*JHSS (Journal of Humanities and Social Studies)*
*https://journal.unpak.ac.id/index.php/jhss*
*Volume 09, Number 02, Page 1413-1419*
*e-ISSN: 2598-120X; p-ISSN: 2598-117X*

# THE INFLUENCE OF FIRM SIZE, RETURN ON ASSETS, AND DEBT TO EQUITY RATIO ON BOND RATINGS WITH EARNINGS MANAGEMENT AS AN INTERVENING VARIABLE IN FINANCIAL COMPANIES ON THE INDONESIAN STOCK EXCHANGE FROM 2022 TO 2024

Aisah Dwi Nurhayati [a*)], Heni Safitri [a)] Dedi Hariyanto [a)]

[a)] *Universitas Muhammadiyah Pontianak, Pontianak, Indonesia*

**) Corresponding Author: 211310216@unmuhpnk.ac.id*

***Article history:*** *received 21 June 2025; revised 02 July 2025; accepted 29 July 2025* *DOI: https://doi.org/10.33751/jhss.v9i2.12682*

**Abstract.** This study aims to examine the influence of firm size, Return on Assets (ROA), and Debt to Equity Ratio (DER) on bond ratings with earnings management as an intervening variable in financial companies listed on the Indonesian Stock Exchange from 2022 to 2024. Bond ratings are crucial for assessing the risk of bond defaults, and understanding the factors that influence these ratings can help companies, investors, and rating agencies make better decisions. Firm size, ROA, and DER have been identified as key financial indicators that affect bond ratings, but the role of earnings management as an intervening factor in this relationship remains underexplored. This study uses a purposive sampling method, focusing on 43 financial companies with investment-grade bond ratings. The data analysis includes financial ratio analysis, path analysis, and several classical assumption tests to ensure the validity of the regression model. The results of this study show that firm size, ROA, and DER do not have a significant direct or indirect influence on bond ratings. The coefficient of determination ($R^2$) indicates that only 5.9% of the variation in bond ratings can be explained by these variables. These findings suggest that factors other than financial ratios, such as macroeconomic conditions or industry stability, may play a more significant role in determining bond ratings. The study recommends further research to explore additional variables and alternative methods for better understanding bond rating dynamics.

**Keywords:** Firm Size, Return on Assets, Debt to Equity, Earnings Management, Bond Ratings

## I. INTRODUCTION

The capital market is part of a country's financial system, where economic actors can invest and raise funds. As economic growth increases, so does the need for funding. Sources of funds for economic growth come not only from the government, but also from the private sector. This funding can be carried out using financial instruments such as bonds. Bonds are medium to long-term transferable debt securities, where the issuer promises to pay interest and repay the principal at a specified time. As a security, bonds provide fixed payments to investors and include information such as maturity date, interest rate, issuer name, face value, and investment grade. The terms and conditions are governed by law and the relevant authorities. Bond ratings are closely related to the size of the company. A good rating reflects a lower risk of default, which is naturally associated with sound financial performance and good management. Companies with large size, good financial performance (as measured by high ROA), and controlled DER tend to have better bond ratings because they are considered more capable of meeting their financial obligations. Therefore, understanding the relationship between factors such as firm size, ROA, DER, and Earnings management is crucial in determining the bond rating of Company [1];[2].

There are several factors that can be used to measure bond ratings, such as firm size, Return On Assets (ROA), and Debt to Equity Ratio (DER). Financial companies are companies classified based on IDX-IC (Indonesian Stock Exchange Industrial Classification). Based on previous studies, previous research tended to examine companies in the non-financial sector or other sectors besides the financial sector. Meanwhile, financial sector companies are also widely listed on the Indonesia Stock Exchange. Financial companies were selected as the object of this study because it is estimated that bonds issued by financial sector companies dominate the majority of the bond market listed on the Indonesia Stock Exchange, specifically in the banking sub-sector. There are 54 financial sector companies that issue bonds. For this reason, the researcher is interested in studying financial sector companies.

Large companies often reflect companies with high growth and a strong position in the capital market. This provides easier access for companies to obtain additional funds from external parties, which in turn can increase company profits and the

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e-ISSN: 2598-120X; p-ISSN: 2598-117X

company's value itself [3]. Firm size is typically measured using several indicators, such as total assets, sales, and capital, which are used to classify companies into three categories: large, medium, and small [4]. Additionally, firm size is a factor that indicates the level of risk a company faces. Large companies generally have lower risk compared to small companies because they have more resources to deal with market uncertainty [5].

In addition to firm size, Return on Assets (ROA) is also an important indicator that describes a company's ability to generate profits from its assets. ROA is one way to measure how efficiently a company uses its assets to generate profits. The higher the ROA, the more efficient the use of assets in generating profits, which is also directly related to a decrease in default risk and an increase in the company's bond rating [6];[7].

Additionally, the Debt to Equity Ratio (DER) is a ratio that indicates the comparison between a company's debt and its equity. A high DER signifies the company's reliance on debt to finance its operations, which increases the risk of default and, ultimately, lowers the company's bond rating [8];[9]. The higher the DER, the greater the risk faced by the company, which has the potential to negatively impact its bond rating.

Earnings management also plays a crucial role in corporate financial analysis. Earnings management refers to actions taken by a company to influence financial statements for specific purposes, such as increasing reported profits to attract investor attention or meet the expectations of other stakeholders [10]. This practice may involve manipulating financial statements to create a positive image of the company's performance, which in turn can influence the bond ratings assigned by rating agencies [11].

The use of earnings management as an intervening variable in this study aims to explain the indirect mechanism of independent variables, namely firm size, ROA, and DER, on the dependent variable, namely bond ratings. This study highlights the important role of earnings management in providing deeper insights into how financial factors indirectly affect bond ratings, as well as how the quality of financial statements affects rating agencies' trust in companies. Earnings management functions as an intervening variable, whereby financial indicators link the influence of two other internal factors on the ratings assigned by independent external agencies, such as bond rating agencies. Earnings management allows companies to adjust their financial statements to reflect a better performance image, thereby influencing the rating agencies' decisions in determining bond ratings.

Based on research conducted by [12], it was found that firm size has a significant positive influence on bond ratings in the banking sector on the Indonesia Stock Exchange during the period 2012-2015.

On the other hand, the results of research conducted by [13] indicate that firm size does not have a significant influence on bond ratings. Based on research conducted by [14], it was found that profitability, proxied by ROA, has a positive and significant influence on bond ratings.

These results contradict the findings of studies conducted by [15];[16] which indicate that Return on Assets does not have a significant effect on bond ratings. Based on the above discussion, the researcher is interested in conducting a study titled The Influence of Firm Size, Return on Assets, and Debt to Equity Ratio on Bond Ratings with Earings Management as an Intervening Variable.

## II. RESEARCH METHOD

This research uses an associative research approach. In accordance with the explanation by [17], associative/correlational research is research that aims to determine the relationship between two or more variables. With this research, a theory can be developed that can be used to explain, predict, and control a phenomenon in research. In this study, the variables examined include firm size (X1), Return on Assets (ROA) (X2), Debt to Equity Ratio (DER) (X3), bond rating (Y), and earnings management (Z) as intervening variables. The data collection technique used in this study is the documentation method. According to [17], documentation involves collecting data from various documents or literature relevant to the topic being studied. In this study, data were obtained from print, electronic, and internet sources to support the analysis. The population used in this study was all financial sector companies listed on the Indonesia Stock Exchange and rated by PT PEFINDO, with a total of 54 companies for the period 2022 to 2024. In this study, the sampling technique used was purposive sampling, which is a technique for determining samples based on certain considerations or criteria [18]. The sample used in this study consists of financial sector companies listed on the Indonesia Stock Exchange from 2022 to 2024, with criteria including the issuance of financial statements for the period and holding investment-grade bond ratings, totaling 43 companies. Data analysis techniques in this study employ several methods to test the relationships between variables. Financial ratio analysis was used to calculate firm size, Return on Assets (ROA), and Debt to Equity Ratio (DER). Earnings management was measured through the calculation of total accruals and discretionary accruals [19]. Classical assumption tests were conducted to ensure the validity of the regression model, including normality, multicollinearity, autocorrelation, heteroskedasticity, and linearity tests [20]. Path analysis was used to test the influence of the intervening variable, earings management, on the relationship between the independent and dependent variables [20]. In addition, correlation coefficient tests (R tests), coefficient of determination tests, and F and t statistical tests were used to measure the strength and significance of the relationship between variables simultaneously and partially [21].

## III. RESULTS AND DISCUSSION

### CLASSICAL ASUMPTION TEST

#### Normality Test

Normality testing is conducted to determine whether the residual data in the regression model follow a normal distribution. Normal distribution of residuals is a critical assumption in linear regression, as it can influence the validity of statistical test results, especially in hypothesis testing

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e-ISSN: 2598-120X; p-ISSN: 2598-117X

decisions. In this study, normality testing was carried out using the One-Sample Kolmogorov-Smirnov Test. Data is considered normally distributed if the significance value (Asymp. Sig. 2-tailed) is greater than 0.05. The results of the test are presented in the following table:

**Table 3.1 Normality Test Results**

| Test | Value |
|---|---|
| N (Sample) | 129 |
| Test Statistic (Kolmogorov-Smirnov) | .269 |
| Asymp.Sig.(2-tailed) | .000[c] |

Source: Processed Data, 2025

Based on the table above, it is known that the significance value is 0.000 < 0.05, which indicates that the residual data is not normally distributed statistically. Thus, the null hypothesis ($H_0$) stating that the residual data is normally distributed is rejected.

Therefore, to distribute the data normally, the researcher needs to identify and handle outliers that affect the distribution deviation. After the outlier adjustment process is done, the normality test is performed again and the results can be seen in the following table:

**Table 3.2 Normality Test After Outlier Handling**

| Test | Value |
|---|---|
| N (Sample) | 105 |
| Test Statistic (Kolmogorov-Smirnov) | .233 |
| Asymp.Sig.(2-tailed) | .113[c] |

Source: Processed Data, 2025

From the table above, we obtain a significance value of 0.113 > 0.05, which means that the null hypothesis ($H_0$) is accepted, so it can be concluded that the residual data is normally distributed after handling the outliers. Thus, the normality assumption has been met and the data is suitable for further regression analysis.

**Multicollinearity Test**

Multicollinearity testing aims to identify whether there is a high correlation among the independent variables in the regression model. High multicollinearity can lead to unstable regression estimates, making it difficult to accurately interpret the effect of each variable. In this study, multicollinearity detection was performed by examining the Tolerance values and Variance Inflation Factor (VIF). If the Tolerance value is greater than 0.10 and the VIF is less than 10, it can be concluded that no multicollinearity exists. Conversely, if the Tolerance is less than 0.10 and/or the VIF is greater than 10, it indicates the presence of multicollinearity. The results of the multicollinearity test are presented in the table below:

**Table 3.3 Multicollinearity Test Results**

| Variable | Tolerance | VIF |
|---|---|---|
| Firm Size (X1) | .797 | 1.254 |
| ROA (X2) | .942 | 1.062 |
| DER (X3) | .832 | 1.202 |
| Earnings Management (Z) | .935 | 1.069 |
| Dependent Variable: Bond Ratings | | |

Source: Processed Data, 2025

Based on the table above, all independent variables have Tolerance values above 0.10 and VIF values below 10, so it can be concluded that there are no symptoms of multicollinearity in this regression model. Thus, the independent variables are suitable for use in further regression analysis.

**Heteroscedasticity Test**

Heteroscedasticity testing is conducted to determine whether there is unequal variance in the residuals of the regression model. The classical regression assumption requires that residuals have constant variance (homoscedasticity). The test is performed using the Glejser test, which involves regressing the absolute values of the residuals against the independent variables. If the significance value (Sig.) is greater than 0.05, it indicates the absence of heteroscedasticity. Conversely, if the Sig. value is less than 0.05, it suggests the presence of heteroscedasticity.

**Table 3.4 Heteroscedasticity Test Results**

| Variable | Sig |
|---|---|
| Firm Size (X1) | .987 |
| ROA (X2) | .123 |
| DER (X3) | .565 |
| Earnings Management (Z) | .763 |

Source: Processed Data, 2025

Based on the test results shown in Table 3.4, all independent variables have significance values above 0.05, namely: Firm Size (0.987), ROA (0.123), DER (0.565), and Earnings Management (0.763). Therefore, it can be concluded that there is no evidence of heteroscedasticity in this regression model, making the model suitable for further testing.

**Autocorrelation Test**

Autocorrelation testing is used to determine if there is a correlation between the residuals of one observation and others in the regression model. Presence of autocorrelation violates linear regression assumptions and affects model validity. This study uses the Run Test, a non-parametric method, with a significance value (Asymp. Sig.). If the value is greater than 0.05, the residuals are random, indicating no autocorrelation. If less than 0.05, autocorrelation is present.

**Table 3.5 Autocorrelation Test Results**

| Runs Test | |
|---|---|
| Test Value[a] | -.01408 |
| Cases < Test Value | 52 |
| Cases >= Test Value | 53 |
| Total Cases | 105 |
| Number of Runs | 62 |
| Z | 1.668 |
| Asymp. Sig. (2-tailed) | .095 |

Source: SPSS output, 2025

Based on the test results in Table 3.4, the Asymp. Sig (2-tailed) value obtained was 0.095, which is greater than 0.05. Thus, it can be concluded that there is no autocorrelation in this regression model, and the residuals are randomly distributed.

**Linearity Test**

Linearity testing is conducted to determine whether there is a linear relationship between the independent and dependent

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variables in the regression model. The linearity assumption must be met for the regression estimates to be valid and accurate. In this study, linearity testing is performed by examining the coefficient of determination (R Square) of the regression model.

**Table 3.6 Linearity Test Results**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .242[a] | .059 | .021 | .489 |

Predictors: (Constant), Earnings Management (Z), DER (X3), ROA (X2), Firm Size (X1)

Source: Processed Data, 2025

The table shows an R2 value of 0.059 with 105 observations, so the calculated c2 value is 105 x 0.059 = 6.195. This value is compared with the c2 table with df = 105 and a significance level of 0.05, resulting in a c2 table value of 129.561. Since the calculated c2 value is smaller than the table c2 value, it can be concluded that the correct model is the linear model.

## STATISTICAL TESTING

### Path Analysis

Path analysis is used to test direct relationships between variables in the research model and to measure the simultaneous effects of each independent variable on the dependent variable. In this study, path analysis is conducted in two stages: first, to examine the effects of firm size, Return on Assets (ROA), and Debt to Equity Ratio (DER) on bond ratings; second, to test the effects of firm size, ROA, DER, and bond ratings on earnings management.

**Table 3.7 Path Analysis Results 1**

| Research Variable | Coefficients | t Statistic | Significance Value |
|---|---|---|---|
| (Constant) | -.901 | -.901 | .370 |
| Firm Size (X1) | 4.074 | 1.273 | .206 |
| ROA (X2) | .002 | .819 | .415 |
| DER (X3) | 3.354 | 1.422 | .158 |

Dependent Variable: Bond Ratings

Source: Processed Data, 2025

Table 3.7 shows the results of testing the effect of firm size, ROA, and DER on bond ratings as dependent variables. The resulting equation is as follows:

a. The significance value (Sig.) for the Firm Size variable is (0.206) > 0.05, so it can be concluded that the Firm Size variable does not have a significant effect on the Bond Rating variable.
b. The significance value (Sig.) for the DER variable is (0.415) > 0.05, so it can be concluded that the DER variable does not have a significant effect on the Bond Rating variable.
c. The significance value (Sig.) for the ROA variable is (0.158) > 0.05, so it can be concluded that the ROA variable does not have a significant effect on the Bond Rating variable.

**Table 3.8 Path Analysis Results 2**

| Research Variable | Coefficients | t Statistic | Significance Value |
|---|---|---|---|
| (Constant) | -1.057 | -1.031 | .305 |
| Firm Size (X1) | .046 | 1.403 | .164 |
| ROA (X2) | .002 | .810 | .420 |
| DER (X3) | .034 | 1.420 | .159 |
| Earnings Management (Z) | .001 | .724 | .471 |

Dependent Variable: Bond Ratings

Source: Processed Data, 2025

Table 3.8 shows the results of the Path Analysis of the above equation, from which the following conclusions can be drawn:

a. Given that the significance value of the Firm Size variable is 0.164 < 0.05, it can be concluded that the Firm Size variable does not have a direct significant effect on the Bond Rating variable.
b. Given that the significance value of the ROA variable is 0.420 > 0.05, it can be concluded that the ROA variable does not have a direct significant effect on the Bond Rating variable.
c. Given that the significance value of the DER variable is 0.159 > 0.05, it can be concluded that the DER variable does not have a direct significant effect on the Bond Rating variable.
d. The significance value of the Earnings Management variable is 0.471 > 0.05, so it can be concluded that the Earnings Management variable does not have a direct significant effect on the Bond Rating variable.

### Correlation and Determination Coefficient ($R^2$)

Correlation Coefficient Analysis (R Test) is used to measure the strength of the relationship between the independent and dependent variables simultaneously. The correlation coefficient (R) ranges from 0 to 1, with values closer to 1 indicating a stronger relationship between the analyzed variables. Coefficient of Determination Test (R Square or $R^2$) measures the extent to which independent variables can explain the variation in the dependent variable within a regression model. $R^2$ values range from 0 to 1, and the higher the $R^2$ value, the greater the proportion of variation in the dependent variable that can be explained by the independent variables.

**Table 3.9 Correlation and Determination Coefficient ($R^2$)**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .242[a] | .059 | .021 | .489 |

Predictors: (Constant), Earnings Management (Z), DER(X3), ROA (X2), Firm Size (X1)
Dependent Variable: Bond Ratings

Source: Processed Data, 2025

Table 3.9 Correlation Coefficient Test Results (R Test) shows that the R value is 0.242. This indicates a relationship between Firm Size, ROA, DER, and Earnings Management on Bond Rating of 0.239. This value is between the coefficient interval of 0.20–0.399, which means a low level of relationship.

Based on Table 3.9 Determination Coefficient Test Results, the R Square value obtained was 0.059 or 5.9%, indicating that the independent variables (firm size, ROA, DER, and earnings management) were only able to explain 5.9% of the variation in the dependent variable (bond rating). The remaining 94.1% is explained by other factors outside the scope of this study. The adjusted R Square value of 0.021 indicates that after adjusting

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for the number of variables and samples, the model can only explain approximately 2.1% of the total data variation. This indicates that the model's explanatory power for bond ratings is very low.

**Simultaneous Test (F Test)**

The F-test is used to determine whether all independent variables in the model have a significant simultaneous effect on the dependent variable. In the context of this study, the F-test is conducted to examine whether the variables of firm size, ROA, and DER collectively influence the bond rating.

**Table 3.10 Simultaneous Test Results Equation 1**

| Model | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|
| Regression | 1.362 | .454 | 1.908 | .133[b] |
| Residual | 24.029 | .238 | | |

Dependent Variable: Bond Ratings
Predictors: (Constant), DER (X3), ROA (X2), Firm Size (X1)

Source: Processed Data, 2025

Based on Table 3.10 Simultaneous Test Results (F Test), the significance value (Sig.) obtained was 0.133, which is greater than the significance level of 0.05. This indicates that simultaneously, the variables of firm size, ROA, and DER do not have a significant effect on bond ratings. Therefore, the regression model constructed is not strong enough to explain the simultaneous relationship between the three independent variables and the dependent variable.

**Table 3.11 Simultaneous Test Results Equation 2**

| Model | Sum of Squares | Mean Square | F | Significance |
|---|---|---|---|---|
| Regression | 1.487 | .372 | 1.555 | .192[b] |
| Residual | 23.903 | .239 | | |

Dependent Variable: Bond Ratings
Predictors: (Constant), Earnings Management (Z), DER (X3), ROA (X2), Firm Size (X1)

Source: Processed Data, 2025

Based on Table 3.11, the significance value (Sig.) obtained is 0.192, which is greater than the significance threshold of 0.05. This indicates that simultaneously, the four independent variables do not have a significant effect on bond ratings. Thus, the regression model in the second equation is not yet able to significantly explain the variation in bond ratings based on the variables used in this study.

**Partial Test (t Test)**

The t test is conducted to analyze the impact of each independent variable on the dependent variable separately. In this study, the t test is used to test how Firm Size, Return on Assets (ROA), and Debt to Equity Ratio (DER) affect bond ratings, both before and after considering the earnings management variable as a mediator.

**Table 3.11 Partial Test Results of Equation 1**

| Research Variable | Coefficients | t Statistic | Significance Value |
|---|---|---|---|
| (Constant) | -.901 | -.901 | .370 |
| Firm Size (X1) | 4.074 | 1.273 | .206 |
| ROA (X2) | .002 | .819 | .415 |
| DER (X3) | 3.354 | 1.422 | .158 |

Dependent Variable: Bond Ratings

Source: Processed Data, 2025

Based on the table, it can be seen that the influence of the independent variables Firm Size, ROA, and DER on the dependent variable Bond Rating can be seen by comparing the significance values, namely:

a. The results of the t-test between the Firm Size variable and Bond Rating show a significance value for the Firm Size variable of 0.206 >0.05. This can be concluded that Firm Size does not have a significant effect on Bond Rating.
b. The results of the t-test between ROA and Bond Rating show a significance value for ROA of 0.415 > 0.05. This can be concluded that ROA does not have a significant effect on Bond Rating.
c. The results of the t-test between the DER variable and Bond Rating show a significance value for the DER variable of 0.158 > 0.05. This can be concluded that ROA does not have a significant effect on Bond Rating.

**Table 3.12 Partial Test Results of Equation 2**

| Research Variable | Coefficients | t Statistic | Significance Value |
|---|---|---|---|
| (Constant) | -1.057 | -1.031 | .305 |
| Firm Size (X1) | .046 | 1.403 | .164 |
| ROA (X2) | .002 | .810 | .420 |
| DER (X3) | .034 | 1.420 | .159 |
| Earnings Management (Z) | .001 | .724 | .471 |

Dependent Variable: Bond Ratings

Source: Processed Data, 2025

The table above shows the results of the partial influence test (t-test), which produced sig values that can be interpreted as follows:

a. The results of the t-test between the Firm Size variable and Bond Rating show a probability (sig) of 0.164 > 0.05, which means that Firm Size with Earnings Management as the intervening variable does not have a partial effect on Bond Rating.
b. The results of the t-test between the ROA variable and Bond Rating show a probability (sig) of 0.420 > 0.05, which means that ROA with Earnings Management as the intervening variable does not have a partial effect on Bond Rating.
c. The results of the t-test between the DER variable and Bond Rating show a probability (sig) of 0.159 > 0.05, meaning that DER with Earnings Management as an intervening variable does not have a partial effect on Bond Rating.

## IV. CONCLUSIONS

Based on the results of research conducted on the influence of firm size, Return on Assets (ROA), and Debt to Equity Ratio (DER) on bond ratings with earnings management as an intervening variable, several conclusions can be drawn. First, no significant influence was found, either directly or indirectly (through intervening variables), from firm size, ROA, and DER on bond ratings. This is evidenced by the results of the Sobel test, which showed that the Z-value for each variable was less than 1.96. Second, the results of the correlation coefficient (R)

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test showed a value of 0.242, which falls into the low correlation category, meaning that the relationship between the independent variables and bond ratings is not very strong. Third, the results of the coefficient of determination ($R^2$) test show that the variables of firm size, ROA, DER, and earnings management can only explain 5.9% of the variation in bond ratings, while the Adjusted $R^2$ value of 2.1% indicates that this model is very weak in explaining bond ratings, with most of the variation influenced by other factors not included in the model. Fourth, the results of the F test (simultaneous) indicate that both in the first equation (without intervening variables) and the second equation (with intervening variables), the model is not significant. This means that firm size, ROA, DER, and earnings management do not collectively influence bond ratings. Fifth, the t-test (partial) results for both equations also show that each independent variable (with or without intervening variables) does not have a significant effect on bond ratings. Based on the results of this study, several suggestions can be made for further research and practitioners. First, for future researchers, it is recommended to add other more relevant variables that may influence bond ratings, such as liquidity, interest rates, operating cash flow, or asset structure. Additionally, it is suggested to consider using alternative methods such as logistic regression or panel data analysis if the data used is longitudinal. Second, for issuers or bond-issuing companies, although financial variables such as firm size, ROA, and DER do not have a significant impact, it is important to maintain financial performance and transparency in reporting. Rating agencies also tend to consider non-financial and qualitative factors in determining bond ratings. Third, for investors, it is recommended not to rely solely on specific financial ratios when assessing bond ratings. External factors such as macroeconomic conditions, industry stability, and the reputation of the bond issuer's management should also be considered. Fourth, for rating agencies, a more comprehensive approach is needed in the bond rating process. Qualitative aspects and other financial indicators that are more sensitive to default risk should be the primary considerations.

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