EFFECTS OF BOND'S INTEREST RATE, RATING AND MATURITY TIME TOWARD BOND'S YIELDS

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ABSTRACT

This study aims to determine the effect of interest rates, bond rate, and the maturity time of bond yields on property and real estate companies listed on the Indonesia Stock Exchange in 2013-2018. This type of research is in the form of associative and using a quantitative approach. The research population is property and real estate companies and sampling technique using purposive sampling. Based on the current criteria obtained, 13 companies and 38 bonds that became the research sample. Data analysis technique using Multiple Linear Regression Analysis. The partial test result shows that the variable interest rate and maturity time is positive and significant, while the variable rating bond is negative and significant. The simultaneous test result indicates that the variable of interest rate, bond rating, and maturity time influence simultaneously to the bond yield.

Keywords: interest rate, bond rate, maturity time, bond yields.

INTRODUCTION

Investments in Indonesia are increasingly growing in these years. In Indonesia, investment development can be seen through the interest of the Indonesian people in investing. Indonesian people can allocate funds for personal gain. In addition to saving funds in banks and financial institutions, the public also began to invest funds in the form of securities, both stocks, and bonds traded on the stock exchange.

Bonds are debt securities issued by the company to investors who want to invest their funds in the bond issuing company. Broadly speaking, bonds are proofs of debt from bidders guaranteed by the insurer which contains promises of interest payments or other pledges as well as repayment of principal loans made on the due date. Payment of bond interest is determined by how much the bond issuer determines the coupon. Each bond has a coupon in the amount and time due that has been set (Tandeilin, 2001).

Investors who buy ordinary shares will not necessarily get regular income from the company because ordinary shares do not require companies to pay cash to shareholders. On the other hand, bonds provide fixed income and predetermined maturity. It can be concluded that stocks have a relatively more substantial risk compared to bonds (Tandelilin, 2001).

The factors that influence stock prices differ from the factors that

determine bond prices because bonds have different characteristics than stocks. Bond market prices are always volatile due to buying and selling activities from investors and are influenced by changes in the magnitude of macroeconomic variables such as inflation, interest rates, and exchange rates. Tandelilin (2001) explains that the high and low of bond market prices are also influenced by the characteristics inherent in the bonds themselves, including intrinsic value, type of issuance, bond indentures and call provision. Factors that can influence yield bonds include bond interest rates, bond ratings, and maturity of bonds, which will be discussed in depth in this study.

The first variable that determines the essential factor influencing changes in bond prices is the prevailing interest rate. If the prevailing interest rate increases, the bond price will decrease, and vice versa. Tandelilin (2001) explains that changes in interest rates usually affect the return of an investment. If the prevailing interest rate increases, the bond price will drop; and vice versa.

Logically, if interest rates increase, the return required for a bond also increases. The conclusion that can be drawn is that interest rates have a positive effect on bond yields. This is in line with the research of Ni Wayan and Nyoman (2005), Anang and Sam'ani (2013), Indarsih (2013), Aisah (2012) and Neneng (2017) where interest rates have a positive effect on bond yields.

The second variable that will be reviewed in this study is the bond rating. Brigham and Houston (2006) explain that bond ratings are one of the characteristics of bonds that are considered by investors in buying bonds as bond ratings show the quality of bonds reflected in the risk of bonds. This rating has a direct effect that can be measured in the interest rate of bonds and the cost of corporate debt.

Logically, companies that have low bond ratings will undoubtedly offer high bond yields to attract investors. It can be concluded that bond ratings harm bond yields. The research of Ni Wayan and Nyoman (2015), Neneng and Muhammad (2017) and Aisah (2017) also concluded that bond ratings harm bond yields.

The last variable that will be reviewed in this study is the time due. Tandelilin (2001) argues that the maturity time affects the bond yield. Bond interest rates are influenced by the amount of demand and supply of funds to be invested in bonds so the bond interest rate can vary for different bonds. Bond interest rates can vary and change depending on the maturity of a bond. A bond that has a different maturity time will have a different bond yield level.

The longer the maturity date of bonds, the higher the risk level compared to bonds that have shorter maturity; so the yield that the company will give to investors will look more significant in order to attract investors. The conclusion is that the maturity of bonds has a positive effect on bond yields. This is in line with the research of Anang and Sam'ani (2013), Aisah (2012), Ni Wayan and Nyoman (2015), where maturity is stated to have a positive effect on bond yields while the research of Neneng and Muhammad

(2017) revealed that the maturity of bonds has a negative effect on bond yields.

The object used in this study was a company engaged in the property and real estate sector, which is registered and traded on the Indonesia Stock Exchange. The reason for choosing a company that is engaged in property and real estate is because, at this time, the property and real estate business is increasing and requires additional funds to conduct its business activities. The company tends to seek additional funds by selling shares or bonds. Data on the growth of the property and real estate business can be seen in Figure 1.

Figure 1. Graphic of property and real estate business growth.
Source: www.pefindo.com

Property and real estate sales from 2011-2017 have increased. Therefore, companies need more funds to run their business by issuing bonds. The existence of funds from the sale of corporate bonds is to run a long-term business. Based on the background above, the formulation of the problems in this study

is 1. Are bond interest rates, bond ratings, and maturity of bonds influencing bond yields on property and real estate companies listed on the Indonesia Stock Exchange? 2. Which variable has the most influence on bond yields on property and real estate companies listed on the Indonesian Stock Exchange?

LITERATURE REVIEW

According to Tandelilin (2001), bond yield is a measure of bond income that investors will receive that tends to be non-permanent. Bond yield is not fixed, as befits bond interest (coupons), because the bond will be very yield related to the level of return required by investors.

Yield to maturity is a compound rate of return that investors will receive if they buy bonds at the current market price and hold the bonds to maturity. Yield to maturity can be calculated using the following formula:

$$YTM = \frac{C_i + \frac{P_P}{n}}{\frac{P_P + P}{2}}$$

where YTM is *Yield to Maturity, P* is the current bond price (t=0), N is the number of years up to the maturity of the bonds, Ci is the payment of coupons for bonds I per year, and Pp is the par value of the bonds.

Samsul (2006) suggests that Investments in deposits or SBIs generate risk-free interest. While investments in bonds contain risks such as failure to receive coupons or fail to pay off and lose due to loss of opportunities to invest elsewhere (opportunity cost), therefore, the yield of bonds obtained must be higher than the deposit rate or SBI.

Changes in interest rates can affect the variability of an investment return. Besides, changes in interest rates will affect bond prices in reverse. If the prevailing interest rate increases, the bond price will also decrease, and vice versa (Tandelilin, 2001). Brigham & Houston (2006) explain that bond rating is an indicator of the risk of default. This rating has a direct effect that can be measured in the interest rate of bonds and the cost of corporate debt.

Changes in the rating of corporate bonds will affect their ability to borrow long-term capital and the cost of capital. Rating agencies will review bonds that regularly circulate, where the agent increases or decreases the rating of a bond as a result of changes in the conditions experienced by the issuer.

Samsul (2006) also emphasizes that the maturity period is the date of the repayment of bonds. In general, bonds are repaid on original maturity dates. However, for bonds that have a call and put options, repayment of bonds can be carried out long before the due date. A bond that has a different maturity time will have different bond yield sensitivity.

This research was conducted to determine the effect of interest rates, bond ratings, and maturity date on bond yields. The conceptual research framework used in this study can be seen in Figure 2:
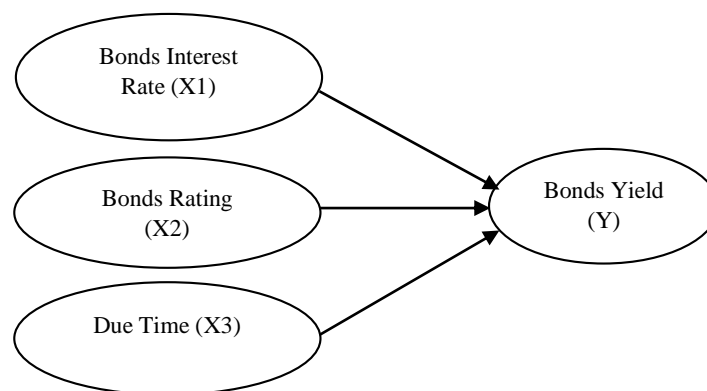

Figure 2. Research Framework

Based on Figure 2, hypothesis 1 (H1) proposed in this study was that the bond interest rate, bond rating, and maturity date of the bonds that have a significant effect on bond yields. Hypothesis 2 (H2) was the bond interest rate is the most influential factor on bond yields.

METHOD

This is quantitative research with associative methods which aims to determine the relationship of two or more variables (Sugiono, 2011). The population of this study was a company in the field of property and real estate that is listed on the Indonesia Stock Exchange in 2013-2018. The sampling method used in this study was a non-probability sample method, with a purposive sampling technique. The samples in this study were 13 companies and 38 bonds. The number of samples taken was not considered if it was considered sufficient (Haryanto, 2008). The following is a selection of research samples using the purposive sampling method in Table 1:

Table 1. Selection of Research Samples

Criteria	Companies	Bonds
Bonds for property and real estate companies circulating on the Indonesia Stock Exchange	5	70
Bonds of property and real estate companies registered with Bareksa	15	70
Bonds that were known to yield to maturity in Bareksa; processed data from the Indonesia Stock Exchange	13	38
Number of Selected Samples	13	38

The yield calculation in this study implemented Yield to Maturity calculation. The value of Yield to Maturity was taken from data released by www.bareska.com. The bond interest rate in this study was the 30-day Bank Indonesia Certificate (SBI) interest rate. The interest rate was taken from the IDX inputted at www.idx.com. The bond rating is character symbols given by ranking agents (in Indonesia, the rating agent, PT PEFINDO).

The S&P bond rating exemplified a plus and minus system, so A+ showed the strongest bond and A- the weakest. Moody uses the markings 1, 2 and 3 with 1 indicating the strongest and 3 the weakest. So, in the double-A category, Aa1 was considered the best, Aa2 was the average, and Aa3 was the weakest.

The maturity date of a bond is the length of outstanding time from a bond with the amount of outstanding balance. Based on data obtained from www.idx.co.id, the data used in this study were quantitative or numerical data from secondary data sources. Data were obtained from the report on bond prices of the property and real estate sub-sector companies from the official website of the Indonesia Stock Exchange and other official sites related to the research topic. The data analysis technique used in this study was multiple linear regression.

RESULTS AND DISCUSSION

The data obtained in this study were then carried out through multiple linear regression analysis, which results are shown in Table 2 as follows:

Table 2. Multiple linear regression results

	Unstandardized Coefficients		Standardized Coefficients	T	
	B	Std. Error	Beta		Sig
Interest Rate (X1)	0.590	0.140	0.489	4.214	0.000
Bond Rating (X2)	-0.792	0.231	-0.392	-3.427	0.002
Time of Maturity (X3)	0.476	0.254	0.215	1.878	0.000

From the results of the research in Table 2, the multiple regression equation was obtained as follows: $Y = 4.838 + 590X1 - 792X2 + 476X3$. The resulting Constanta was 4.838, which means that the independent variable that had not changed or was considered constant towards the average yield was 48.38%.

The interest rate coefficient value was positive, equal to 0.590. This indicates that any increase in the interest rate of 1% would have an impact on the increase in bond yield by 59.0% with the assumption of other independent variables (bond rating and maturity) were constant.

The bond rating coefficient was negative at 0.792; this indicated that any bond rating decrease of 1% would have an impact on the decrease in bond yield by -79.2% with the assumption that other variables (interest rates and maturity) were constant.

Simultaneous tests were also conducted in this study to examine whether the independent variables had a simultaneous influence on the dependent variable. The testing with the F Test was done using the calculated F results compared to the F table with $\alpha = 5\%$. F Test results can be seen in Table 3.

Table 3. F Test results

	F. Table	Calculated F	Sig.
Regression	2.85	15.253	0.000

Based on the data in Table 3, it was found that the calculated F value was 15.253, and the F table value was 2.85. This could be interpreted that F count > F table that was with a significance value of 0.000 or less than 0.05. It could be concluded that bond interest rates, bond ratings, and bond maturity have simultaneous influences on bond yields.

The results of this study are in line with the research conducted by Neneng and Muhammad (2017). The study shows that ratings, liquidity, coupons, and maturity time have a cumulative effect on bond yields. This finding suggests that interest rates, bond ratings, and bond maturity can be used as benchmarks by companies in determining bond yields. Furthermore, this research is following the theory presented by Samsul (2016), who states the factors influencing bond prices include coupon rates, coupon frequencies, interest rates, maturity, and bond ratings.

Hypothesis testing in this study used the T-Test carried out using the

results of the T table compared to T count with $\alpha = 5\%$. If the T count > T table, then the independent variable has a significant effect on the dependent variable and vice versa. The results of the T-Test can be seen in Table 4 below:

Table 4. T-Test results

	T table	Calculated T	Sig.
Interest Rate (X1)	1.685	4.214	0.000
Bonds Rating (X2)	1.685	-3.427	0.002
Maturity Time (X3)	1.685	1.878	0.000

Based on the results of the T-Test in Table 4, a variable relationship of interest rates to bond yields showed that the calculated T value was 4.214 and the T table value was 1.685 (df = 1-40, $\alpha = 0.05$). Therefore, T count > T table and significance value 0.000 < 0.05. That is, interest rates have a positive and significant effect on bond yields.

Table 4 also shows the results of the bond rating T-test on bond yields which portrayed that the calculated T value of the bond rating was -3.427 and the T table value was 1.685 (df = 1-40, $\alpha = 0.05$). It can be concluded that T count < T table and significance value 0.02 < 0.05. This means that bond ratings also have a significant and positive effect on bond yields.

Based on the results of the T-Test in Table 4, the relationship of the maturity variable to bond yields displayed the calculated T value from the maturity date was 1.878 and the T table value was 1.685 (df = 1-40, $\alpha = 0.05$). This shows that T count > T table and significance value 0.000 <

0.05. The conclusion of the partial maturity test shows that maturity time has a positive and significant effect on bond yields. Thus, hypothesis 1, that is, bond interest rates, bond ratings, and the maturity date of bonds which affect bond yields was acceptable.

Based on the results of the T-test in Table 4, it can be seen that the most crucial variable on bond yields is the interest rate. The results of this study support the results of research conducted by Anang and Sam'ani (2013) about the factors that affect bond yields. Interest rates positively and significantly influence bond yields.

The research conducted by Ni Wayan and Nyoman (2015) about variables that affect bond yields also shows that interest rates have a positive and significant effect on bond yields. Therefore, the interest rate can be used as a benchmark for the company in establishing bond yields. This research is under the theory presented by Tandelilin (2001) which states that bond yields will be very influential, one of which is to the interest rate which is to be a consideration tool for the company in calculating bond yields.

CONCLUSION

This study projected that variable interest rates, bond ratings, and bond maturity simultaneously affect bond yields. Partially, variable interest rates, bond ratings, and maturity have a significant effect on bond yields. This study also found that the interest rate variable was the variable that most affected the yield of bonds compared to the bond rating and maturity.

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