's leverage, the greater the likelihood of an investment grade or non-investment grade rating.
- Firm Size (X_3): Not significant and the coefficient is very small (close to zero). There is no significant influence on the bond rating.
- Current Ratio (X_4): Not significant. The value has a coefficient of 0.919, meaning that a slightly higher CR reduces the likelihood of an investment grade rating, but the effect is weak and not significant.

Coefficient of Determination (R^2)

The coefficient of determination in logistic regression, such as Cox & Snell R^2 and Nagelkerke R^2 , is a statistical measure used to indicate how well the model explains the variation of

the dependent variable (in this case, bond ratings). The results are as follows:

TABLE 3.5 RESULTS OF THE COEFFICIENT OF DETERMINATION TEST

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	27,958 ^a	,542	,765

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than ,001.

Source: SPSS output, 2025

Nagelkerke is an adjusted version of Cox & Snell that can reach a maximum of 1. This value indicates that the logistic regression model explains approximately 76.5% of the variation in the probability of bonds entering investment grade or not. The model is simultaneously significant, and its predictive ability is still quite high, as approximately 76.5% of the variation in bond ratings is explained by the independent variables in the model. The remaining (approximately 23.5%) is influenced by other factors outside the model.

Regression Coefficient

The test was conducted to examine whether independent variables could explain the dependent variable better when considered separately. Based on the logistic regression test, the following results were obtained:

TABLE 3.6 LOGISTIC REGRESSION TEST RESULTS

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	MANAJEMEN LABA	6,745	2,671	6,377	1	,012	849,639
	DER	2,578	1,265	4,151	1	,042	13,172
	UKURAN PERUSAHAAN	,000	,000	,271	1	,603	1,000
	CR	,919	,637	2,082	1	,149	2,506
	Constant	-1,741	1,640	1,127	1	,288	,175

a. Variable(s) entered on step 1: MANAJEMEN LABA, DER, UKURAN PERUSAHAAN, CR.

Source: SPSS output, 2025

The interpretation is as follows:

1. Earnings Management

The logistic regression results show that the earnings management variable has a significance value of 0.012, which is smaller than the significance level of 0.05. This indicates that earnings management has a significant effect on bond ratings. Therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. This means that the earnings management practices carried out by companies have a strong statistical influence on the likelihood of bonds being categorized as investment grade or non-investment grade. These results are also reinforced by research conducted by [23] and [24], which revealed that earnings management has a positive influence on a company's bond rating.

2. Debt to Equity Ratio (DER)

The DER variable shows a significance value of 0.042, which is also less than 0.05. This means that DER has a significant effect on the company's bond rating. Thus, H_0 is rejected and H_a is accepted. This interpretation shows that the company's leverage ratio plays a role in determining the bond rating classification. The value of Exp(B) of 13.172 indicates that each 1-unit increase in DER significantly increases the likelihood of a bond rating change. Research conducted by [25], also found that the Debt to Equity Ratio (DER) has a

positive and significant effect on company value, highlighting the important role of DER in assessing company performance and value.

3. Firm Size

Firm size, typically measured by total assets or the natural logarithm of assets, has a significance value of 0.603. This value is well above the significance threshold of 0.05, so H_0 is accepted and H_a is rejected. This indicates that firm size does not have a significant influence on bond ratings. In other words, the size of the company does not play an important role in determining whether the bonds issued are classified as investment grade. The results of this study are also supported by [26], which show that company size does not have a significant effect on bond ratings. Therefore, the role of firm size in determining operational performance or financial ratings requires further study.

4. Current Ratio (CR)

The Current Ratio (CR) variable has a significance value of 0.149. Since this value is also higher than the significance level of 0.05, H_0 is accepted and H_a is rejected. This means that the current ratio, which reflects a company's ability to meet its short-term obligations, does not have a significant effect on bond ratings. This indicates that a company's short-term liquidity is not a major determinant in bond rating assessment in this model. This finding is consistent with the research conducted by [27], which shows that the current ratio does not significantly affect the bond ratings of banking companies listed on the Indonesia Stock Exchange. In other words, the level of liquidity measured by the current ratio does not statistically affect the bond ratings assigned by rating agencies.

IV. CONCLUSIONS

From the results of the study, it can be concluded that:

1. Based on logistic regression analysis, it can be concluded that profit management and debt to equity ratio have an influence on investment or non-investment bond ratings (bond ratings).
2. Based on the Model Fit Test (Hosmer and Lemeshow), the test results show a significance value of 0.225 (> 0.05), which means that the logistic regression model is suitable for use.
3. Based on the Simultaneous Test (Overall Model Fit), it can be stated that the variables of earnings management, debt-to-equity ratio (DER), firm size, and current ratio have a significant simultaneous effect on bond ratings.
4. The Coefficient of Determination Test (Nagelkerke R^2) shows that the Nagelkerke R^2 value is 76.5%, meaning that 76.5% of the variation in bond ratings can be explained by the variables of profit management, debt-to-equity ratio, company size, and current ratio. The remaining 23.5% is explained by other factors outside the model.

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