

# Analysis of the Effect of Fundamental and Maturity Factors on Yield to Maturity of Corporate Bonds Traded on the Indonesia Stock Exchange in 2020

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## ABSTRACT

The volume of corporate bond issuance in Indonesia has fluctuated from 2015-2020 following the economic developments. The Covid 19 pandemic in 2020 caused declining in companies issuing bonds. The pandemic led a big impact on the bond market. Low key interest rates decrease the return obtained in bond investment. The economic slowdown has pushed the central bank of Indonesia cut the key rates from 5% to 3.75% in 2020. The lower key rates will cause an increase in bank loans then the government can control economic growth and inflation rate.

Partially, the study aims to analyze the effect of the current ratio, debt to equity, return on assets, total assets, and maturity on the yield to maturity of bonds traded on the Indonesia Stock Exchange (IDX) in 2020. Quantitative methods with an associative approach are used as research methods. 302 corporate bonds issued by 69 companies took into a sample in this study. The sampling method used purposive judgment sampling. Data analysis of the proposed hypothesis used the multiple linear regression method by using the SPSS version 24 program. The research found that there was a significant effect among the return on assets, total assets, and maturity variables on the bond's yield. However, the current ratio and debt to equity variables were found to have no effect on the yield to maturity of all corporate bonds traded on the IDX in 2020.

**Keywords:** Current Ratio, Debt to Equity Ratio, Maturity, Return on Asset, Total Asset, Yield to Maturity.

**Submitted:** August 13, 2022

**Published:** September 22, 2022

**ISSN:** 2507-1076

**DOI:** 10.24018/ejbmr.2022.7.5.1627

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## I. INTRODUCTION

A capital market is a certain place for investors and debtor parties to meet each of interests. The debtors aim to offer their securities to the investors since they need fund for operation or investment. The capital market will act as intermediary institution for the parties (Tandelilin, 2011). It shows the main role of capital market in supporting economic growth by integrating the fund needed by the debtors and the investors as capitalist. Bonds are known as securities traded in the capital market. The bond issuer will offer certain rate of interest called coupon that will be paid periodically along the bond's tenor and the issuer will repay the nominal value of bonds to the investors at maturity date. The volume of corporate bond issuance in Indonesia fluctuated from 2015-2020 following with economic developments. The Covid 19 pandemic in 2020 has caused big impact in economic and number the companies issuing bonds decrease drastically. The decline in companies issuing bonds was also followed by the decrease of amount and value of bond issuance.

The corona virus pandemic has a significant impact on the corporate bond market. Investors' risk appetite for corporate bonds has declined since the pandemic. The weakening of economy has forced Bank Indonesia as central bank to reduce the key interest rate from 5% to 3.75% in 2020. The lower

interest rate will affect the increase amount of bank loans from companies and citizens then the government can sustain the economy growth and control the inflation rate. The lower key of interest rate ofcourse will decrease the yield obtained by bond investors. Eventhough the issuance of corporate bonds decreased drastically, but bond issuances in the second semester of 2020 increased when compared to the issuance of bonds in the first semester. This was triggered by the lower of interest rates and many companies necessary to refinance their maturing debt securities (Kontan.co.ic, 2020). This indicates that bonds are still widely acceptable and chosen to finance and finally give contribution to the bond market development.

There are a lot of reasons why investors prefer bonds over stocks. First, the return on bonds is usually fixed then this will minimize the risk of loss. The other reason is due to the issuer bankruptcy, bond investors will have privilege to be prioritized over other creditors (Listiwati, 2018). The bond investors will earn return from coupon rate that we call yield. The yield will vary along the time since the interest rates fluctuated and affect the market price of the bonds. The return also will come from difference market price of bond when traded (Samsul, 2016). Yield to maturity (YTM) is the total return that investors will earn start from purchasing date and hold until maturity. YTM is commonly used to consider the

return since the yield shows the return in total expected by the investor. YTM can be influenced by the current ratio (CR), debt to equity ratio (DER), return on assets (ROA), total assets, and maturity.

CR as liquidity ratio will in relation with the company ability to meet its short-term obligations at maturity. Paramita (2018) reveals that CR can affect the YTM of bonds. DER is a ratio that compare between amount of debt and equity. This ratio is used to determine each fund of principal used as loan collateral (Kasmir, 2014:157). ROA is a ratio that reflects the return obtain by operating total company assets. Bond prices should fluctuate following the ROA achievement.

Total Assets can be treated as the size of a company. The large companies have a lower default risk than small companies. Another factor that affects the YTM of a bond is the bond maturity. The maturity or tenor is the term of time since the investors hold the bond until the maturity date (Keown *et al.*, 2009). Therefore, for investors who intend to have greater control over the changes of bond prices, it is advisable to choose bonds with lower coupon rates and longer maturities. If investors expect the increase of interest rates, they should choose bonds with higher coupons or shorter maturities, because by choosing bonds with larger coupons or shorter maturities. As the reseach of Che-Yahya *et al.* (2016), Siregar and Pratiwi (2020) that said maturity had a positive effect to YTM og bond.

## II. LITERATURE REVIEW

The current ratio (CR) is a ratio that describe the company's capability to pay its obligations. Langkun and Rusgowanto (2022) say that the liquidity ratio is the company's ability to pay off the short-term debt in a timely manner. Liquidity can increase the credibility of the company and generate positive investor sentiment. Liquidity reflects the company manager performance, how they maintain working capital and finally decrease the default risk. The company with better CR could offer the bond with lower yield since the company have shown certainty ability to pay coupon and redeem the maturity value. This inline with research of Sangi (2020) and Meriska (2021) stated that CR has negative influence to YTM of bonds. The different results of research were found by Zulfa (2020) and Hamid (2019) that stated CR had no effect on bond's YTM.

H1: There is a negative influence of CR on YTM of bonds.

The debt to equity ratio (DER) is the ratio used to estimate leverage level of debt compared with shareholder equity. The higher DER shows debt composition is higher than the equity. This ratio shows the credit quality of the company. When the company's debt level is high, debt payments increase and it becomes more difficult for companies to get into another loan because lack of fund to repay interest and principal (Dayanti and Janiman, 2019). In other words, this ratio is a determinant of each amount of equity used for debt collateral (Kasmir, 2014). This is similar with research of Sangi and Setyawan (2020), Adam and Nuary (2020), and Che-Yahya *et al.* (2016) that stated DER has positive influence Bond's YTM.

The contrary results found by Putri and Andati (2020) and

Latif and Marsoem (2019) that stated DER had no effect to bonds's YTM.

H2: There is a positive influence of DER on YTM of bonds.

Return on Assets (ROA) is a metric that shows the return level obtain by operating all assets of the company. ROA measures the effectiveness of management in managing operation asset to achieve certain income. The lower of ROA, the worse it is and vice versa. ROA is also known as economic rentability, which contain a company's ability to generate profits from all of its assets. The more profitable a company is, then it can be said the ability to fulfill its obligations. This reduces the risk of default so then the bond yield offered colud be lower. Research by Latif and Marsoem (2019) found that ROA had a negative effect on bond yields, while Weniasti and Marsoem (2019), and Giovanni and Saadah (2018) found that ROA had no effect on yields.

H3: There is a negative effect of return on assets on the yield to maturity of bonds

According to Fauzan (2020), total assets are a scale to measure big and small company level with certain term that could be total assets owned, *log size* and stock market price. Fluctuation of asset amount could affect to bond market price. The big company that operates high amount of asset will offer lower yield of bond since assumption the big company has lower risk of default than the small one. Listiawati and Paramita (2018) said that the larger the size of the company indicates the presence of the company, the greater the company's assets increase the opportunity to obtain maximum profit and be able to compete in the industry. This can help investors predict the possible risks of investing in the company. The previous research by Sangi *et al.* (2020), and Weniasti and Marsoem (2019) stated that company size had negative effects on bond's YTM. At the other side, the research of Listiati and Paramitha (2018) and Meliyanti and Ferikawita (2020) said that company size had no effect to bond's YTM.

H4: There is a negative effect of total assets on YTM of bonds.

Maturity or tenor of the bond showing the period of time since the bond is issued to bond holders until the bond expires or redeemed (Keown *et al.*, 2009). The bond market price will much differ for bond with longer tenor caused of interest rates fluctuation. For this reason, for investors who want to have greater control over changes in bond prices, it is advisable to choose bonds with lower coupon rates and longer maturities. But if investors expect an increase in market interest rates, investors should choose bonds with higher coupons rates or shorter maturities, because choosing bonds with larger coupons or shorter maturities will result in several percentage points fall in price (Tandelilin, 2011, p. 160). This is in accordance with the research of Che-Yahya *et al.* (2016), Siregar and Pratiwi (2020) and Dayanti and Janiman (2019) that stated maturity had positive effect on bond yield, whereas by Fauzany and Windy (2017) and Putri and Andati stated the

maturity had no effect on bond's yield.

H5: There is a positive effect of maturity on bond's YTM.

Based on the development of hypotheses, a framework of thought can be defined in Fig. 1.

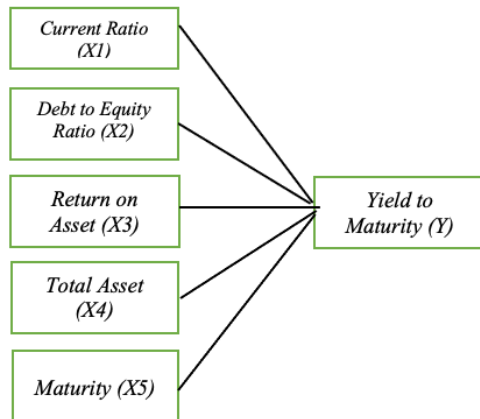


Fig. 1. Framework.

### III. METHODOLOGY

The research method utilizes a quantitative method with an associative approach. The associative approach is research with the aim of identifying patterns or relationships between two or more variables (Sugiyono, 2016, p. 11). This study analyzes the effect of CR, DER, ROA, Total Assets, and Maturity on YTM of bonds.

The population in this study is all conventional corporate bonds traded on the IDX in 2020. The sample consist of 302 corporate bonds issued by 65 companies. The sample was determined by the purposive sampling technique. The sample criteria are:

1. Conventional corporate bonds traded in 2020.

TABLE I: OPERATIONALIZATION OF RESEARCH VARIABLES

Variable	Variable Concept	Size	Scale
Current Ratio (X1)	Comparison between current assets against current debt	$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}$	Ratio
Debt to Equity Ratio (X2)	Comparison between total amount of debt to total equity	$DER = \frac{\text{Total Debt}}{\text{Equity}}$	Ratio
Return on Asset (X3)	Comparison between total net profit to total assets	$ROA = \frac{\text{Net Profit}}{\text{Total Asset}}$	Ratio
Total Asset (X4)	Wealth (total assets) owned by a company	Total Asset = LN Total Asset	Ratio
Maturity (X5)	The length of time from the issuer of the bond to the bondholder and the expiration of the bond	Year	Ratio
Yield to Maturity Obligation (Y)	The compound rate of return that investors will receive if they buy bonds at the current market price and hold the bonds until maturity	$YTM = \frac{Ci + \frac{Pp - P}{n}}{\frac{Pp + P}{2}}$	Ratio

TABLE II: NORMALITY TEST RESULTS; ONE-SAMPLE KOLMOGOROV-SMIRNOV TEST

	Unstandardized Residual	
N	-	302
Normal Parameters <sup>a,b</sup>	Mean	0,0000000
-	Std. Dev	0,01640552
Most Extreme Differences	Absolute	0,042
-	Positive	0,042
-	Negative	-0,028
Test Statistics	-	0,042
Asymp.Sig. (2-tailed)	-	0,200 <sup>c,d</sup>

Source: Results of Data Processing with SPSS 24 (2022).

2. Pay coupons in a fixed amount (fixed rate).
3. Companies stock sold to public (go public).
4. Companies that issue bonds have complete financial statements during the period of research.

Data was collected by utilizing the documentation method, Secondary data such as CR, DER, ROA are obtained and base on the financial statements of companies listed on the IDX in 2020 (www.idx.co.id). Meanwhile, data on corporate bonds traded in 2020 is based on data from The Indonesia Capital Market Institute (TICMI) as the central reference for the Indonesian Capital Market. The hypothesis test uses multiple linear regression method with the SPSS version 24 program. Multiple linear regression was used to find the effect of five independent variables on the dependent variable. Before hypothesis test, the classical assumption test is carried out first so that the BLUE (best linear unbiased estimator) or best linear estimator is not biased. Therefore, in testing a hypothesis, it is necessary to avoid deviations from the classical assumptions by applying the data normality, multicollinearity, heteroscedasticity tests. Only after receiving normal data, the hypothesis is tested by partial test (t-test), f-test (simultaneous), and coefficient of determination (R<sup>2</sup>).

### IV. RESULTS AND DISCUSSION

#### A. Classical Assumption Test

Classical assumption testing is carried out before hypothesis testing because the purpose of this test is to identify, validate, and ensure whether or not the normal regression variable model is used in the study. The classic assumption check is described in Table II.

TABLE III: MULTICOLLINEARITY TEST RESULTS

Coefficients <sup>a</sup>			
Collinearity Statistics			
	Model	Tolerance	VIF
1	(Constant)	-	-
	CR	0,653	1,532
	DER	0,609	1,642
	ROA	0,673	1,485
	TOTAL ASSET	0,610	1,639
	MATURITY	0,836	1,196

Source: Results of Data Processing with SPSS 24 (2022).

TABLE IV: HETEROSCEDASTICITY TEST RESULTS

Variable	Sig.	Conclusion
CR	0,882	Heteroscedasticity does not occur
DER	0,210	Heteroscedasticity does not occur
ROA	0,260	Heteroscedasticity does not occur
TOTAL ASSET	0,341	Heteroscedasticity does not occur
MATURITY	0,423	Heteroscedasticity does not occur

Source: Results of Data Processing with SPSS 24 (2021).

Obtained the value of Asymp. Sig. (2-tailed) 0.20. The significance value is above 0.05 and the conclusion is that the residual data is normally distributed. Furthermore, a multicollinear test was carried out to see if there was a correlation in the correlation regression model. The test results are as shown in Table III.

In the variable CR, DER, ROA, Total assets and maturity, the tolerance value is > 0.10 and the VIF value is below 10. The results show no correlation or there is no multicollinearity. The presence of heteroscedasticity can be determined using the Gletser test. In the Gletser test, mixed error regression is performed for all the independent variables that are expected. The results of the heteroscedasticity test are presented in Table IV.

The variable CR, DER, ROA, Total Assets and Maturity are free from heteroscedasticity issue since the sig value is found greater than 0.05.

*B. Hypothesis Test*

The following steps were taken to validate the research hypothesis: Hypothesis testing using t-test (t-test) and F-test. The use of t-test and F-test in research is to determine the effect of each independent variable on the dependent variable, and to see the effect of the independent variable simultaneously on the dependent variable. Obtained test results are presented in Table V.

The CR variable obtains a regression coefficient of 0.000 with a significance (Sig.) of 0.809 > 0.05. Since Sig > = 0.05,

it means the 1st hypothesis is rejected and CR has no effect on bond's YTM. Then the DER variable obtained a regression coefficient of 0.000 with a significant (Sig.) 0.438 > 0.05. means the second hypothesis is rejected, DER has no effect on bond's YTM. Furthermore, the ROA variable obtained a regression coefficient value of -0.094 with a significance (Sig.) 0.017 < 0.05, means the third hypothesis is accepted, ROA has a negative effect on bond's YTM. The total asset variable obtained a regression coefficient of -0.005 with a significant (Sig.) 0.000 < 0.05, means that the fourth hypothesis is accepted, total assets had a negative effect on the bond's YTM. Finally, for the maturity variable, the regression coefficient value is 0.002 with a significance (Sig.) of 0.00 < 0.05 means that the 5th hypothesis is accepted. It is concluded that maturity has a positive effect on bond's YTM. Then the results of the F test analysis are shown in the table presented in Table VI.

Referring to the results of the F model test, the F value is 10,245 > the f table value is 2,245 with a significant level of 0.000 or < 0.05 so that the 6th hypothesis is accepted. It can be said that CR, DER, ROA, Total Assets and Maturity simultaneously have an effect on bond's YTM.

The results of the Coefficient of Determination (R2) are described in Table VII.

It was found that the Adjusted R-Square value from the determination coefficient test was 0.133, which means that the bond's YTM can be explained by CR, DER, ROA as 13,3% while the remaining 86,7% could be explained by other variables exclude this research.

*C. Discussion*

The CR had no effect on bond yield can be explained due to the sufficient condition on average liquidity level of the companies. This result contrary with the hypothesis test that stated CR has negative effect on bond's yield. The results show that most of the companies assumed have their own corporate value on investors side. How much more, all the companies in this research include in investment grade rating that means have strong capability to pay the liabilities.

TABLE V: MULTIPLE REGRESSION TEST RESULTS

Model	Unstandardized Coefficients			Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.	
1	(Constant)	0,209	0,026	-	8,115	0,000
	CR	0,000	0,001	-0,016	-0,242	0,809
	DER	0,000	0,000	0,053	0,777	0,438
	ROA	-0,094	0,039	-0,157	-2,393	0,017
	Total Aset	-0,005	0,001	-,373	-5,434	0,000
	Maturity	0,002	0,001	0,264	4,492	0,000

Source: Results of Data Processing with SPSS 24 (2022).

TABLE VI: F TEST RESULTS (SIMULTANEOUS TEST)

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	0,014	5	0,003	10,245	0,000 <sup>b</sup>
	Residual	0,081	296	0,000	-	-
	Total	0,095	301	-	-	-

Source: Results of Data Processing with SPSS 24 (2022).

TABLE VII: COEFFICIENT OF DETERMINATION TEST RESULTS (R<sup>2</sup>)

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	0,384 <sup>a</sup>	0,148	0,133	0,0165435

Source: Results of Data Processing with SPSS 24 (2022).

Strong capability does not solely rely on liquidity factors. The ability to gain margin, assets owned and the warranty from holding company are the factors should be considered. With the factors stated above, companies are deserved to issue new securities to cover the payable due date. This occurs in 2020 when many companies issue new securities to refinance the expired debt. The liquidity along Covid 19 pandemic period faced by all parties without exception and can be defined as forced major conditions, Economic recovery program and distribution and effectiveness of Corona vaccine will increase investors trust to invest in bonds. This is the reason why CR had no effect on bond's yield. This result is in line with the findings of Putri *et al.* (2020), Simu (2017), Syamsu and Endri (2022), Susanti and Permana (2017) and Hamid *et al.* (2019) that stated when fluctuation of liquidity occurs but no effect on bonds yield.

The increase in DER does not affect on bonds yield. Large business usually operates in stable market and well-established experience. Various types of finance are used to restructure expired debt. From track record history, they have ability to provide securities to finance fix assets for anticipating market growth. Central Bank of Indonesia (BI) cut rates to 3,75% from 5% to support economic recovery regarding Covid-19 pandemic. It will encourage public to have cheaper loans to stimulate sustain economy. DER did not make as determinant factor influence the bond yield, investment grade rating and stimulus package increase investors belief. These facts inline with research of Putri *et al.* (2020), Hendrayadi *et al.* (2021), Siregar *et al.* (2020) who found that there was no effect of DER on bonds YTM.

The negative effect between ROA and bond yields indicates company's ability to continue earn profit and to meet its obligations. Comparing return to the assets owned indicates company existence. Investors identify company's ROA to determine whether it is risky or make sense to invest. The rising ROA indicates the companies well managed and get more profit, whereas the falling ROA can mean the company fail to achieve revenue growth from an invested asset.

The previous research by Latif and Marsoem (2019) and Danti *et al.* (2021) states that ROA metric had negative effect and significant to YTM of bonds. The higher ROA value means the company has the ability to manage its debt securities.

One of the ways for investors consideration to invest is by looking the total assets operated by the company. Total assets reflect the company size. The company size can be defined with total capital, income, and total assets. When investors put their investment in bonds portfolio, they should able to measure risk and return of the companies. Large entities usually become market leaders in industry and globally focus.

A similar study by Hendaryadi *et al.* (2018) obtained a negative effect of firm size on bond yields to maturity. The companies have positive image of ability to meet their long and short-term obligations. Therefore, large companies offer lower yields, as well as guarantees in terms of payment to investors. The similar research by Latif and Marsoem (2019) stated that large companies assumed achieve more gain and easier to get finance by asset guarantee.

The bond maturity variable has a positive impact on bond yields. The longer term bond, the higher return of bond holder

expect. The magnitude of the change in interest rates will cause investment losses. When market rates rise above coupon rates, the bond prices will decline and vice versa. The long term bond more risky than the short term bond. Therefore, the bond issuer offer higher coupon rates to compensate the long term bond.

This is in accordance with the findings of Sari *et al.* (2019) and Dayanti and Janiman (2019) in their research found a positive effect of maturity on bond's YTM.

## V. CONCLUSION

Referring to the research, it is concluded that:

1. Current Ratio and Debt to Equity Ratio donot affect the Yield to Maturity of corporate bonds traded in Indonesia Stock Exchange in 2020.
2. Return on assets has a negative effect on the YTM of corporate bonds traded on the Indonesia Stock Exchange in 2020. The company's ability to generate returns on the assets operated is the main factor influencing investors' considerations. For conservative investors who avoid risk (risk averse) and prioritize the level of security over the profits generated, it is necessary to pay attention to corporate bonds with high ROA, since ROA reflects the company's ability to pay its obligations. However, aggressive investors (risk takers) tend to seek high returns and are willing to take risks in investing in corporate bonds with low ROA (junk bonds).
3. Total assets have a negative effect on the YTM of corporate bonds traded on the Indonesia Stock Exchange in 2020. Total Assets describes the size of the company. With a larger company scale, it will generate higher profits and it is easier to obtain funds from the market. This gives a signal to investors about the company's ability to pay its obligations.
4. Maturity has a positive effect on the YTM of corporate bonds traded on the Indonesia Stock Exchange in 2020. The longer term bonds, the greater risk of changes in interest rates that can affect bond prices.
5. This study uses regression analysis with cross-sectional data with research samples of corporate bonds traded in 1 (one) year, 2020. Further research is recommended to take data from several years with a larger sample using panel data regression which is a combination of between cross section data and time series data.
6. This study uses 5 independent variables. The adjusted R square value of the five variables is 13.3% that means there are still 86.7% of other variables can affect the YTM of bonds. Further research should pay attention to other economic factors as research variables such as sales growth, inflation rates and others.

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