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Analysis of the Determinants of Corporate Bond Yields in the Basic Materials Sector Listed on the IDX in 2022-2025

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Abstract

Corporate bond yield determines both the funding cost of issuers and the return required by investors, yet the evidence on its determinants remains inconsistent. This study analyzes the effects of bond rating, interest rate, and maturity on the yields of corporate bonds in the basic materials sector listed on the Indonesia Stock Exchange (IDX) from 2022 to 2025. A quantitative approach with secondary data was used. The population comprises 229 corporate bonds issued by 13 companies, and the sample consists of 109 bonds from 11 issuers selected through purposive sampling. Data were collected through documentation from the Indonesian Bond Market Directory (IBMD) and the BI Rate data of Bank Indonesia, and were analyzed using classical assumption tests, multiple linear regression, the t-test, the F-test, and the coefficient of determination in SPSS 22. The results show that bond rating has a negative and significant effect on bond yield ($B = -0.006$, $\text{Sig.} = 0.000$), while interest rate ($B = 0.005$, $\text{Sig.} = 0.000$) and maturity ($B = 0.003$, $\text{Sig.} = 0.000$) have positive and significant effects. Simultaneously, the three variables significantly affect bond yield ($F = 23.058$, $\text{Sig.} = 0.000$). The Adjusted R Square of 0.380 indicates that 38% of the variation in bond yield is explained by the model, while the remaining 62% is explained by other factors outside the model. These findings imply that issuers and investors should assess rating, benchmark interest rate, and maturity jointly when pricing and selecting corporate bonds.

I. INTRODUCTION

The capital market plays a strategic role for companies and investors in the financial system and in national economic development (Kusriyanto & Nelmda, 2019). Among the instruments traded, bonds are debt securities that provide fixed income in the form of coupons as well as repayment of the principal at maturity (Listiwati & Paramita, 2018). For investors, bonds are an investment alternative whose rate of return and risk need to be analyzed carefully.

This study focuses on corporate bonds in the basic materials sector. This sector supplies key inputs to various industries and therefore holds an important position in the supply chain. Bond return, or yield, is an important indicator for investors in assessing profit and risk. Yield to maturity (YTM) is used as a measure of a bond's rate of return and tends to fluctuate with changes in bond prices and market conditions (Andrian & Paramita, 2024).

The data show that the average yield of corporate bonds in the basic materials sector fluctuated during 2022-2025, namely 8.77% in 2022, rising to 9.37% in 2023, and then declining to 9.21% in 2024 and 8.44% in 2025 (Fig. 1). These fluctuations indicate that changes in economic and market conditions can affect the rate of return received by investors.

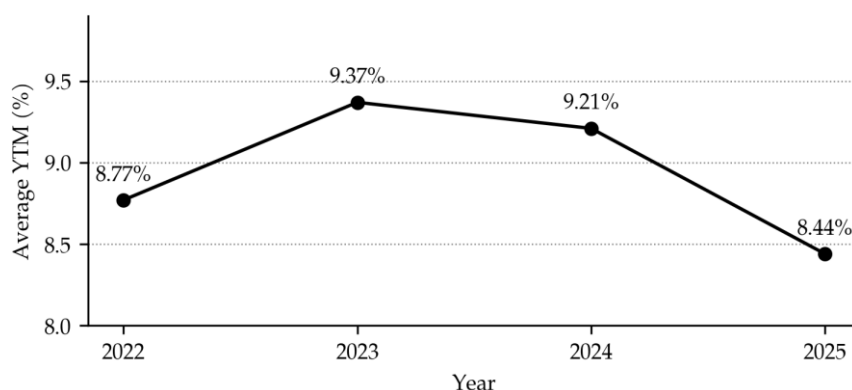


Fig. 1. Average yield to maturity (YTM) of basic materials corporate bonds, 2022-2025

Three factors are suspected to affect bond yield: bond rating, interest rate, and maturity. Bond rating provides information about default risk; the higher the rating, the lower the credit risk, so investors tend to demand a lower yield. Interest rates affect yield through changes in bond prices, since an increase in interest rates generally pushes bond prices down and raises yield. A longer maturity involves greater uncertainty and risk, which can prompt investors to ask for a higher yield.

However, previous studies have shown inconsistent results. Several studies found that bond rating has a negative effect on yield, interest rate has a positive effect, and maturity has a positive effect, whereas other studies found different results. These differing findings form the basis for re-examining the relationship among the three variables for corporate bonds in the basic materials sector in the 2022-2025 period.

This study contributes to the literature in two ways. First, to the authors' knowledge, relatively few studies examine bond rating, interest rate, and maturity jointly for a single sector of the Indonesian corporate bond market, namely basic materials, using recent data. Second, it interprets the results through signalling theory, linking the three variables to the information that investors use to assess risk and required return. Accordingly, this study aims to analyze the effect of bond rating, interest rate, and maturity on the yield of corporate bonds in the basic materials sector listed on the IDX in 2022-2025, both partially and simultaneously. The findings are expected to help issuers manage funding costs and to help investors evaluate the risk and return of corporate bonds.

A. Literature Review and Hypothesis Development

Signalling theory explains that information conveyed by companies or related parties can serve as a signal for investors in reducing uncertainty in investment decision-making (Gama et al., 2024). In this study, bond rating, interest rate, and maturity are viewed as information that shapes investor perceptions of bond risk and rate of return.

Bonds are debt securities issued by governments or companies to obtain funding (Suriyanti & Hamzah, 2024). Bond return, or yield, is the rate of return expected by investors. One commonly used measure is yield to maturity (YTM), which, according to Adnyana (2020), is the rate of return obtained if the bond is held until maturity.

Bond rating is an assessment of credit quality and of the issuer's ability to meet its obligations (Otoritas Jasa Keuangan, 2019). A higher rating indicates a lower default risk, so investors tend to accept a lower yield, whereas a lower rating indicates a higher risk and can increase the required yield. Previous studies report a negative relationship between rating and yield (Ahmad & Wahyudiani, 2019; Ramadhan et al., 2020; Yuliah et al., 2020). Therefore:

H1: Bond rating has a negative and significant effect on bond yield.

Interest rate is a macroeconomic factor that affects the bond market, including bond prices, the coupons paid by issuers, and the returns received by bondholders (Sitorus, 2015). An increase in the benchmark interest rate can lower bond prices and thereby raise yield, while a decrease pushes bond prices up and lowers yield. A positive relationship has been reported by Fauzani and Yahya (2017), Listiawati and Paramita (2018), and Sari and Rahyuda (2019). Therefore:

H2: Interest rate has a positive and significant effect on bond yield.

Maturity is the number of years from the time a bond is issued until it matures, or the date set for repaying the bond's par value (Brigham & Houston, 2019). The longer the maturity, the greater the uncertainty and risk borne by investors, so the yield offered tends to be higher; bonds with a shorter maturity carry lower risk and uncertainty and therefore offer a relatively lower yield. This positive relationship is supported by Simu (2017), Kusriyanto and Nelmida (2019), and Ratnasari et al. (2023). Therefore:

H3: Maturity has a positive and significant effect on bond yield.

Because rating, interest rate, and maturity provide complementary signals about risk and required return, they are expected to jointly explain bond yield:

H4: Bond rating, interest rate, and maturity simultaneously have a significant effect on bond yield.

Fig. 2 summarizes the research framework and the hypothesized relationships.

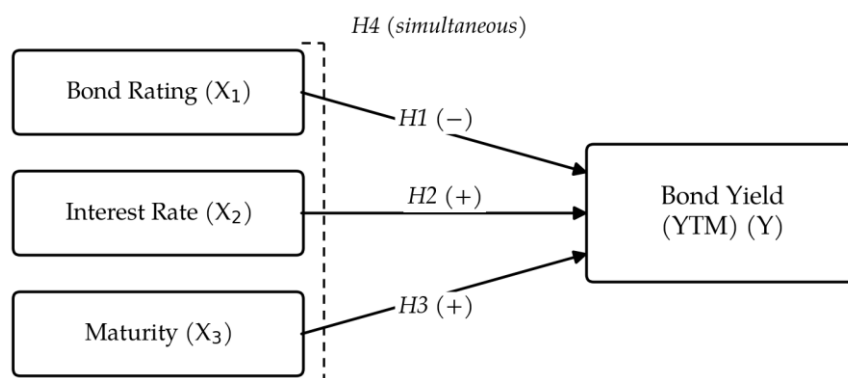


Fig. 2. Research framework

II. METHOD

This study uses a quantitative approach. The population is all corporate bonds in the basic materials sector listed on the IDX during 2022-2025, totaling 229 bonds issued by 13 companies. The sample, selected through purposive sampling according to the sampling criteria, consists of 109 bonds from 11 issuing companies.

The data are secondary data. They were collected using the documentation technique through the Indonesian Bond Market Directory (IBMD) on the official website of the Indonesia Stock Exchange and the BI Rate data from Bank Indonesia.

The dependent variable is bond yield (Y), measured by yield to maturity (YTM). The independent variables are bond rating (X₁), represented by a numerical rating score; interest rate (X₂), represented by the BI Rate; and maturity (X₃), measured as the number of years from issuance until maturity. The operationalization of the variables is summarized in Table I.

TABLE I. OPERATIONALIZATION OF VARIABLES

Variable	Symbol	Measurement
Bond Yield	Y	Yield to maturity (YTM), expressed as a decimal
Bond Rating	X ₁	Numerical score representing the bond rating
Interest Rate	X ₂	BI Rate (Bank Indonesia benchmark interest rate), in percent
Maturity	X ₃	Number of years from issuance until maturity

Source: Processed by the authors (2026)

Before the regression was interpreted, the model was checked against the classical assumptions. Multicollinearity was assessed using tolerance and variance inflation factor (VIF) values, heteroscedasticity was examined through the significance of the residual-based test for each independent variable, and autocorrelation was tested using the Run Test after correcting the model with the Cochrane-Orcutt procedure. The partial effect of each independent variable was then tested with the t-test, the simultaneous effect with the F-test, and the explanatory power of the model with the coefficient of determination.

The analysis was carried out using SPSS 22 and covered descriptive statistics, classical assumption tests (multicollinearity, heteroscedasticity, and autocorrelation), multiple linear regression, the t-test, the F-test, and the coefficient of determination. The regression model is specified as $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$, where Y is bond yield (YTM), X₁ is bond rating, X₂ is interest rate (BI Rate), X₃ is maturity, and e is the error term. Hypotheses were tested at the 0.05 significance level.

III. RESULTS AND DISCUSSION

This section presents the descriptive statistics, the classical assumption tests, the regression results and hypothesis tests, and a discussion of the findings in light of previous studies.

A. Descriptive Statistics

Table II presents the descriptive statistics of the 109 valid observations.

TABLE II. DESCRIPTIVE STATISTICS

Variable	N	Minimum	Maximum	Mean	Std. Deviation
YTM (Y)	109	0.07	0.11	0.0899	0.01070
Bond Rating (X ₁)	109	5	10	5.99	0.967
BI Rate (X ₂)	109	4.00	6.10	5.4395	0.75157
Maturity (X ₃)	109	1	10	4.12	1.704

Source: SPSS 22 output (data processed, 2026)

The YTM ranges from 0.07 to 0.11 with a mean of 0.0899 (about 8.99%) and a standard deviation of 0.01070, indicating that yields are fairly closely clustered around the mean. Bond rating has a minimum value of 5 and a maximum of 10 with a mean of 5.99. The BI Rate has a minimum value of 4.00 and a maximum of 6.10 with a mean of 5.4395. Maturity has a minimum value of 1 and a maximum of 10 years with a mean of 4.12 years.

B. Classical Assumption Tests

The classical assumption tests show that the regression model meets the analysis requirements. As shown in Table III, all tolerance values are above 0.10 and all VIF values are below 10, so no multicollinearity is present. The heteroscedasticity test yields significance values of 0.791, 0.479, and 0.119, all above 0.05, so no symptoms of heteroscedasticity were found. The autocorrelation test after the Cochrane-Orcutt procedure produced a Run Test significance value of 0.699 (> 0.05), so the residuals are considered random.

TABLE III. MULTICOLLINEARITY TEST RESULTS

Variable	Tolerance	VIF
Bond Rating (X_1)	0.892	1.121
BI Rate (X_2)	0.885	1.130
Maturity (X_3)	0.795	1.258

Source: SPSS 22 output (data processed, 2026)

C. Regression Results and Hypothesis Testing

Table IV reports the results of the multiple linear regression analysis together with the partial test (t-test). With 109 observations and three independent variables, the degrees of freedom are 105 ($109 - 3 - 1$), so the critical t value at the 0.05 significance level (two-tailed) is approximately 1.983. A hypothesis is accepted when the absolute calculated t exceeds the critical t and the significance value is below 0.05.

TABLE IV. MULTIPLE LINEAR REGRESSION AND T-TEST RESULTS

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	0.084	0.008	—	10.071	0.000
Bond Rating (X_1)	-0.006	0.001	-0.532	-6.630	0.000
BI Rate (X_2)	0.005	0.001	0.359	4.459	0.000
Maturity (X_3)	0.003	0.001	0.523	6.156	0.000

Dependent variable: Bond Yield (YTM). Source: SPSS 22 output (data processed, 2026)

Based on Table IV, the following regression equation is obtained:

$$Y = 0.084 - 0.006X_1 + 0.005X_2 + 0.003X_3 + e$$

Because YTM is expressed as a decimal, the coefficients can be read as follows. Holding the other variables constant, each one-point increase in the rating score is associated with a decrease of about 0.006 (0.6 percentage points) in YTM, each one-percentage-point increase in the BI Rate with an increase of about 0.005 (0.5 percentage points), and each additional year of maturity with an increase of about 0.003 (0.3 percentage points). All three variables are significant (Sig. = 0.000 < 0.05), so H1, H2, and H3 are accepted. Judging by the standardized coefficients, bond rating ($\beta = -0.532$) and maturity ($\beta = 0.523$) have a similar and larger influence than the BI Rate ($\beta = 0.359$).

The simultaneous test (F-test) and the coefficient of determination are presented in Table V. The calculated F value of 23.058 exceeds the critical F value of approximately 2.69 (df = 3 and 105; $\alpha = 0.05$), with a significance of 0.000 (< 0.05), so H4 is accepted. The Adjusted R Square of 0.380 means that bond rating, interest rate, and maturity together explain 38.0% of the variation in bond yield, while the remaining 62.0% is explained by other factors outside the research model.

TABLE V. F-TEST AND COEFFICIENT OF DETERMINATION

Test	Value	Sig.	Remarks
F-test	23.058	0.000	Significant
R Square	0.397	—	39.7%
Adjusted R Square	0.380	—	38.0%

Source: SPSS 22 output (data processed, 2026)

Table VI summarizes the results of the hypothesis testing.

TABLE VI. SUMMARY OF HYPOTHESIS TESTING

Hypothesis	Relationship	Test statistic	Sig.	Decision
H1	Bond Rating → Bond Yield (negative)	B = -0.006; t = -6.630	0.000	Accepted
H2	Interest Rate → Bond Yield (positive)	B = 0.005; t = 4.459	0.000	Accepted
H3	Maturity → Bond Yield (positive)	B = 0.003; t = 6.156	0.000	Accepted
H4	X ₁ , X ₂ , X ₃ simultaneously → Bond Yield	F = 23.058	0.000	Accepted

Decision rule: accepted if Sig. < 0.05. Source: SPSS 22 output (data processed, 2026)

D. Discussion

Bond rating and bond yield. Bond rating has a regression coefficient of -0.006 with a calculated t of -6.630 and a significance of 0.000. Because the calculated t falls within the rejection region of H_0 and the significance is below 0.05, H1 is accepted: bond rating has a negative and significant effect on bond yield. This means that the higher the bond rating, the lower the yield demanded by investors. From the perspective of signalling theory, a high rating conveys a positive signal about the issuer's financial condition and a low default risk, so investors do not demand an excessively high return. This result is in line with Yuliah et al. (2020), Ahmad and Wahyudiani (2019), and Ramadhan et al. (2020). Its standardized coefficient is the largest in absolute terms, marginally ahead of maturity, which suggests that credit quality is the most influential signal for yield in this sector.

Interest rate and bond yield. The interest rate has a regression coefficient of 0.005 with a calculated t of 4.459 and a significance of 0.000, indicating that the interest rate has a positive and significant effect on bond yield, so H2 is accepted. An increase in the BI Rate can lower bond prices because investors have more attractive alternative instruments. To attract investor interest again, bond issuers tend to offer a higher yield. The results of this study are consistent with Sari and Rahyuda (2019), Listiawati and Paramita (2018), and Fauzani and Yahya (2017).

Maturity and bond yield. Maturity has a regression coefficient of 0.003 with a calculated t of 6.156 and a significance of 0.000. Thus, maturity has a positive and significant effect on bond yield, and H3 is accepted. The longer the time to maturity, the greater the uncertainty and risk borne by investors, so the yield offered is higher as compensation for that risk. The results of this study are supported by Ratnasari et al. (2023), Kusriyanto and Nelmida (2019), and Simu (2017).

Simultaneous effect. The F-test shows that bond rating, interest rate, and maturity simultaneously have a significant effect on the yield of corporate bonds in the basic materials sector, so H4 is accepted. The three variables provide complementary signals to investors: rating reflects default risk, the interest rate describes macroeconomic conditions and the required rate of return, while maturity reflects the investment time horizon and uncertainty. The Adjusted R Square of 0.380 indicates that a considerable part of the variation in yield is still explained by factors outside the model, which is common in studies of market-based yields.

Implications. The findings have practical implications for both parties in the bond market. For issuers in the basic materials sector, maintaining a strong rating is associated with a lower required yield and therefore a lower cost of debt, while the choice of maturity and the timing of issuance relative to the BI Rate can be used to keep funding costs efficient. For investors, a high-rated bond with a short maturity issued in a low-rate environment is associated with a lower yield, but also with lower perceived risk; therefore, the required yield should be evaluated against rating, benchmark rate, and tenor together rather than in isolation.

IV. CONCLUSIONS

Based on the research results, it can be concluded that (1) bond rating has a negative and significant effect on bond yield; (2) interest rate has a positive and significant effect on bond yield; (3) maturity has a positive and significant effect on bond yield; and (4) bond rating, interest rate, and maturity simultaneously have a significant effect on the yield of corporate bonds in the basic materials sector listed on the IDX in 2022-2025. The Adjusted R Square of 0.380 shows that the model explains 38% of the variation in bond yield.

Theoretically, the findings support signalling theory by showing that rating, interest rate, and maturity are all taken into account by investors as signals of risk and required return. For companies, it is recommended to maintain and improve bond ratings through good financial performance management and to pay attention to the determination of coupon rates and maturity so that funding costs remain efficient. For investors, information on rating, interest rate, and maturity should be considered together, while paying attention to market timing in bond transactions.

This study has several limitations. It covers only the basic materials sector over four years (109 bonds from 11 issuers), includes only one macroeconomic variable, and leaves 62% of the variation in yield unexplained. Future researchers are encouraged to extend the research period, to expand the coverage to corporate bonds on the IDX outside the basic materials sector, and to add other variables, such as coupon, liquidity, inflation, or issuer characteristics examined in previous studies (Listiwati & Paramita, 2018; Sari & Rahyuda, 2019).

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