Panel data model estimation: the effect of managerial ownership, capital structure, and company size on corporate value

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Abstract. Previous studies have been found that managerial ownership, capital structure, and firm size affect the firm's value. This research uses panel data regression method. By using the panel data of Property and Real Estate firms listed on the Indonesia Stock Exchange, there are 117 observations that combine cross-section data of 39 companies with time-series data during the period 2014 to 2016. From the model selection results, it was found that the fixed effect model is the best model compared with common effect model and random effect model. By applying the best model base, the researchers found an evidence to suggest that the managerial ownership significantly positively affect s firm’s value. The results also showed that firm size significantly positively affects firm’s value. However, the empirical results do not show evidence that capital structure significantly affects the firm's value. The results of this study are consistent with the stated literature that managerial ownership and firm size are the determinants of firm’s value. These factors must be considered by the owners of capital and managers in maximizing the value of the company.

1. Introduction

In the agency theory, it is stated that the shareholder - as the owner of the company - delegates his authority to another party; i.e the manager. This outflow will trigger the emergence of agency conflict that will result in the decline in the value of the company. A decrease in the value of the firm will affect the shareholders' wealth. The conflicts occur between company owners and managers can be minimized by making managers - as an expected professionals - to act on behalf of the owner to achieve the company's goal of increasing the company’s value.

The management will be more careful in doing loaning; because the high amount of debt will cause financial difficulties so that the value of the company will decrease. The decision to choose the source of funding is an important financial decision for the company. If the company wants to increase the value of the company, then the company should seek additional funds, for example through the capital
market. By taking the long-term debt policy taken means that the company's capital structure will change.

Studies on the consequences and correlates of managerial ownership, capital structure, and firm size on firm value can be traced back from previous research. Empirically, previous research has revealed that managerial ownership has a positive effect on value [1]. However, Sujoko & Ugi [2] found that managerial ownership had a negative effect on firm value. The research on the relationship of capital structure with firm value also showed different result among researchers. Sri [3] found that capital structure had positive and significant effect to firm value. Meanwhile, Dewi & Wirajaya [4] states that the capital structure has a negative and significant effect on the value of the company. The research on the relationship of firm size to firm value shows that firm size does not significantly influence company value. Whereas Hasnawati & Sawir [5] asserted that company size is the factor that most influence company value.

2. Method

This research was conducted at property and real estate companies listed in Indonesia Stock Exchange. ICMD (Indonesian Capital Market Directory) is used as the main data source in this research. The type of data obtained from ICMD is quantitative data taken from the company's annual financial report, while the data collection technique used is literary review study and documentation. The populations of this study are all companies of Property and Real Estate companies listed in Indonesia Stock Exchange period 2014 until 2016 which amounted to 51 companies. The sampling process is done by using purposive sampling method. There are 51 property and real estate companies that have been and still listed in Indonesia Stock Exchange from 2014 until 2016; while 12 companies do not have complete financial reports from 2014-2016. From the selection process, obtained as many as 39 companies set as the final sample in the study or as many as 117 observations.

The variable in research consist of two kinds, which is independent variable and dependent variable. The independent variable in this research is Managerial Ownership as X1, Capital Structure as X2, and company size as X3. Meanwhile, the firm value as Y is dependent variable.

| No | Variabel | Definition | Proxy |
|----|----------|------------|-------|
| 1. | Company’s Value | A comparison between stock price per share and book value per share | \( PBV = \frac{\text{Market Price}}{\text{Book Value}} \) |
| 2. | Managerial Ownership | The total shares' ownership by the management of the entire capital's share of the managed company | Percentage of shares owned by directors and commissioners |
| 3. | Capital structure | Comparison of total debt to total equity. | \( DER = \frac{\text{Total Debt}}{\text{Total Equity}} \) |
| 4. | Firm size | The amount of assets owned by the company at a certain period | Size-Log Total Assets |

Source: [6]; [7] [8] [9] [10]

This research is a hypothesis testing research that aims to examine the effect of managerial ownership, capital structure, and firm size on firm value. Form of data used in this research is time series data and cross section. Substantially, panel data is able to overcome the problems caused by ignoring the relevant independent variables [11] [12] [13] Winarno, 2011). Common Effect, Fixed Effect, and Random Effect approach have also been done at data panel regression analysis [14] [15]. The determination of which model is most appropriate use in all three models is done by using chow test and Hausman test.
3. Result And Discussion

Descriptive statistical test aims to provide a general overview of research objects. The calculation of descriptive statistics in this study includes the mean, minimum, maximum, and standard deviation of each variable. The distribution of each variable based is as follows:

| Statistic | PBV     | MO       | DER      | LNTA     |
|-----------|---------|----------|----------|----------|
| Mean      | 1.607094| 43.98709 | 0.703419 | 11.80897 |
| Maximum   | 7.140000| 90.09000 | 0.202000 | 13.66000 |
| Minimum   | 0.100000| 10.22000 | 0.030000 | 9.490000 |
| Std. Dev. | 1.535672| 21.44293 | 0.498852 | 1.255466 |
| Observations | 117    | 117      | 117      | 117      |

Table 2 is a descriptive statistic of 117 observations from 39 companies with observation periods during 2014 to 2016. The lowest value for price to book value as a proxy of company value is 0.10. The minimum value is in Indonesia Prima Property Tbk in 2016. Meanwhile, the highest value is 7.14 in Metropolitan Kentjana Tbk in 2014. The company's value average of the sample company amounted to 1.607094. This reflects that the average market price of sample companies is higher than market to book value per share. Descriptive statistical illustration of Price to Book Value can be presented in the following figure.

![Figure 1. Illustration of Price to Book Value Statistics](image1)

The managerial ownership also provides information that the lowest value is 10.22. The lowest value is in Lippo Karawaci Tbk. Meanwhile, the highest value is 90.09 at Indonesia Prima Property Tbk in 2014. On average, managerial ownership of the sample company amounted to 43.98709. This means, the amount of ownership of shares by the management of the entire capital stock of the managed company is quite high. Specifically, variations of Managerial Ownership are provided in the following Figure:

![Figure 2. Illustration of Managerial Ownership Statistics](image2)

The information obtained from the capital structure (proxy with debt to equity ratio) of the sample company is the lowest value reaching 0.03, while the highest value reaches 2.02. The lowest score is on the Ristia Bintang Mahkotasejati Tbk in 2016, and the highest value is in Cowell Development Tbk in 2015. The average capital structure of the sample company is 0.703419. This provides information that
sample companies use more funds on an external basis (debt) than on internal funds (equity). Statistics illustration from Debt to Equity Ratio can also be depicted as follows:

![Figure 3. Statistics illustration from Debt to Equity Ratio](image)

Take a look from the side of firm size shows that the lowest value is 9.49, while the highest value is 13.66. Based on the data and information on total assets of the company, Suryamas Dutamakmur Tbk as a sample company, is considered as a small company compared to other sample companies. However, Lippo Karawaci Tbk considered as a large company compared with other sample companies. A general illustration of the company's total assets can be visualized to the following figure.

![Figure 4. Illustration of Total Assets](image)

### 3.1. The Selection of Panel Data Regression

The analysis stages used to determine the best estimation models in panel data are the estimation of Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The results of statistical tests obtained in estimating the models are as follows:

| Variable | CEM | FEM | REM |
|----------|-----|-----|-----|
|          | t-Stat | Prob | t-Stat | Prob | t-Stat | Prob |
| MO       | 2.295789 | 0.0235 | 3.368306 | 0.0012 | 3.197432 | 0.0018 |
| DER      | 2.640275 | 0.0095 | 0.744886 | 0.4587 | 2.158406 | 0.0330 |
| LNTA     | 0.848242 | 0.3981 | 3.577121 | 0.0006 | -0.103067 | 0.9181 |
| R-Squared| 0.084935 | 0.897154 | 0.095757 | |

Table 4 shows the t-statistics, probability and R-Squared values for each model as the basis for selecting the best model in panel data regression. The estimation results explain that each model has a different significance value for each variable. However, viewed from the R-Squared value, the estimation by using the fixed effect model has a more dominant ability in explaining the dependent variable. Nevertheless, to find out which model is best, further testing is done by using Chow-test and Hausman-test.

| Effects Test        | Statistic | d.f.  | Prob.  |
|---------------------|-----------|-------|--------|
| Cross-section F     | 15.587091 | (38,75) | 0.0000 |
| Cross-section Chi-square | 255.734593 | 38 | 0.0000 |
The aim of the Chow test is to determine which model is better to be used between the Common Effect Model and Fixed Effect Model. Table 5 shows that the probability value in the Chi-square Cross-section is smaller than alpha (α) (0.0000 < 0.05), then H0 is rejected. This means that the Fixed Effect Model is better to be used rather than the Common Effect Model.

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|--------------|------------------|-------------|-------|
| Cross-section random | 16.503892 | 3 | 0.0009 |

The aim of the Hausman test is to determine a better model between the Fixed Effect model and the Random Effect model. Table 6 shows that the probability value in the cross-section random is smaller than alpha (α) (0.0009 > 0.05), so H0 is accepted. Thus, it can be concluded that a suitable model used in panel data regression is the Fixed Effect Model.

3.2. Hypothesis testing

This study is conducted to see the effect of independent variables on the dependent variable. Regression analysis of panel data is used to see whether the hypothesis that has been made will be accepted or rejected. The significance level used is 5%. The estimated statistical model is the best model and free from the deviation of classical assumptions. To find out the results of hypothesis testing after selecting the model, it can be seen in the following table:

| Table 6. Fixed Effect Model Estimation Results of Managerial Ownership, Capital Structure, and Company Size on Corporate Value |
|---------------------------------------------------------------|
| Dependent Variable | = Company’s values |
| Independent Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| MO | 0.041639 | 0.012362 | 3.368306 | 0.0012 |
| DER | 0.516983 | 0.694043 | 0.744886 | 0.4587 |
| LNTA | 2.898598 | 0.810316 | 3.577121 | 0.0006 |

The first hypothesis states that managerial ownership significantly influences the value of the company. Statistically, the result of the research shows that there is a positive influence between managerial ownership toward the value of the company in the proxy with price to book value in the property company listed on the Indonesia Stock Exchange. The Managerial ownership of the firm’s value is positive. It means that any managerial ownership has an impact to the company's value improvement.

The second hypothesis states that capital structure has a significant effect on the firm value. The result of the study is not show any evidence of significant influence between the variable of capital structure on the value of the company to the property companies listed on the Indonesia Stock Exchange. This indicates that the capital structure is not a determinant factor of the size or value of the company. In a word, information about the company's capital structure does not have a significant impact to the value of the company.

The existence of a positive influence between capital structure variables and the value of the company states that an increase in the amount of debt in the capital structure of a company indicates the company is confident of the future earnings prospects of the company. That is the reason why the company does not have to worry about payment of debt and interest.

The third hypothesis states that firm size has a significant effect on the firm value. Any tests related to the relationship between firm size and corporate value have provided statistical evidence. These evidence are the results of the study indicate that there is a positive and significant influence between firm size on the value of the company on property companies listed on the Indonesia Stock Exchange. In the area of corporate finance, Dang, Li, & Yang [6] found that statistically, firm size is significant to firm value. In general, large companies have higher asset values than small firms, so large companies are easier to enter the capital market. The size of a large company shows the company experiencing growth so that investors will assess positive and the value of the company will increase.
4. Conclusion

Based on the results and discussion, it is concluded that managerial ownership significantly positively affects the value of the company. The results also show that the firm size significantly positively affects company value. However, empirical results do not show evidence that capital structure significantly affects firm value. The results of this study are consistent with the literature that states the managerial ownership and firm size are the determinants of corporate value. These factors must be considered by the owners of capital and managers in maximizing the company value.

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