THE INFLUENCE OF BOND RATING, MATURITY AND COUPON ON BOND PRICES ON THE INDONESIAN STOCK EXCHANGE

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Abstract:
This research was conducted to find out whether the Bond Rating, Maturity and Coupon influence the bond prices of the Banking Company Sector listed on the Indonesian Stock Exchange for the 2021 period. The population in this study was 50 companies that met the criteria of 27 bond companies listed on the Indonesian Stock Exchange. This research uses quantitative data and is processed with the Eviews 10 application. The data collection technique used is library research and indirect observation, namely by accessing the website.www.idx.co.idand other websites. The analysis technique used is panel data regression. The results obtained from this research are 1) Partially, bond ratings have a positive and significant effect on bond prices. 2) Partially, bond maturity has a positive and significant effect on bond prices. 3) Bond coupons partially have a positive and significant effect on bond prices. 4) Simultaneously, Bond Rating, Maturity and Coupon have a positive and significant effect on bond prices.

INTRODUCTION

The Indonesian Stock Exchange (BEI) is a capital market in Indonesia that has provided infrastructure to support the implementation of securities trading in an orderly, fair and efficient manner that is easily accessible to all stakeholders. As a developing country, Indonesia can also strive to develop infrastructure and increase economic growth in order to improve the welfare of society (Rangkuty et al., 2019). According to (Fransiskus Paulus paskalis Abi, S.E., 2016) The capital market provides various investment products for investors such as; Shares, Bonds, Mutual Funds and other securities. The capital market plays a very important role in a country's economy, many countries are competing to follow and demonstrate the capital market through various policies. The capital market is an activity that can be related to public offerings and trading of issued securities, as well as institutions and professions related to securities. The capital market is a market for various long-term financial instruments that can be

bought and sold, either in the form of debt (bonds) or own capital (shares) issued by the government or private companies.

In this regard, in the capital market there are also investments, one of which is bond investment. Investment is an activity of saving or placing funds for a certain period with the hope that this saving will result in profits or an increase in investment assessment. When investing in bonds, sufficient funds are needed and the capital owner must also have sufficient knowledge about bonds so that they do not experience failure in the future.

According to (Wijayanto, 2015) Bonds are medium or long-term transferable debt securities that contain a promise from the issuing party to pay compensation in the form of interest over a certain period and repay the principal at a specified time to the party purchasing the bond. The bond price (price) is the sum of the results of the present value of all cash receipts in the future, both through coupons and principal at maturity using a certain interest rate as the discount rate. Bond prices often experience changes in mechanisms due to demand and supply for bonds (Husnan & Pudjiastuti, 2015).

The buying and selling price of bonds is not always the nominal value. The price is determined by the bond interest rate. The greater the interest, the higher the bond price. On the other hand, the lower the bond interest, the lower the price. Therefore, when determining bond prices, the value of cash flows during the expected period can be determined or estimated. Bond prices are expressed in terms of percent (%) of the bond's nominal value. Bond prices tend to fluctuate in the market as a result of capital market conditions and interest rate movements.

Bond ratings are character symbols given by rating agents to indicate the risk of bonds issued (Hartono, 2018). The purpose of bond ratings is to assess the company's performance whether or not the bonds are worth investing in. So investors can assess the level of security of a bond and the credibility of the bond based on the information they have received from the rating agent. The largest and most well-known rating agents in the world are Moody's and standard & poor's, while in Indonesia there are also three debt securities rating agents, namely PT Pefindo (Indonesian Securities Rating), PT Fitch Ratings Indonesia and PT Kasnic Credit Rating Indonesia. Bond ratings really help investors to determine the quality and risk of a bond. So the higher the bond rating, the lower the risk the bond has. On the other hand, the lower the bond rating, the higher the

risk the bond has. Bond ratings provide information on debt, both short and long term. Bond ratings really help investors in determining the quality and risk of bonds.

Maturity (maturity time) is the date on which the obligated principal value must be repaid by the bond issuer (Sorongan, 2021). Payment obligations can be avoided if bonds are redeemed or bonds are repurchased before the maturity period determined by the bond issuer. Interest rate risk can be higher for bonds that have a long maturity compared to bonds that have a short maturity period. The longer the maturity, the longer it takes for the bond to be paid off. So the longer the maturity period set for a bond, the higher the risk faced by investment holders due to the time value of money and the development of macro conditions which can change at any time.

The coupon is the interest rate or yield obtained from the bond. An interest-free bond is a bond that does not come with a coupon where this bond is traded for a value below the par value of the bond which is paid by the bond issuer at the specified maturity date (Sumarna & Badjra, 2016). A high coupon rate will attract investors' purchasing power so that the price offered rises and vice versa, if the coupon rate is low it causes investors' purchasing power to decrease so that the price offered goes down (Hardiyanti & Elizabeth, 2021).

This research focuses on the influence of bond ratings, maturity and coupons on the prices of bonds listed on the Indonesia Stock Exchange. This research uses maturity observations in 2021 in the Banking Sector.

LITERATURE REVIEW

Preferred Habitat Theory

Preferred habitat theory is closely related to liquidity preference theory. This theory assumes that investors have a preference for bonds with a certain maturity (preferred maturity). This theory is a combination of market segmentation theory with liquidity preference theory. Rather than always favoring short-term securities as in liquidity preference theory, investors are willing to buy other securities with different time periods as long as they suit their investment objectives.

According to (Sitorus, 2015) This theory explains that investors are willing to buy securities with a term close to their preferences if they are given a higher level of return. For securities whose term is farther from the preference, a higher interest rate is required

as compensation for the greater risk. In preferred habitat theory there is the possibility of shorter term and riskier effects.

Definition of Bonds

According to (Dr. Musdalifa Azis, S.E. et al., 2015) states that bonds are fixed income debt securities where the issuer (issuer) agrees to pay a fixed amount of interest for a certain period of time and will repay the principal amount at maturity. Bonds are securities that are sold to the public, where various provisions are included that explain various things such as nominal value, interest rate, time period, name of the issuer and several other provisions explained in the law that has been passed by the relevant institution (Handini, 2020).

According to (Ramadhan et al., 2017) Bonds are securities that can be issued by a company by making an agreement with the holder to pay a fixed amount of money on a future maturity date accompanied by periodic interest payments.

Bond Price

According to (Sitorus, 2015) the price of the bond is expressed in the form of a percentage (%), that is, a percentage of the face value. Market participants do not need to mention percent, just with a nominal figure, for example only 100% of 100. According to the price of a bond is a tradable price, usually expressed in terms of a percentage of its face value. The bond price will be paid at maturity, either through coupon or principal at maturity, using a certain interest rate as the discount rate. This interest rate is referred to as yield to maturity (YTM). The rate of profit is inversely proportional to the price of the bond. If the yield rises, the price will fall (Ismail, 2021).

Bond Rating

According (Hafiz et al., 2021) to the bond rating, it is a rating denoted as a letter where the rating describes the condition and ability of the company as a bond to pay off its obligations. Bond ratings can be seen and in accordance with the ratings issued by PT Pefindo and are measured using an ordinal scale that classifies ratings into numbers. According to (Ahmad &; Wahyudiani, 2019) Bond rating is a statement in the form of a symbol about the state of the bond issuing company issued by PT Pefindo, the bond rating

is given a rating symbol so that it can be determined by classifying the rating in accordance with the rating category is a dummy rating variable.

Understanding Maturity

According to (Laili Ramadhan, 2020) Maturity is the maturity period during which the principal value of the bond must be repaid or paid by the bond issuer. The price of bonds is negatively affected by the maturity period. If the longer the maturity of a bond, the higher the coupon or relationship. Treasury bonds have a maturity time of approximately 12 months, it can be 5 years, 10 years, 20 years, or even 50 years. Government bonds that have a fixed coupon rate and variable rate. Government Bonds are one form of Government Bonds (SUN). According to(Sumarna & Badjra, 2016) each bond, it must have a maturity period or known as a maturity date where the principal value of the bond must be repaid or paid by the bond issuer.

Understanding Bond Coupons

Coupon (interest rate) is an interest value received by bondholders on a regular basis, when bonds have high coupons and above the average deposit interest rate, bond coupons will be in demand by investors. According to (Mokoagouw et al., 2021) Bond coupons are a factor that can affect bond yields. The amount of a bond yield can be measured from the amount of coupon ownership of the bond. Bond coupon is an interest rate that can be paid to investors in each period by the bond issuing company until maturity. Coupon bond is the percentage rate / interest rate of a bond, the coupon interest rate states the amount of income or yield that investors can periodically obtain from the bond issuer until the end of the bond's life or maturity rate (Ekananda, 2019).

RESEARCH METHODS

Research Approach

This research approach uses associative research. According to (Sugiyono, 2019) associative research, it is a formulation of a research problem that asks the relationship between two or more variables. This study analyzes the effect of bond ratings, maturity and coupons on bond prices. In a study, to achieve a scientific goal will not be separated from the use of methods because methods are the main way that can be used to achieve a goal.

The method used in this study is a method with a quantitative descriptive approach. According to (Sugiyono, 2019) descriptive quantitative is a research method that describes and explains independent variables to analyze their influence on the dependent variable.

Population and Sample

According to (Siyoto &; Sodik, 2015) population, it is a generalized area consisting of objects / subjects that have certain quantities and characteristics that are set by researchers to be studied and then drawn conclusions. The population used in this study is all Banking Sub-Sector companies listed on the Indonesia Stock Exchange, totaling 50 companies with different bond series.

According to (Siyoto &; Sodik, 2015) the sample is a portion of the number and characteristics possessed by the population, or the smallest part of the members of the population taken according to a certain procedure. The technique used at the time of sampling is purposive sampling. Purposive sampling is a sampling technique with certain considerations or special selection (Siyoto &; Sodik, 2015).

Data Analysis Techniques

According to (Sugiyono, 2018) Technical, data analysis is a way that is expressed in favor of calculations to answer problem formulations and test hypotheses proposed in research. Data analysis techniques that can be used in this study are quantitative. The data were analyzed using panel data regression analysis methods and hypothesis tests.

1. Panel Data Regression Analysis

This research uses panel data regression analysis tools. Panel data is a combination of time series data with cross sections. In other words, panel data is data obtained from cross section data that is repeatedly observed on the same object unit at different times.

2. Test Chow

The Chow test is used to determine the best model between Common or Pooled and Fixed Effect which will be used in estimating panel data.

3. Hausman test

The Hausman test is a statistical test used to choose whether the Fixed Effect or Random Effect model is most appropriate to use.

4. Research Hypothesis Testing

The accuracy of the sample regression function in estimating actual values can be measured from its goodness of fit. Statistically, it can be measured from the determination coefficient value, the F statistical value, the t statistical value and testing of moderating variables. Statistical calculations are called statistically significant.

a. Coefficient of Determination (Adjusted R2)

The coefficient of determination (Adjusted R^2) aims to measure how far the model's ability is to explain variations in the dependent variable. The coefficient of determination value is between zero and one. A value close to one means that the independent variables provide almost all the information needed to predict the dependent variable and vice versa if it is close to zero. Therefore, many researchers recommend using the Adjusted R^2 value when evaluating the best regression model (Ghozali, 2018).

b. Partial Testing (t Test)

This test aims to test that each independent variable influences the dependent variable significantly. Decision making criteria:

Ha is accepted if $t_{count} > t_{table}$ and Sig <5%. This means that the independent variable has a significant effect on the dependent variable.

Ha is rejected if $t_{count} < t_{table}$ and Sig > 5%. This means that the independent variable does not have a significant effect on the dependent variable.

c. Simultaneous Testing (F Test)

This test aims to test the independent variables together (simultaneously) to significantly influence the dependent variable. This simultaneous test uses the F-test, namely by comparing the significance value of F-test with the significance value used, namely 0.05.

RESULTS AND DISCUSSION

Research Results

1. Descriptive Statistics

Descriptive statistics is a process of collecting, presenting and summarizing various data characteristics to describe adequate data. The results of data processing on the data used in this study in the Table, as follows:

Table 1. Results of Descriptive Statistical Analysis

Descriptive Statistics					
Variable	N	Minimum	Maximum	Mean	Std. Deviation
Bond Price	27	93.98	106.00	100.28430	3.132971
Rank	27	0	1	0.37	.492
Maturity	27	3	6	3.52	.753
Bond Coupon	27	6.35	6.35	9.3189	1.32971

Source: Data Processing Results, 2023

Based on Table 1., the result of descriptive statistical testing is that it can be seen that the Bond Price has a minimum value of 93.98 and a maximum value of 106,000. The standard deviation value shows a figure of 3.132971, the highest bond price value was achieved by companies with the Bank Mayapada IV Subordinated Bond MAYA04SB series Year 2014 and the lowest bond price value is a company with the Bank PANIN Shelf-Registration Bond II PNBN02CN2 series Phase I Year 2016.

The results of descriptive statistical testing of data are known that the minimum value is 0 and the maximum value is 1. The results show that the magnitude of the ranking that became this study ranged from 0 and 1, with an average value (mean) of 0.37 and a standard deviation value of 0.492. A rating value of 0 is achieved by bonds that have a rating range of idBB+ to idA+. While the rating value of 1 is experienced by companies that have a rating range of idAA to idAAA.

The test results of descriptive statistical results are a minimum maturity value of 3 and a maximum value of 6. These results show that the amount of maturity that is the sample of this study ranges from 1 and 6. With an average value (mean) of 3.52, the highest maturity value was achieved by bond companies with Bank Nagari SMBSBRR02 sukuk mudharabah II bond series in 2015 and the lowest maturity value was BSBR07 Bank Nagari bond VII in 2015, BEXI02CCN7 Indonesia Eximbank II shelf registration bond phase VII year 2016 Series C, BBRI01CCN2 Bank shelf registration bond I Phase II Year 2016 Series C, BBRI01CCN3 Shelf-Registration Bonds I Bank BRI Phase III Year 2016 Series C, BBIA01SB Subordinated Bonds I Bank UOB Indonesia Year 2014, BEXI03CCNI Shelf Registration Bonds Indonesia Eximbank, III Phase I Year 2016 Series C, PNBN02CN1 Shelf-Registration Bonds II Bank PANIN Phase I Year 2016,

BBTN15 Bonds XV Bank BTN Year 2011, BDKI01CN1 Shelf Registration Bonds I Bank DKI Phase I Year 2016, BSSB01CN1 Bank Sulselbar Shelf-Registration Bond I Phase I Year 2016, Bank Sulselbar Sukuk Mudharabah II SMBSB02 Year 2016, BEXI03CCN2 Indonesia Eximbank III Shelf-Registration Bond Phase II Year 2016 Series C, BBTN02BCN2 Bank BTN Shelf-Registration Bond II Phase II Year 2016 Series B, BMRI01ACN1 Bank Mandiri Shelf-Registration Bond I Phase I Year 2016 Series A, BIIF01BCN3 Maybank Finance Shelf-Registration Bond I Phase III Year 2016 Series B, and BBRI02CCN1 Bank BRI Shelf-Registration Bond II Phase I Year 2016 Series C.

The result of this statistical test is that it can be seen that the minimum value of Coupon Bonds is 6.35 and the maximum value is 12.50. The results showed that the coupon sizes of bonds sampled were 6.35 and 12.50 with an average (mean) of 9.3189 and a standard deviation value of 1.32971. The highest bond coupon value is a company MAYA04SB Bank Mayapada IV Subordinated Bonds Year 2014, while the lowest value is a bond company with a series of bonds BBTN02BCN2 Bank BTN Shelf-Registration Bonds II Phase II Year 2016 Bond Series.

2. Panel Data Regression Model

Table 2. Results *Common Effect Models* (CEM)

Dependent Variable: Y
Method: Least Squares Panel
Date: 09/07/23 Time: 20:47
Sample: 2021
Periods included: 1
Cross-sections included: 27
Total panel (balanced) observations: 27

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	79.30040	18.73277	4.233246	0.0001
X1	1.268705	0.035813	0.000353	0.9997
X2	0.301232	0.183393	1.982548	0.0065
X3	10.28297	2.461338	4.177799	0.0001

R-squared	0.269085	Mean dependent var	0.363083
Adjusted R-squared	0.226917	SD dependent var	0.723176
SE of regression	0.635854	Akaike info criterion	2.001053
Sum squared resid	21.02412	Schwarz criterion	2.145721
Log likelihood	-52.02948	Hannan-Quinn Criter.	2.057140
F-statistic	6.381240	Durbin-Watson stat	0.322181
Prob(F-statistic)	0.000916		

Source: Data Processing Results, 2023

Based on Table 2, the individual test (t-test probability) looks significant with α = 5% and the adjusted R^2 value is 0.226917. The probability value of the f-stat is equal 0.000916 gives the meaning that the model is significant.

Table 3. Results *Fixed Effect Models* (FEM)

Dependent Variable: Y
Method: Least Squares Panel
Date: 09/07/23 Time: 20:45
Sample: 2021
Periods included: 1
Cross-sections included: 27
Total panel (balanced) observations: 27

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	0.420037	4.663352	0.090072	0.9286
X1	0.378358	0.108975	3.471975	0.0010
X2	0.114548	0.950025	0.120574	0.9045
X3	0.265271	0.583682	0.454479	0.6512

Effects Specification

Cross-section fixed(dummy variables)

R-squared	0.287809	Mean dependent var	0.665312
Adjusted R-squared	0.797044	SD dependent var	1.023229
SE of regression	0.972313	Akaike info criterion	2.974853
Sum squared resid	52.94203	Schwarz criterion	3.480779
Log likelihood	91.09470	Hannan-Quinn Criter.	3.176263
F-statistic	1.508708	Durbin-Watson stat	1.419578
Prob(F-statistic)	0.033645		

Source: Data Processing Results, 2023

Based on Table 3., the individual test (t-test probability) looks significant with α = 5% and the adjusted R^2 value is0.797044. The probability value of the f-stat is equal 0.033645 gives the meaning that the model is significant. The Durbin-Watson stat value is 1.419578 which is not yet close to the number 2 range.

Table 4. Results *Random Effect Models* (REM)

Dependent Variable: Y
Method: Panel EGLS (Cross-section random effects)
Date: 09/07/23 Time: 20:49
Sample: 2021
Periods included: 1
Cross-sections included: 27
Total panel (balanced) observations: 27
Swamy and Arora estimator of component variances

Variables	Coefficient	Std. Error	t-Statistics	Prob.

C	3.453931	1.994759	1.731503	0.0880
X1	0.124927	0.076753	2.627646	0.0083
X2	0.543048	0.405467	2.839315	0.0150
X3	0.088237	0.226988	2.388729	0.0387

Effects Specification	S.D	Rho
Random cross-section	0.000000	0.0000
Idiosyncratic random	0.972313	1,0000

Weighted Statistics			
R-squared	0.081047	Mean dependent var	0.665312
Adjusted R-squared	0.726184	SD dependent var	1.023229
SE of regression	1.009744	Sum squared resid	68.31209
F-statistic	1.477266	Durbin-Watson stat	1.769587
Prob(F-statistic)	0.018924		

Unweighted Statistics			
R-squared	0.081047	Mean dependent var	0.665312
Sum squared resid	68.31209	Durbin-Watson stat	1.769587

Source: Data Processing Results, 2023

Based on Table 4, the above individual test (t-test probability) looks significant with $\alpha = 5\%$ and the adjusted R^2 value is 0.726184. The probability value of the f-stat is equal 0.018924 giving the meaning that the model is not significant.

3. Selection of Panel Data Regression Models

To choose the most appropriate model to use in managing panel data, tests that can be carried out are; (1) Chow Test, and (2) Hausman Test. The following is the application of model selection in this research:

Table 5. Results Test Chow

Effects Test	Statistics	df	Prob.
Cross-section F	1.477986	(11.56)	0.1659
Chi-square cross-section	18.352022	11	0.0378

Source: Data Processing Results, 2023

Based on the Chow test results in Table 5, it is known that the probability value is 0.0378. Because the probability value is $0.0378 < 0.05$, the estimation model used is the Fixed Effect Models (FEM).

Table 6. Results Hausman test

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-section	13.764641	4	0.0081

Source: Data Processing Results, 2023

Based on the Hausman test in Table 6, the probability value is known is 0.0081. Because the probability value is <0.05, the estimation model used is Fixed Effect Models (FEM).

4. Hypothesis test

Table 7. Results Coefficient of Determination (Adjusted R^2)

Dependent Variable: Y
Method: Panel EGLS (Cross-section random effects)
Date: 09/07/23 Time: 20:49
Sample: 2021
Periods included: 1
Cross-sections included: 27
Total panel (balanced) observations: 27
Swamy and Arora estimator of component variances

R-squared	0.081047	Mean dependent var	0.665312
Adjusted R-squared	0.726184	SD dependent var	1.023229
SE of regression	1.009744	Sum squared resid	68.31209
F-statistic	1.477266	Durbin-Watson stat	1.769587
Prob(F-statistic)	0.018924		

Source: Data Processing Results, 2023

Based on Table 7, it shows that the Adjusted R-Square is 0.726184, which means that 72.6% of the factors influencing bond prices can be explained by Rating, Maturity and Bond Coupon while the remaining 27.6% is explained by other factors not examined in in this research.

Table 8. Results Simultaneous Test (F Test)

Dependent Variable: Y
Method: Panel EGLS (Cross-section random effects)
Date: 09/07/23 Time: 20:49
Sample: 2021
Periods included: 1
Cross-sections included: 27
Total panel (balanced) observations: 27
Swamy and Arora estimator of component variances

R-squared	0.081047	Mean dependent var	0.665312
Adjusted R-squared	0.726184	SD dependent var	1.023229
SE of regression	1.009744	Sum squared resid	68.31209
F-statistic	1.477266	Durbin-Watson stat	1.769587
Prob(F-statistic)	0.018924		

Source: HaManagement sealHan Data, 2023

In Table 8, it can be seen that the calculated Fvalue is 1.477266 with a significance level of 0.018924 using a significance level (α) of 5%. Based on the table, it is obtained that 0.018 <0.05, this shows that there is a significant simultaneous influence of the Rating, Maturity and Bond Coupon variables on the Bond Price variable on the Indonesian Stock Exchange in the Banking Sector.

Table 9. Results Partial Test (t Test)

Dependent Variable: Y
Method: Panel EGLS (Cross-section random effects)
Date: 09/07/23 Time: 20:49
Sample: 2021
Periods included: 1
Cross-sections included: 27
Total panel (balanced) observations: 27
Swamy and Arora estimator of component variances

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	3.453931	1.994759	1.731503	0.0880
X1	0.124927	0.076753	2.627646	0.0083
X2	0.543048	0.405467	2.839315	0.0150
X3	0.088237	0.226988	2.388729	0.0387

Source: HaManagement sealHan Data, 2023

Based on Table 9., results tcount value for Rating is 2.627646 with a significance level of 0.0083 then the variable Rating positive and significant effect on Bond Prices on the Indonesian Stock Exchange, Banking Sector with tcount value 2.627> t_{table} 2.055 and significant value 0.008<0.05.

$T_{calculated}$ value for Maturity is 2.839315 with a significance level of 0.0150 then the variable Maturity positive and significant effect to Bond Prices on the Indonesian Stock Exchange, Banking Sector with t_{count} value 2.839> t_{table} 2.055 and significant value 0.015<0.05.

$T_{calculated}$ value for Bond Coupon is 2.388729 with a significance level of 0.0387 then the variable Bond Coupons have a positive and significant effect to Bond Prices on the Indonesian Stock Exchange, Banking Sector with t_{count} value 2.388<t_{table} 2.055 and significant value 0.03>0.05.

CONCLUSION

1. Before investing in bonds, you should pay attention to bond ratings because ratings can go down and up at any time every day.

2. For investors, to first research if buying bonds with maturity or a relatively short maturity period is likely to occur bond prices will be higher.
3. Companies are advised to buy bonds with high bond coupons because with high bond coupons, the price of a bond will fall.
4. Companies are advised in advance to know the price of bonds, because if bond prices are high it will reduce bond purchases so that investors are fewer or less. So investors should be careful in buying bonds.

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