The Effect of Bonds Rating, Profitability, Leverage, and Firm Size on Yield to Maturity Corporate Bonds

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Abstract:- This study aims to analyze the effect of bonds rating, return on assets (ROA), debt to equity ratio (DER) and firm size on corporate bond Yield to Maturity (YTM). The research population consisted of corporate bonds traded on the Indonesia Stock Exchange for the period 2015-2017. The sample selection technique is done by purposive sampling. The research sample consisted of 67 corporate bonds issued by 29 companies from all sectors except the banking and financial sectors. The method of research analysis used is descriptive statistics and Random Effect Model (REM) panel data regression. The results showed partially that the Bond Rating and Firm Size variables had a significant negative effect on YTM, while the ROA and DER variables had no effect on YTM. The implication of this research is that companies need to improve performance and bond ratings to maintain investor confidence. In addition, the company also needs to increase its total assets so that it is easier to find external funding sources through the issuance of bonds. This is because both of them proved to have an effect on YTM. For further research, it is expected to be able to examine other variables that affect YTM because the coefficient of determination of this study is 19.59%, which means there are 80.41% variations in YTM bonds which are explained by other variables outside the research.

Keywords:- Bond Rating, Return on Asset, Debt to Equity Ratio, Firm Size, Yield to Maturity.

I. INTRODUCTION

The capital market is an activity related to public offerings and securities trading of public companies relating to securities issued. Capital markets are said to have economic functions because they provide facilities that bring together two interests, namely those who have excess funds (investors) and those who need funds (issuers) and as financial functions because capital markets provide the possibility and opportunity to get return for the appropriate fund owners with the characteristics of the chosen investment (Darmadji and Fakhruddin, 2001). The capital market can be an alternative to raising funds other than the banking system through bonds.

The Indonesia Stock Exchange (IDX) data shows that in general market, participants believe that the corporate bond market in Indonesia is quite promising. The value of corporate bonds experienced a significant increase starting in 2011-2017. This condition indicates that the market confidence in Indonesian bonds is quite high.
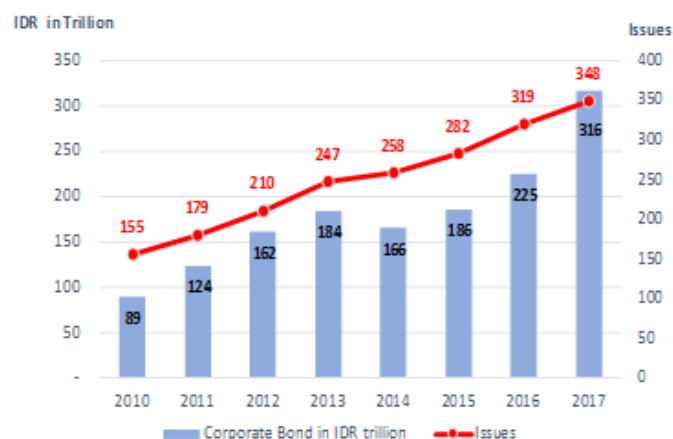

Fig 1:- Chart of Value and Issues of Corporate Bonds

Fig. 1 shows an increase in the value of corporate bonds in 2015 by 12% from Rp166 trillion to Rp186 trillion, in 2016 it rose 21% to Rp225 trillion and a very significant increase occurred in 2017 at 41% to Rp316 trillion. This increase was followed by an increase in the number of bonds issued by corporations starting in 2010 as many as 155 until 2017 there were 348 issues. This trend indicates that corporate bonds are beginning to be widely traded in Indonesia. Investors' interest in corporate bonds is higher because corporate bond yields are also high and the income given by bonds tends to be fixed, so the risk of losses that investors will receive is low. According to Tandelilin (2010), yield is the most important factor as a consideration for investors in purchasing bonds as an investment instrument. As an investment instrument, changes in bond yields obtained by investors will experience changes over time. Therefore both investors and companies should always pay attention to the factors that influence changes in bond yields. This phenomenon is very interesting to further analyze what factors affect corporate bond yields.

During the period 2015-2017, the average yield of corporate bonds from all sectors (except the financial sector) experienced a declining trend from 2015 at 10.5% to 9.82% in 2016 and 9.46% in 2017. There are several factors affected the fluctuations in bond yields. External factors namely macroeconomics such as inflation and

interest rates and internal factors, namely bond ratings and company performance.

The profitability ratio of the company is used to see the ability of the company based on profit generated from the total assets owned by the company, while the leverage ratio shows the risk of the distribution of business profits of the company absorbed to pay off the company's debt obligations (Surya and Nasher, 2011). Thus, companies that have a very large debt level can influence their ability to pay debts and influence bond yields. Firm size can be used to represent the company's financial characteristics. Companies with total large assets are considered to have good prospects in a relatively long period of time, besides that it also reflects the condition of companies that are relatively more stable and more capability to generate profits than companies with small total assets. Investors in the corporate bond market must be aware of the risk that companies may not be able to pay for coupons or principal (default risk).

This research is focused on obtaining empirical evidence of the effect of corporate financial performance on the Yield To Maturity bonds issued by companies as measured by bond ratings, profitability, leverage and firm size as independent variables. These variables were chosen because of differences in the result of previous studies.

The results of the study by Situmorang (2017), Zohrotun and Baridwan (2006) state that bond ratings do not affect YTM bonds, in contrast to Ibrahim's (2018), Fristi, et al (2015), Surya and Nasher (2011), Thompson and Vaz (1990) which states that bond ratings have a significant negative effect on YTM bonds. While the Lady and Halim research (2015) states that bond ratings have a significant positive effect on YTM bonds.

Laeli (2010) and Fahrudin (2018) state that profitability has no effect on YTM bonds, in contrast to Fristi's research results, et al. (2015) stating that profitability has a significant negative effect on YTM bonds. The results of the study contradict Wibowo (2016) which states that it has a positive effect on YTM bonds.

The results of research on leverage against YTM also show different results. The study of Situmorang (2017) and Laeli (2010) shows that leverage does not affect YTM bonds, in contrast to Ibrahim (2008), Surya and Nasher (2011), Hapsari (2013), Lady and Halim (2015) who found that leverage has a significant positive influence to YTM. While the results of Listiawati (2018) and Wibowo's (2016) research show that leverage has a significant negative effect on YTM.

Research on the effect of firm size on YTM carried out by Situmorang (2017), Laeli (2010), Listiawati (2018) found that the size of the company had no effect on YTM, contrary to the results of the Hapsari (2013), Lady and Halim (2015) study which stated that the size of the company has a significant positive effect on YTM, also different from the results of Ibrahim's (2008), Thompson

and Vaz (1990), Wibowo (2016) which states that firm size has a significant negative effect on YTM.

Based on the description of the background above, the main problems that will be discussed, namely:

➢ Does the Bond Rating affect the Corporate Bond Yield To Maturity listed on the Indonesia Stock Exchange?
➢ Does Profitability affect the Corporate Bond Yield To Maturity listed on the Indonesia Stock Exchange?
➢ Does Leverage affect the Yield To Maturity of Corporate Bonds listed on the Indonesia Stock Exchange?
➢ Does the Company Size affect the Corporate Bond Yield To Maturity listed on the Indonesia Stock Exchange?

II. LITERATURE REVIEW

A. Agency Theory

Agency Theory firstly stated by Jensen and Meckling (1976) explaining the relationship between the principal and agent, where the owner and shareholders of the company are principals while the management acts as an agent. Agency theory emphasizes the importance of delegating authority from the principal to the agent, where the agent has the obligation to manage the company in accordance with the interests of the principal. To be able to function properly, the management must be given adequate intensive supervision. Supervision can be done through ways of binding agents, checking financial statements, and limiting decisions that can be taken by management. Monitoring of activities of course require a fee called agency costs.

B. Asymetric Information Theory

Asymetric Information explained that information inequality occurs if one party from a transaction has more or better information than the other party (George Arkelof, 1970). The parties related to the company have unequal information about the prospects and risks of the company. Bond investors need information that can be used as a reference in communicating investment decisions, so that financial information of a quality business entity is needed as a responsibility for managing the funds invested. Information such as bond rating is considered very important for investors because it can be used to decide whether the bond is worth investing and knowing the level of risk.

C. Signaling Theory

Signaling Theory explains that corporate executives have better information and tend to provide that information to prospective investors (Ross, 1973). According to Brigham and Houston (2011), signal theory is an action taken by a company to provide guidance to investors about how management observes the company's prospects. Information of bond ratings published is expected to be a signal of the company's financial condition and describe the possibilities that occur related to the debt held (Sari, 2007).

D. Bond

According to Gitman (2003) bonds are long-term debt instruments that indicate that a company has borrowed a certain amount of money and promises to pay it in the future with conditions that have been determined, namely maturity time, coupon interest and interest payment period. The Indonesia Stock Exchange defines bonds as transferable medium-long term debt that contains promises from the issuing party to pay compensation in the form of interest for a certain period and pay off the debt principal at a specified time to the buyer of the bond. In simple terms, bonds are securities issued by issuers to investors (bondholders), where the issuer will give a return in the form of a coupon paid regularly and the principal when the bond falls its maturity date (Adler, Desmon, Wilson; 2007).

E. Yield to Maturity

Yield To Maturity (YTM) is defined as the level of compound returns that investors will receive if the bond buyer is at the current market price and holds the bond to maturity. YTM is a measure of yield that is widely used because the yield reflects the return of the compounded rate of return expected by the investor assuming that the investor maintains the bond up to the maturity date and the investor reinvests the income earned from the bond at the YTM level produced (Tandelilin, 2001).

F. Bond Rating

Bond rating is a symbolic statement given by a rating agent to indicate the risk of a bond. The bond rating is an opinion about the credit worthiness of the bond issuer based on relevant risk factors. According to Baker and Mansi (2001) bond ratings are indicators of the timeliness of payment of principal and interest on debt bonds. Bond ratings are updated regularly to reflect significant changes in the company's financial and business performance. Bond ratings can change, be delayed or withdrawn as a result of changes in the company's debt repayment capacity (Tandelilin, 2010: 251).

G. Profitability

The profitability ratio aims to measure or assess the company's ability to obtain profits through various activities carried out by the company. In this study the profitability ratio used is Return on Asets (ROA). According to Brotman (1989) and Bouzoita Young (1998) that the higher the level of profitability of the company, the lower the risk of default and the better the rating given to the company.

H. Leverage

Leverage ratio is the ratio used to measure the extent to which a company's activities are financed by debt. The leverage ratio used in this study is the Debt to Equity Ratio (DER), which is a financial ratio that shows the proportion of entity capital and debt used to finance the assets of an entity.

I. Firm Size

Firm size is a benchmark that shows the size of a company can be measured based on total sales, average sales and total assets (Ferry and Jones, 1979 in Panjaitan,

2004). The size of the company in this study is measured by the total assets of the company. The definition of total assets is all resources controlled by the company as a result of past transactions and are expected to provide economic benefits for the company in the future (Indonesian Accountant Association).

Based on the formulation of the problem and the empirical studies that have been done, the hypothesis can be drawn as follows:

➢ H1: Bond rating has a negative effect on YTM bonds.

The worse the rating of a bond, the higher the rate of return that investors will demand for a bond. Low-rated bonds will provide a high coupon rate, whereas high-rating bonds indicate that the quality of the bonds is good so they can provide a low coupon rate (Darmawan; 2007) This is because the higher the bond rating means the issuing company has a performance that is considered good so the default risk is low. The negative correlation between bond ratings to YTM is supported by the results of research by Thompson and Vaz (1990), Bhojraj and Sengupta (2003), Purnamawati (2013), Ibrahim (2008), Sari and Abudanti (2015), and Fahrudin (2018) who states that bond ratings have a negative and significant effect on bond yields.

➢ H2: Profitability has a negative effect on YTM bonds.

Profitability can be used to predict the yield of a bond. A profitable company will offer a strong guarantee for the benefit of investors that the principal debt will be paid and cause the risk of default to be lower so that the yield offered becomes lower (Restuti, 2007). The negative correlation between profitability and YTM is supported by the results of Fristi's research (2018) and Che-Yahya (2016) which state that the profitability has a negative and significant effect on bond yields.

➢ H3: Leverage has a positive effect on YTM bonds.

Companies with relatively high debt ratios will offer higher returns in normal economic situation. This is as compensation because companies with higher debt levels tend to have a high risk of return on investment. With the use of debt which is getting bigger, it will lead to the higher risk of not being able to pay debts (Indra, 2006). The greater the level of risk, the greater the benefits implied (Sartono, 2001). Thus, the greater the debt (DER), the higher the expected yield. This positive correlation is clarified by the results of Ibrahim (2008), Surya and Nasher (2011), Hapsari (2013), Ziebart and Reiter (1992) and Che-Yahya (2016) who stated that DER has a positive and significant effect on bond yields.

➢ H4: Firm size has a negative effect on YTM bonds.

The influence of company size on business risk finds that the size of the company influences business risk. Small companies have a higher risk and return than large companies. Companies that have large total assets will offer low bond yields because large-scale companies have a small risk compared to small companies because they are considered to have good prospects in a relatively long period of time, are more stable and more capable to generate

profits than companies with total assets the small one (Ibrahim, 2008). The negative correlation is supported by the results of the study by Purnamawati (2013), Aisah (2010), Thompson and Vaz (1990) which state that the size of the company has a negative and significant effect on bond yields.

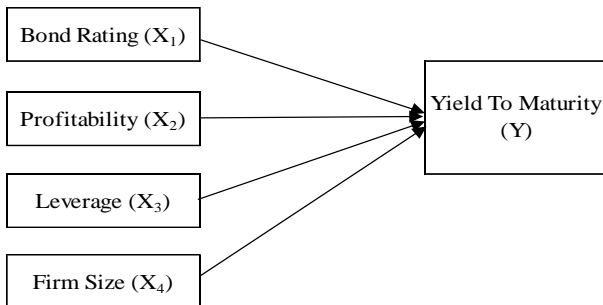The schema of this research model can be described as follows:

Fig 2:- Research Model

III. METHODOLOGY

This study aims to examine the effect of independent variables namely bond ratings, profitability, leverage, and firm size on the dependent variable, YTM. Bond rating measurement is based on letter symbol statements issued by securities rating agency (PT Pefindo). Ranking classification is used based on research sample data, where the lowest rating is BBB and the highest rating is AAA. Since bond rating data is on an ordinal scale, it is necessary to convert the data into an interval scale to meet the requirements of the regression equation. The transformation method used in this study is Method of Successive Interval (MSI), refers to previous research by Praptiningsih (2015), Pratiwi (2017), Sayekti and Nugraha (2014).

Profitability ratio is proxied by Return on Assets (ROA), Leverage ratio is proxied by Debt to Equity Ratio (DER), Firm Size measured by logaritma natural of total assets and YTM calculated by YTM approximation.

The population in this study are corporate bonds traded on the Indonesia Stock Exchange (IDX) during 2015-2017. The sampling method was done by purposive sampling based on the criteria set by the researcher and obtained a sample of 67 corporate bonds issued by 29 companies. The criteria used in selecting samples are:

- Corporate bonds traded on the Indonesia Stock Exchange (IDX) during year 2015-2017 and issued by companies from all industrial sectors (except the financial sector).
- Corporate bonds that are still outstanding and have not yet matured so that data on the applicable bond prices can be obtained.
- Corporate bonds pay a fixed coupon rate so there is no floating rate effect on bond yields.

- Companies that submit annual financial reports in full in the 2015-2017 accounting period.
- Corporate bonds listed in the bond rating issued by PT. Pefindo during the period 2015-2017

The data used in this study are secondary data obtained from the Indonesia Stock Exchange, PT Pefindo, Indonesia Bond Pricing Agency (IBPA), PT Indonesian Central Securities Custodian (KSEI).Data analysis method used to test the effect of independent variables on the dependent variable using panel data regression. The significant level determined in this study is $\alpha = 5\%$, meaning the possibility of the truth of the results of the conclusion drawn has a probability of 95%.

IV. RESULTS AND DISCUSSION

The type of data used in this study is panel data, which is a combination of time series data and cross-sectional data. Time series data for the period 2015-2017 while cross-sectional data is 67 corporate bonds.The dependent variable in this study is YTM while bond rating (RATING), ROA, DER, Firm Size (SIZE) are the independent variables. A descriptive statistical analysis was carried out to obtain an overview of these variables.

A. Descriptive Statistic

Variable	YTM	RATING	ROA	DER	SIZE (IDR Trillion)
Mean	0.0993	3.049	0.0345	1.75	175.62
Maximum	0.1229	4.341	0.1648	7.15	1,334.96
Minimum	0.0798	1.000	- 0.2448	0.33	1.75
Std. Dev.	0.0083	0.946	0.0517	1.01	391.93
N	201	201	201	201	201

Table 1:- Descriptive Statistics on Variables YTM, RATING, ROA, DER, SIZE 2015-2017

Based on table 1, the result descriptive statistical test shows that the number of data samples (N) is 201 data. The minimum YTM value of 0.0798 comes from ROTI01CN1 bonds issued by PT Nippon Indosari Corporindo Tbk (2017) and YTM with a maximum of 0.1229 originating from MDLN01BCN1 bonds issued by PT Modernland Realty Tbk (2015). During 2015-2017 the mean YTM of 0.0993 indicates that the interest rate or yield expected by investors to maturity is 9.93% of the nominal value of bond issuance. The mean YTM shows that investment through corporate bonds is enough to provide a high return prospect. The standard deviation of YTM is smaller than the mean value indicating the data is homogeneous and has a low deviation rate.

The higher the bond rating on an ordinal scale, the higher the value on the interval scale. The lowest value comes from bonds issued by PT Perkebunan Nusantara X, PT Tiga Pilar Sejahtera Food Tbk, PT PP Tbk and PT Express Trasindo Utama Tbk with BBB bond ratings (2017). While the maximum value of RATING comes from the bonds of PT Perusahaan Listrik Negara, PT Indosat Tbk,

and PT Telekomunikasi Indonesia Tbk with AAA bond ratings. The mean RATING indicates that the average company in the research sample has a rating of A + and AA- bonds. The small standard deviation of the mean value shows the data is homogeneous and has a low deviation rate.

The minimum ROA value of -0.2448 comes from PT Express Trasindo Utama Tbk (2017) where the company lost Rp492 billion. While the maximum ROA value of 0.1648 comes from PT Telekomunikasi Indonesia Tbk (2017) with profits earned in 2017 of Rp32.70 trillion. ROA illustrates the extent to which the company's asset capabilities are able to generate profits. ROA with a negative value means that the company is not able to maximize the use of total assets owned to generate profits. The higher the ROA ratio shows the management efficiency in managing company assets. Standard deviation and the mean show that the data deviation is not too large, which means that the variable fluctuations in the ROA data are not too high.

Descriptive statistical analysis of DER variable showed a very significant increase. The minimum DER value of 0.3297 comes from PT Perkebunan Nusantara X (2015). While the maximum DER value of 7.15 comes from PT Express Trasindo Utama Tbk (2017). During 2015-2017, the mean DER was 1.74 which means that on average the sample companies issuing bonds had debts of 1.74 times of their own capital (equity) owned by the company. The DER value above number 1 indicates that companies tend to use debt as a source of corporate funding. The standard deviation is smaller than the mean value indicating the data is homogeneous and has a low deviation rate.

The variable size of the company is measured based on the total assets of the company in trillion rupiahs. The minimum value of Rp1,746 trillion comes from total assets owned by PT Panorama Sentrawisata (2015). While the maximum value of Rp1,334.96 trillion comes from the total assets of PT Perusahaan Listrik Negara Tbk (2017). According to Law No. 20 of 2008 the classification of firm size is based on the total assets of the company. The average value of Rp175.62 trillion means that the companies included in the research sample are classified as large companies. The standard deviation is greater than the mean value indicating a high level of deviation. Excessive data fluctuations occur because the value of the variable uses a large unit of trillion rupiah. For processing the data, then the firm size variable is transformed into natural logarithms without changing the proportion of the actual value.

B. Stationary Tests
Before doing the modeling it is necessary to know whether the data used is stationary or not. The unit root test method is used to find out the stationary data, namely the Augmented Dickey Fuller (ADF) test.

Variable	t-statistic	Test critical values 1%	Prob.	Test for unit root in
YTM	-3.7906	-3.464101	0.0036	level
RATING	-3.8525	-3.463235	0.0029	level
ROA	-4.2712	-3.463576	0.0007	level
DER	-18.8381	-3.463405	0.0000	first difference
SIZE	-15.0298	-3.463235	0.0000	first difference

Table 2:- Stationary Test on Variables

Table 2 shows the results of the stationary test output where the variable YTM root test, RATING and ROA performed at the level which have a p-value <0.05 and the ADF t-statistic value is smaller than the critical value of 1%, 5%, 10% so that the data said to be stationary. While the DER and SIZE variables pass the stationary test at first difference level.

C. Selecting the Panel Data Regression Model
In panel data regression, model selection can be done using three methods of approach. The approach methods are the Common-Constant Model, Fixed Effect Method, and Random Effect Method. The selection of the right model can be done by testing the three models, namely the Chow test, the Hausman Test, and the Lagrange Multiplier Test.

Test	Statistic	Prob.	Selected Model
Chow Test	349.2413	0.0000	Fixed Effect
Hausman Test	6.036833	0.1964	Random Effect
Lagrange Multiplier Test	47.16503	0.0000	Random Effect

Table 3:- Chow Test, Hausman Test and LM Test

A Chow test is carried out to determine whether the Common Effect or Fixed Effect model is more appropriate to use. Chow test results indicate that the probability value is 0.0000 (p-value <0.05) then it can be concluded that the Fixed Effect model is more appropriate than the Common Effect model for this study.

Hausman test as a statistical test to choose the model whether the Fixed Effect and Random Effect models are the most appropriate. Hausman test results indicate that the probability value is 0.1964 (p-value> 0.05), it can be concluded the right model used is the Random Effect model.

The Lagrange Multiplier test is performed to find out whether the Random Effect Model is better than the Common Effect Model. Tabel 3 indicates the probability value of 0.0000 (p-value <0.05) so that it can be concluded from this test that the right model to use is the Random Effect model.

Based on the three tests performed, the Random Effect model is more appropriate to be used for this study.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.110108	0.002881	38.21695	0.0000
RATING	-0.004289	0.000938	-4.573338	0.0000
ROA	0.004322	0.011889	0.363484	0.7168
DDER	-0.001280	0.000644	-1.987517	0.0490
DSIZE	-0.010255	0.003604	-2.845645	0.0052

Effects Specification		
	S.D.	Rho
Cross-section random	0.007474	0.8493
Idiosyncratic random	0.003148	0.1507

Weighted Statistics			
R-squared	0.195974	Mean dependent var	0.027511
Adjusted R-squared	0.171042	S.D. dependent var	0.003485
S.E. of regression	0.003173	Sum squared resid	0.001299
F-statistic	7.860620	Durbin-Watson stat	1.929839
Prob(F-statistic)	0.000011		

Unweighted Statistics			
R-squared	0.121656	Mean dependent var	0.096384
Sum squared resid	0.008770	Durbin-Watson stat	0.285745

Table 4:- Results of Data Panel Regression with Random Effect Model (REM)

The regression equation as follows:

$$YTM_{it} = \alpha + \beta_1 RATING_{it} + \beta_2 ROA_{it} + \beta_3 D(DER_{it}) + \beta_4 D(SIZE_{it}) + \varepsilon_{it} \; ; \; \varepsilon_{it} = u_i + v_t + w_{it}$$

Hence the panel data regression equation model can be formulated as follows:

YTM = 0.0110108 –0.004289 RATING + 0.004322 ROA – 0.001280 DDER –0.010255 DSIZE

D. Panel Data Regression Analysis
The coefficient of determination (R-squared) on the Random Effect Model is 0.195974 means that 19.59% of the YTM variations can be explained by changes in the RATING, ROA, DER, and SIZE variables. While the remaining 80.41% is explained by other factors outside the research variables.

Random Effect Model F test in Table 4 show that the F-statistic is 7.860620 greater than the F table value (= 2.44) and the p-value of 0.000011 is smaller than the 0.05 significance level so it can be concluded that the estimated regression model is suitable for use in this research.

The t-test is performed to show the effect of one independent variable individually in explaining the variation of the dependent variable. Based on the regression results in Table 4, it can be explained the correlation between the independent variables on the dependent variable as follows:

Variable	t-Statistic	Prob.	t-table	Ha Regression Result
RATING	-4.573338	0.0000	-1.65675	Negative (-) Significant
ROA	0.363484	0.7168	-1.65675	Has no effect
DDER	-1.987517	0.0490	1.65675	Has no effect
DSIZE	-2.845645	0.0052	-1.65675	Negative (-) Significant

Table 5:- t Test Result

Determination of hypothesis decisions is as follows:

➤ Hypothesis 1 (H1) in this study aims to test whether RATING has a negative effect on YTM. Based on the t-test results of panel data regression in Table 5, the RATING variable has a negative coefficient and t-statistic of -4.573338 with p value 0.0000. The value of t table is -1,65675, t-statistics are in the rejection area of H0 which means H1 is accepted, and p value lower than 0.05 therefore it can be interpreted that RATING partially has a negative and significant effect on YTM.

➤ Hypothesis 2 (H2) aims to test whether ROA has a negative effect on YTM. Table 5 shows the ROA variable has a positive coefficient and the t-statistisc is 0.363484, the t table value is -1.665675, t-statistics are in the H0 reception area which means H2 is rejected so that it can be interpreted that ROA partially has no effect on YTM.

➤ Hypothesis 3 (H3) in the study aims to test whether DER has a positive effect on YTM. Based on the t-test results Table 5 shows the DER variable has a negative coefficient and t-statistics of -1.987517, the t- table value is 1.65675, , t-statistics are in the H0 reception area which means H3 is rejected so that it can be interpreted that DER partially has no effect on YTM

➤ Hypothesis 4 (H4) in this study aims to test whether SIZE has a negative effect on YTM. Based on the t-test results Table 5, the SIZE variable has a negative coefficient and t-statistics is -2.845645 with p value 0.0052, the t-table value is -1.665675, t-statistics are in the rejection area of H0 which means H4 is accepted, and p value lower than 0.05 therefore it can be interpreted that so that it can be interpreted that SIZE partially affects YTM

E. The Classical Assumption Test
After panel data regression analysis, the next step is testing the classic assumption to find out whether the model formed meets the BLUE (Best Linear Unbiased Estimator) requirement. The classic assumption test carried out in this study is the normality test, multicollinearity test, heteroscedasticity test and autocorrelation test.

The normality test aims to determine whether the residual value of a model has a normal distribution or not (Ghozali, 2013: 160). The normality test used in this study is the Jarque-Bera Test. Comparisons are made with a 0.05 level of significance and the probability value of Jarque-Bera.
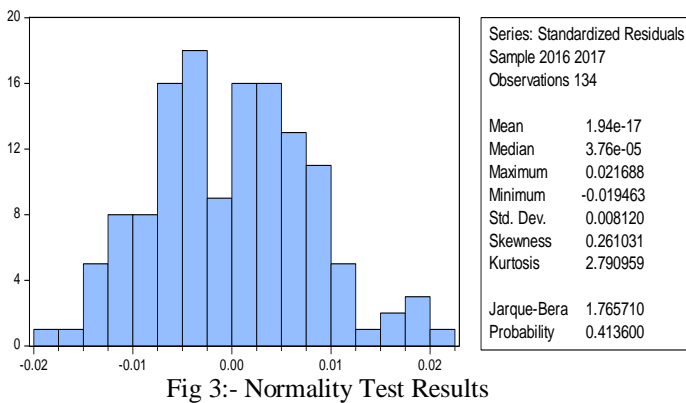
Fig 3:- Normality Test Results

Based on the results of the normality test shown in Figure 3 it can be seen that the Jarque-Bera probability value is $0.4136 > 0.05$ so it can be concluded that the residuals of the model are normally distributed.

The presence or absence of multicollinearity symptoms was conducted by looking at the tolerance value and the value of Variance Inflation Factor (VIF). If the tolerance value is greater than 0.10, it can be concluded that there is no multicollinearity. The limit of VIF is 10, if the VIF value is below 10, it is concluded that there is no multicollinearity (Gujarati, 2012: 432).

Based on the Table 6 output results, tolerance values of all independent variables have values greater than 0.10 and VIF values of all independent variables under 10, it is concluded that multicollinearity does not occur.

Variable	Collinearity Statistics	
	Tolerance	VIF
RATING	.766	1.305
ROA	.740	1.351
DDER	.714	1.400
DSIZE	.722	1.386
a. Dependent Variable: YTM		

Table 6:- Multicollinearity Test Results

Heteroscedasticity test is used to determine the inequality of variance from residuals for all observations in the regression model. The results of heteroscedasticity test with Breusch-Pagan-Godfrey Test in Table 7 shows the probability value of F-statistics $0.0944 > 0.05$, it can be concluded that there is no problem of heteroscedasticity.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.027261	Prob. F(4,129)	0.0944
Obs*R-squared	7.925167	Prob. Chi-Square(4)	0.0944
Scaled explained SS	6.938163	Prob. Chi-Square(4)	0.1392

Table 7:- Heteroscedasticity Test Results

The autocorrelation test is conducted by Durbin Watson (DW) test, which compares the value of durbin watson count (d) with the value of durbin watson table, which is the upper (du) and lower bound (dl) (Gujarati, 2004: 470). The basis of decision making is if du < d < 4-du then there is no autocorrelation in the data.

The results of the regression output in Table 4 show the value of Durbin Watson count (d) of 1.929839. The DW value of the upper limit table (du) = 1.77969 and the lower limit (dl) = 1.65691 so that the 4-du value is known = 2.2203. Based on the test, the resulting value of du (1.77969) <d (1.929839) <4-du (2.2203) can be concluded that there is no autocorrelation in the data.

F. Analysis of the Effect of Bond Rating on YTM

Based on t-test result, RATING partially has a negative and significant effect on YTM. This result is in line with the hypothesis statement made before. In accordance with the signaling theory that published information such as bond ratings can be a signal about the condition of bonds issued by the company. Related to the Asymetric Information theory that bond ratings can be used to reduce information asymmetry between management and investors. Empirically, the results of this study are consistent with the results of research by Thompson and Vaz (1990), Bhojraj and Sengupta (2003), Purnamawati (2013), Ibrahim (2008), Sari and Abudanti (2015). The bond rating shows the quality of bonds reflected in the risk of bonds. High-ranking bonds are generally issued by companies that have good financial performance hence the risk is lower. With a low level of risk, the yield given is also lower. While low-grade bonds will certainly provide high yields to attract investor interest and compensate for the emergence of large risks.

As an example based on this research data, for 2015 MDLN01BCN1 bonds issued by PT Modernland Realty with rating A give YTM of 12.29%, while ISAT01BCN1 PT Indosat bonds with AAA rating give YTM value of 8.65%. In 2016, APLN01CN3 bonds issued by PT Podomoro Land Tbk are rated A- giving YTM 12.11%, this value is higher than YTM given the ISAT01BCN1 PT Indosat Tbk bonds amounting to 8.36% rated AAA. In 2017, the MDLN01BCN1 bond PT Modernland Realty Tbk ranked A gives YTM of 12.13%, higher than the YTM of ROTI01CN1 bonds issued by PT Nippon Indosari Corporindo Tbk with an AA rating of 7.98%.

G. Analysis of the Effect of Profitability on YTM

Based on t-test result, ROA partially has no effect on YTM. Related to Signaling Theory that profitability ratios can give a signal to investors about the company's financial condition and know the risk of bonds. If the company's profitability is considered good, then it signals that the risk of low investment and security is more secure, thus offering low bond yields. The results of this study support the results of Laeli (2010) and Fahrudin's (2018) research where ROA has no effect on YTM.

Profitability has not been a consideration in determining YTM, because company profits tend to fluctuate and cause difficulty in assessing bond risk merely from the level of company profitability. In carrying out its business activities, companies face business risks and regulatory risks so that companies that have high profits do

not necessarily have good prospects in fulfilling their long-term obligations. Investors are expected to be more careful before investing in bonds and consider long-term business potential because of the nature of long-term bonds.

H. Analysis of the Effect of Leverage on YTM

Based on t-test results of the DER variable indicate that corporate leverage proxied with DER partially has no effect on YTM, thus these results contradict the hypothesis statement made earlier that leverage is thought to have a positive effect on YTM bonds Regarding the Agency Theory, the agency relationship that occurs between the principal and agency has burdened the manager to account for the resources he manages. Companies that have more debt proportions in their capital structure will have greater agency costs where the company has an obligation to meet the information needs of long-term creditors, so the company will provide information more comprehensively. The results of this study support the study of Situmorang (2017), Laeli (2010), Purnamawati (2013), Arifuddin (2014), Desnitasari (2014).

The non-influential correlation of DER to YTM is because the increase in leverage ratio does not affect the probability of increase in bond yield, which means that the leverage ratio is not taken into account in determining bond yields when viewed partially. This is likely because investors trust the securities rating agency more and no longer see the company's financial statements into details. Investors pay less attention to the risks involved when investing in bonds because they consider bonds to be low-risk investments. Bonds issued by companies generally have a long period of time, so investors feel safe because the company will still pay interest and principal debt by using the resources owned by the company.

I. Analysis of the Effect of Firm Size on YTM

Based on t-test result, the SIZE partially affects YTM. Thus this result is in accordance with the hypothesis statement made previously that the size of the company is thought to have a negative effect on YTM bonds. Regarding the Agency Theory, the agency relationship that occurs between the principal and agency has burdened the manager to account for the resources he manages. The greater the total assets, the more resources managed by the company, the greater the activity of a business. Empirically, the results of this study are in line with the results of a study by Purnamawati (2013), Aisah (2010), Thompson and Vaz (1990), Ibrahim (2008), Wibowo (2016).

For example, in 2017 PT Perusahaan Listrik Negara has total assets of Rp1,334.96 Trillion and bonds issued give YTM 8.58%, while PT Express Trasindo Utama Tbk which has a much lower total assets of Rp2.01 Trillion gives higher YTM bonds at rate 11.76%.

The results of the study indicate that companies that have large total assets will offer low YTM bonds because large-scale companies have a small risk compared to small companies that have a large risk. With a low level of risk, the yield given is also lower. In addition, large companies

are considered to have good prospects in a relatively long period of time, are more stable and more capable to generate profits than companies with small total assets.

V. CONCLUSION

Based on the results of the analysis and discussion in this study, conclusions can be taken as follows:

➤ The results of data testing show a determination coefficient of 19.59% which means that the variable rating of bonds (RATING), Profitability (ROA), Leverage (DER), and Company Size (SIZE) only affects 19.59% of YTM variation, the remaining 80.41% is influenced by other factors outside of research.

➤ Variable RATING partially has a negative and significant effect on YTM of corporate bonds. The results of the study indicate that bond ratings are considered by investors in making decisions whether the bonds are worthy of being an investment and to determine the level of risk and determine the expected YTM amount.

➤ Variable ROA partially has no effect on YTM of corporate bonds. The results of the study show that profitability has not become a primary consideration in determining the amount of corporate bond yield value.

➤ The DER variable partially does not affect the YTM of corporate bonds. The results show that leverage ratios do not affect the probability of increasing bond yields, which means that leverage ratios are not taken into account in determining bond yields when viewed partially.

➤ SIZE variables partially have a negative effect on YTM corporate bonds. Large companies will provide smaller YTM because large companies have a small risk and are considered to have good prospects in a relatively long period of time, are more stable and more able to generate profits than companies with small total assets. Investors believe that the funds invested in the company are guaranteed by the amount of assets owned by the company so the risk of default is low.

Based on the above conclusions, the author tries to convey some suggestions for further research.

➤ For companies, it is necessary to improve performance and bond ratings to maintain investor confidence. Besides that, the company also needs to increase its total assets to make it easier to find external funding sources through debt or bond issuance. This is because both of them proved to have an effect on YTM corporate bonds.

➤ The ability of the variables examined in this study explains that the variation in YTM changes is only 19.59%. For future research research, it is expected to be able to examine other variables that affect YTM bonds to increase the value of the coefficient of determination. In addition, it is recommended to add a longer period of time so that it reflects the condition of the company in the long run.

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