

Application of the Fixed Effect Model to Measuring Variables Affecting Stock Price in Companies in the Property and Real Estate Industry Sector

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Abstract: To determine the effect of company size, price book value, and profitability ratio on stock prices, a comparative causal study was carried out with a sample of 11 property and real estate sub-sector companies listed on the Indonesia Stock Exchange in 2017 – 2021 which have complete financial statements. Correlation and regression analysis multiplied using Eviews 9 software. The results of this study indicate that the t test proves that company size has a positive direction but has no effect and is not significant on stock prices. Meanwhile, Price Book Value (PBV) and Profitability Ratios are negative and have no but significant effect on stock prices (share). Research with the F test proves that simultaneously firm size, price book value, and profitability ratios affect stock prices. The coefficient of determination test shows the size of the company, price book value, and the ratio of profitability to stock price of 85.70% while 14.3% is the contribution of other factors.

Keywords: Stock Price, Company Size, Profitability Ratio, Price Book Value

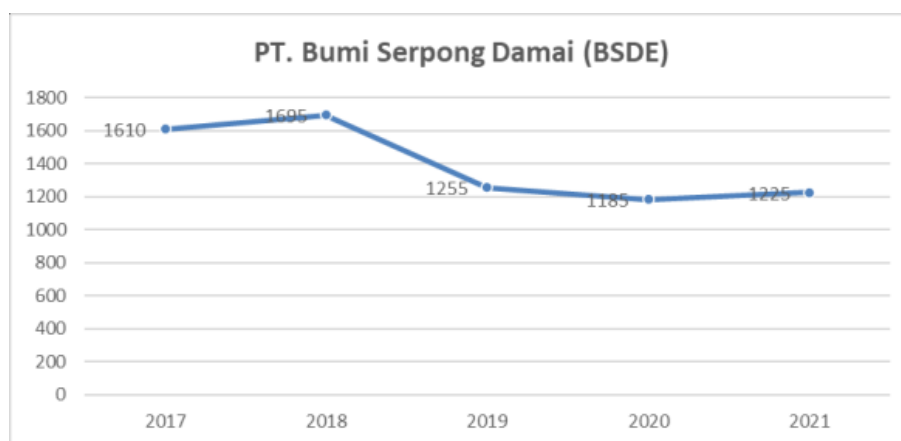
INTRODUCTION

One type of investment that is popular with the millennial generation is stock investment. Shares can be defined as a sign of participation or ownership of a person or entity in a company (Kamaludin and indriani, 2021), many young investors choose stocks because they have two potential benefits, namely coming from dividends where income depends on company performance, and capital gains.

The potential for large stock profits makes stock investment have a high risk, Many investors experience losses in investment activities because they only focus on high profits but do not have sufficient supporting knowledge in investing. Therefore, to reduce the risk of this loss, investors need to obtain all kinds of information that is used as a guide in making investment decisions. In general, there are two streams in stock valuation that investors can

do, namely conducting fundamental analysis and technical analysis. This research uses fundamental analysis where to determine the company's financial performance by analyzing its financial ratios.

The property and real estate industry is an industry engaged in the development of services by facilitating the development of integrated and dynamic areas. The development of the property and real estate industry is so rapid, as evidenced by the increasing number of companies listed on the IDX. However, economic uncertainty due to the pandemic has also put pressure on people's purchasing power to delay investing in the property sector, this of course weighed on the increasingly dismal performance of the property industry on the Indonesia Stock Exchange. One of the property companies that experienced a decline in share price was PT. Bumi Serpong Damai.



Source: Indonesia Stock Exchange, (2022)

Graph 1. 1 Share Prices

From chart 1 above, it can be seen that the share price of PT Bumi Serpong Damai Tbk tends to be unstable and fluctuates from 2017 to 2021.

Based on the phenomena that occur, it can be concluded that stock prices are always fluctuating, resulting in more investors needing more accurate information to avoid the risk of loss. This is what prompted the author to conduct research on the topic of stock prices. This study tries to test the stock prices of Property and Real Estate Sector Companies listed on the IDX in 2017-2021 using several dependent variables that are thought to influence stock prices such as company size, price book value, and profitability ratios.

Based on the description above, the problem under study is the influence of company size, Price Book Value, and Profitability variables on company stock prices in the property and real estate sub-sector for the 2017-2021 period. While the purpose of this research is to find out and prove that company size, Price Book Value, and Profitability have an effect on company stock prices in the property and real estate sub-sector for the period 2017-2021.

LITERATURE REVIEW

The stock price is the price of a stock which is strongly influenced by the law of demand and supply, the stock price will tend to rise when a stock experiences excess demand and tends to fall when there is excess supply. stock prices are unpredictable or have an uncertain pattern (Sudirman, 2015).

Company size is a scale where the size of the company can be classified as measured by the natural logarithm divided by total assets. (Widiastari, Putu Ayu., dan Gerianta Wirawan Yasa, 2018).

Price book value is the ratio used to measure the performance of the stock market price to its book value (Najmiyah, et.all 2014). Price book value is calculated using the formula price per share divided by the book value per share (Cahyaningrum, 2017).

The profitability ratio is another factor that needs to be taken into account by potential investors before investing in stocks, because this ratio affects the long-term viability of the company. In another sense is the prospect in the future. Every company will always try to improve the company's performance, because with high profits, companies can continue to operate and develop so that stock prices continue to rise (Lailia and Nisfatul, 2017).

RESEARCH METHODOLOGY

The research method used in this study is a comparative causal research method, which examines the possibility of a causal relationship between variables and their effect on other variables. This study explains whether or not there is an effect of Company Size, Price Book Value, and Profitability on Stock Prices in property and real estate sub-sector companies listed on the Indonesia Stock Exchange for the 2017-2021 period. According to the analysis and type of data, this research is classified into quantitative data which is processed using the eviews 9.0 application.

How to collect data using purposive sampling technique. The criteria or considerations for sampling used are:

1. The company publishes audited financial statements and has been listed on the Indonesia Stock Exchange for the period ending December 31 during the 2017-2021 period.
2. During the 2017-2021 period, the company has consistently distributed dividends.
3. The company has data on the closing price of shares in each quarter where the shares are actively traded during the 2017-2021 period.
4. The share price did not experience suspension during the 2017-2021 period
5. Representing the Property and real estate sub-sector companies. The company provides complete data, according to what is needed in this study.

Operational variables are descriptions of research structures that describe variables or sub-variables to concepts, dimensions, indicators, and measures that are directed to obtain variable values. In this study the variables used are as follows:

1. Company Size

Company size is a comparison of the size of the business of a company or organization (Sholichah and Andayani, 2015). Basically, company size is divided into 3 categories, namely large firms, medium firms, and small firms. Company size is a scale where the size of the company can be classified according to various ways, including total assets, stock market value, and others (Prasetyorini, Bhukti Fitri, 2013). Calculation of company size in this study uses the formula: $\text{Company Size} = \text{LN}(\text{Total Assets})$

2. Price Book Value

Price book value is the ratio used to measure the performance of the stock market price to its book value (Najmiyah, 2014). PBV also shows how far the company is able to create company value relative to the amount of capital invested. If the book value of a company increases, the value of the company indicated by the share price will also increase. The price book value is calculated using the formula price per share divided by the book value per share (Cahyaningrum, 2017). Calculation of Price Book Value in this study uses the following formula:

$$PBV = \frac{\text{Stock price}}{\text{Book Value}}$$

3. Profitability

The profitability ratio is a ratio to assess a company's ability to make a profit (Kasmir, 2016). Profitability in this study is measured by return on assets (ROA). Return On Assets is a ratio that shows how much the contribution of assets in creating net profit. In other words, this ratio is used to measure how much net profit will be generated from each rupiah of funds embedded in total assets. This ratio is calculated by dividing net income to total assets. The higher the return on assets means the higher the amount of net profit generated (Hery, 2017). Calculation of Profitability Ratios in this study uses the following formula:

$$ROA = \frac{\text{Net profit}}{\text{Total Assets}}$$

4. Stock Price

Stock price is the selling price of a share, every increase and decrease in price that occurs can determine the profit and loss of securities owned by investors. The dependent variable in this study is the stock price of property and real estate sub-sector companies listed on the Indonesia Stock Exchange. namely the stock price that is formed from the presence of factors that affect stock prices in the stock market. The stock price data used is the average annual closing price starting in 2017-2021.

RESULTS AND DISCUSSION

Based on the analysis using sample data from 11 property and real estate sub-sector companies managed using e-views 9, the results of descriptive statistics for each variable are obtained as follows:

1. Stock Price

The maximum value owned by PT Lippo Cikarang Tbk in 2017 was 3015 and the minimum value owned by PT Mega Manunggal Properti Tbk in 2019 was 196. The mean share price of property and real estate sector companies in 2017 - 2021 was 803.1091 and a standard deviation of 480.4263.

2. Company Size

The maximum value is owned by PT. Bumi Serpong Damai TBK in 2020 is -0.7347 and the minimum value is owned by PT. Pakuwon Jati Tbk in 2021 is -0.85510. The mean share price of property and real estate sector companies in 2017 - 2021 is -0.776709 and a standard deviation is 0.030672.

3. Price Book Value

The maximum value is owned by PT. Bumi Serpong Damai TBK in 2021 is 0.694928 and the minimum value is owned by PT. Ciputra Development Tbk in 2018 amounted to 0.219440. The mean share price of property and real estate sector companies in 2017 - 2021 is 0.375560 and a standard deviation is 0.114804.

4. Profitability Ratios

The maximum value is owned by PT. Alam Sutra Realty Tbk in 2021 is 0.652560 and the minimum value owned by PT Mega Manunggal Properti Tbk in 2020 is 0.013244. The mean share price of property and real estate sector companies in 2017 - 2021 is 0.180980 and the standard deviation is 0.198634.

To analyze panel data, the Fixed Effect Model is used, which is a model with different intercepts for each subject (cross section), but the slope of each subject does not change over time (Gujarat, 2015). The results of this calculation using Eviews 9 get the following results:

Table 1. Fixed Effect Model Test Results

Dependent Variable: SHARE
 Method: Panel EGLS (Cross-section weights) Date: 06/01/22 Time: 20:23
 Sample: 2017 2021
 Periods included: 5
 Cross-sections included: 11
 Total panel (balanced) observations: 55
 Linear estimation after one-step weighting matrix

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| C | 1543.282 | 755.4823 | 2.042777 | 0.0475 |
| SIZE | 566.6416 | 1011.901 | 0.559977 | 0.5785 |
| PBV | -675.8510 | 319.4553 | -2.115635 | 0.0405 |
| ROA | -237.0268 | 62.58663 | -3.787179 | 0.0005 |

Source: Eviews 9. (2022), output results

Based on the data in the table above, it can be concluded as follows:

- 1) The constant regression coefficient value is 1543,282, the statistical value is 2.042777, and the probability is 0.0475 <0.05.
- 2) The variable company size (Size) has a regression coefficient value of 566.6416, a statistical value of 0.559977, with a probability of 0.5785 > 0.05, meaning that the variable company size (Size) has a positive and insignificant effect on the variable stock price (share) at the $\alpha = 0.05$.
- 3) The Price Book Value (PBV) variable has a regression coefficient of -675.8510, a statistical value of -2.115635, with a probability of 0.0405 <0.05, meaning that the Price Book Value (PBV) variable has a negative and significant effect on the Stock Price (Share) variable.) at the level of $\alpha = 0.05$.
- 4) The Profitability Ratio Variable (ROA) has a regression coefficient value of -237.0268, a statistical value of -3.787179, with a Probability of 0.0005 <0.05, meaning that the Profitability Ratio variable (ROA) has a negative and not significant effect on the Stock Price (Share) variable at the level of $\alpha = 0.05$.

To determine the most efficient model of the three equation models, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), it is necessary to test each of these models using the panel data regression method. Based on the results of the tests carried out, it can be concluded that the fixed effect model (FEM) was selected.

Correlation Coefficient Test

The results of the Fixed Effect Model (FEM) in the table above obtained the coefficient of determination R2 (R_square) between the Firm Size Variable (Size), Price Book Value (PBV), and Profitability Ratio (ROA) to the Share Price Variable (Share) is 0.892103, then the R value is $\sqrt{0.892103} = 0.944512$ So this number indicates that there is a very strong relationship between the independent variable and the dependent variable.

Multiple Linear Regression Equation Test

From the results of the multiple linear regression equation above, it can be analyzed the effect of each independent variable on the dependent variable, namely:

- 1) A constant of 1543,282 states that if the value of the Company Size Variable (Size), Price Book Value (PBV), and Profitability Ratio (ROA) is constant (value 0) in a positive direction. Then the share price is 1543,282 assuming the regression coefficient of other variables is constant.

- 2) The regression coefficient value of the Company Size Variable is 566.6416 has a positive relationship, so the increase in stock price is 1, the stock price will increase by 566.6416 assuming the regression coefficient of other variables is constant.
- 3) The value of the regression coefficient of the Price Book Value (PBV) variable is the PBV value of -675.8510 which has a negative relationship with the stock price, so when the PBV is -675.8510 the stock price does not increase assuming the regression coefficients of other variables are constant.
- 4) The value of the regression coefficient of the Profitability Ratio Variable (ROA) has a negative relationship with the stock price, so when the ROA is -237.0268 the stock price does not increase assuming the regression coefficient of other variables is constant.

Partial Regression Test (t test)

Based on the test calculations performed, it can be concluded as follows:

- 1) Based on the results in the table above, the partial regression test (t test) shows that the value of the regression coefficient variable Firm Size (Size) $t\text{-count} = 0.559977 < 1.67528$ and the probability is $0.5785 > 0.05$, which means that company size is positive but has no effect and does not significant to the Share Price.
- 2) The partial regression test (t test) shows that, the value of the regression coefficient variable Price Book Value (PBV) $t\text{-count} = -2.115635 < 1.67528$ and the probability is $0.0405 < 0.05$, which means that the Price Book Value (PBV) is negative and has no effect but significant to the Share Price (Share).
- 3) The partial regression test (t-test) on the Profitability Ratio (ROA) variable shows that the $t\text{-count value} = -3.787179 < 1.67528$ and the probability is $0.0005 < 0.05$, which means the Profitability Ratio is negative and has no but significant effect on stock prices (share).

Multiple Regression Coefficient Test (F-Test)

To test the significance of the regression parameters together, the F statistical test is used. The F statistical test basically shows whether all the independent variables included in the model have a simultaneous effect on the dependent or dependent variable. In table F statistics attached in the appendix with $df1 = (i-1) = 11-1=10$ and $df2 = (n-(k+i)) = 66-(3+11) = 52$ and degrees of freedom 0.05.

Based on the results of these calculations, we can compare the F-count of 26.07632 and the F-table of 2.02 (F-count > F-table) and the probability is $0.0000 < 0.05$. it means that H_a is accepted where the variables of company size (size), price book value (PBV), and profitability ratios (ROA) jointly affect stock prices.

Determination Coefficient Test (R^2)

The Coefficient of Determination test is used to find out the presentation on the variable Firm Size (Size), Price Book Value (PBV), and Profitability Ratio to the variable Stock Price (Share). Based on table 1.1, it can be seen that the adjusted R-Squared value is 0.857892, meaning that together the variables company size (Size), Price book value (PBV), and Profitability Ratio (ROA) affect the stock price variable by 85.70%, while the remainder is 14.3 % influenced by other variables not examined.

CONCLUSION AND SUGGESTION

Conclusion

Based on the results of research and discussion with the results of regression using 3 models of the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) approaches, it can be concluded that the Fixed Effect Model (FEM) is considered the best model for analyzing the influence of Company size, Price Book Value,

and Profitability Ratio to Share Price in property and real estate sub-sector companies in 2017 – 2021. Based on the results of research and discussion, it can be concluded that the following:

1. Based on the partial regression test (t test) shows that the value of the regression coefficient variable Firm Size (Size) $t\text{-value} = 0.559977 < 1.67528$ and the probability is $0.5785 > 0.05$, which means that company size is positive but has no effect and is not significant on stock prices.
2. Based on the partial regression test (t test) shows that, the value of the regression coefficient variable Price Book Value (PBV) $t\text{-count} = -2.115635 < 1.67528$ and the probability is $0.0405 < 0.05$, which means that the Price Book Value (PBV) is negative and has no effect but significant to the Share Price (Share).
3. Based on the partial regression test (t test) on the Profitability Ratio (ROA) variable, it shows that the t-count value = $-3.787179 < 1.67528$ and the probability is $0.0005 > 0.05$, which means that the Profitability Ratio is negative and has no but significant effect on stock prices (share).
4. Based on the results of the simultaneous coefficient test (Test F) using the Fixed Effect Model (FEM) this can be seen from the effect of the F-count of $26.07632 > F_{\text{table}} \text{ of } 2.02$ and a probability of $0.0000 < 0.05$. it can be concluded that company size (size), price book value (PBV), and profitability ratios (ROA) jointly affect stock prices in property and real estate sub-sector companies in 2017-2021.

Suggestion

1. For future researchers, it is possible to review the dominant variables influencing stock prices, such as company liquidity, market trends, Return of Equity (ROE), sales and Earning per Share (EPS) Growth.
2. Companies going public must improve their performance in order to be able to increase profitability so that their stock prices continue to rise.

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