III. RESEARCH METHODOLOGY

3.1 Research Object

A. Population and Sample

The population in this research are all companies listed in Indonesia Stock Exchange in 2010-2014, as many as 141 companies. Samples were taken from population by purposive sampling method with several criteria must be met as follows:

1. The Company has the proportion of institutional ownership during the period 2010-2014.
2. Companies presents the complete financial report for the period 2010-2014.
3. Value of the Company (PBV) is not negative.
4. Companies that do not have data outliers for each variable.
5. The sample company have the needed information during the period on this study.

Based on the criteria outlined above, then we obtained sample as shown in the following table:
Table 2. Research Sample

<table>
<thead>
<tr>
<th>Sample Characteristics</th>
<th>Emiten</th>
</tr>
</thead>
<tbody>
<tr>
<td>The manufacturing company that listed in Indonesia Stock Exchange in 2010-2014</td>
<td>105</td>
</tr>
<tr>
<td>Manufacturing companies which do not have institutional ownership</td>
<td>2</td>
</tr>
<tr>
<td>Companies that have a data outlier and the value of the company is negative</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total research sample</strong></td>
<td><strong>84</strong></td>
</tr>
</tbody>
</table>

Source: data processed

3.2 Research Design

A. Type and Source of Data

The data used in this research is panel data, which is a combination of time series data and cross section data. Meanwhile, the data used in this research is secondary data. Secondary data is a source of research data obtained by researchers indirectly through an intermediary medium (obtained and recorded by the other party). The use of secondary data on the basis of the consideration that the companies studied was go public company, which has the obligation to make financial reporting to parties outside companies.

Secondary data in this research in the form of annual reports from manufacturing companies listed in Indonesia Stock Exchange in 2010-2014. Meanwhile, a source of quantitative data used in this research are audited company's financial statements as well as journals and other support references.
3.3 Research Variable and Operational Variable

A. Research Variable

In this study the variables used consisted of the dependent variable, independent variable, and control variables.

1. Dependent Variable

The dependent variable is the variable that explained or influenced by independent variables. The dependent variable (Y) in this company is the value of companies and is expressed with PBV.

2. Independent Variable

Independent variables are variables that describe or affect other variables. This study uses institutional ownership variable as the independent variable (X1) and expressed with INS.

3. Control Variable

Control variables in this study is the dividend policy (X2), debt policy (X3), and the growth of companies (X4). Each variable is expressed with a notation DEV, DER, and GRO sequentially.
B. Operational Definition of Variable

1. Dependent Variable

The dependent variable used in this research are the value of companies. The value of companies is the value that is willing to pay if the company is being sold. Price Book Value is used as a measurement of the company's value in this research (Wongso, 2013).

\[
\text{Price to book value (PBV)} = \frac{\text{market price per share}}{\text{book value per share}}
\]

Price to book value or PBV describe how big the market appreciates the book value of shares in a company. The higher this ratio means the market believes in company's prospects. Companies that goes well, generally PBV ratio reaches above one, which indicates that the market value is greater than its book value.

2. Independent Variable

a. Institutional Ownership

This variable is measured from the total percentage of shares hold by institutions. Institutional stock ownership is ownership by the parties in the form of institutions, such as banks, insurance companies, investment companies, pension funds, and other institutions. Calculation of share ownership by the institution is
measured by calculate the total shares owned by all institutional ownership to number of shares outstanding (Haruman, 2008).

\[ INS = \frac{Total \ shares \ owned \ by \ institutional \ ownership}{total \ outstanding \ shares} \times 100\% \]

3. Control Variable

a. Dividend Policy

Dividend policy in this research is measured by using dummy variables, where DEV = 1, if the company's share dividend DEV = 0, if the company does not distribute dividends.

b. Debt Policy

Debt policy is a policy of funding from external companies. Measurement in this research is the debt to equity ratio (DER), which is the ratio of debt to equity. Can be formulated as follows (Brigham and Houston, 2006):

\[ DER = \frac{total \ debt}{total \ equity} \]

c. Growth

According Nasihah and Widyarti (2012) the company's growth is represent a measure company’s success. Assets are used for operational activities of the company. The greater assets that is
expected then the greater operating results generated by a company.

The company's growth is measured using changes in total assets.
The company's growth is the difference between the total assets owned by the company in the current period to the previous period divided by the total assets of the previous period (Puspita, 2011).

\[
GRO = \frac{\text{total assets of current period} - \text{previous period}}{\text{Total assets of previous period}}
\]

Operational variables above can be summarized in Table 3 below:

Table 3. Summary of Definition and Operationalization Variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Formulation</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of the Company</td>
<td>Ratio of year-end stock market price and book value of the company</td>
<td>[ PBV = \frac{PS}{BVS} ]</td>
<td>Ratio</td>
</tr>
<tr>
<td>Institutional Ownership</td>
<td>The proportion of shares held by institutions</td>
<td>[ INS = \frac{\text{shares held by institutional}}{\text{total outstanding shares}} ]</td>
<td>Ratio</td>
</tr>
<tr>
<td>Dividend Policy</td>
<td>Dummy variable</td>
<td>Dummy variable</td>
<td>Dummy variable</td>
</tr>
<tr>
<td>Debt Policy</td>
<td>Ratio between debt to equity</td>
<td>[ DER = \frac{\text{total debt}}{\text{total equity}} ]</td>
<td>Ratio</td>
</tr>
<tr>
<td>Company’s Growth</td>
<td>Changes in total assets</td>
<td>[ GRO = \frac{\text{total assets of current period} - \text{previous period}}{\text{Total assets of previous period}} ]</td>
<td>Ratio</td>
</tr>
</tbody>
</table>
3.4 Analysis Tools

A. Descriptive Analysis

Descriptive statistics provide a description of a data from the average value/mean, standard deviation, maximum, and minimum (Ghozali, 2011). It aims to provide an overview of the object under study through the sample data to make a general conclusions, so that the variables used in the study are easier to understand.

B. Multiple Linear Regression Analysis

Multiple linear regression analysis is use to measure the strength of the relationship between two or more variables, and also shows the direction of the relationship between the dependent variable and independent variables (Ghozali, 2011). The equation formulated as follows:

\[ PBV = \alpha + \beta_1 INS + \beta_2 DEV + \beta_3 DER + \beta_4 GRO + \varepsilon \]

Description

\[ Y = PBV = \text{Value of the Company} \]
\[ X_1 = INS = \text{Institutional Ownership} \]
\[ X_2 = DEV = \text{Dividend Policy} \]
\[ X_3 = DER = \text{Debt Policy} \]
\[ X_4 = GRO = \text{Growth} \]
\[ \beta_1, \beta_2, \beta_3, \beta_4 = \text{Coefficien of Regression} \]
\[ \alpha = \text{Constanta} \]
\[ \varepsilon = \text{Error} \]
This study uses an Eviews software to do the multiple regression models for panel data, where there are three approaches on the panel data, that are:

1. **Pooling Least Square**

   This approach is the simplest approach with two other approaches. With this approach, we can not see the differences between individuals and differences over time because the intercept and slope of the model are the same (Armida, 2009).

2. **Fixed Effect Approach**

   On this approach, the panel data model has an intercept which may vary for each individual and the time is each cross-section unit is fixed in time series (Armida, 2009).

3. **Random Effect Approach**

   On this approach, the difference between time and individuals are accommodated by error. Error in this approach is divided into error for the individual components, an error for the time component and composite error. This study uses Generalize Least Square (GLS). Advantages of random effect model compared to fixed effect model is the degrees of freedom, are not necessary to estimate the intercept of N cross-sectional (Armida, 2009).

Tests were conducted to test which approach is used, are Chow Test and Hausman Test.
• Chow Test is a test that is performed to determine whether the model used is pooled least squares or fixed effect. This test uses F distribution statistics if the value of F statistic is greater than the F table, means this study using a fixed effect approach (Armida, 2009).

H₀: Model is using pooled least square approach
H₁: Model is using fixed effect approach

• Hausman Test is a test that is performed to determine whether the model used fixed effect or random effect approach. This test using chi-square distribution, whereby if the probability of Hausman smaller than α (Hausman test results significantly), the model used is the fixed effect approach (Armida, 2009).

H₀: Model is using random effect approach
H₁: Model is using fixed effect approach

C. Classical Assumption Testing

Good regression linear model can be regarded as a good model if the model meets the assumptions called classical assumptions. If the value of classical assumptions are met, then the method of estimation will create a Linear Unbiased Estimator and have a minimum variance that is often called BLUE (Best Linear Unbiased Estimator) (Widarjono, 2009).

1. Normality Testing

Normality test is used to determine the normality of the error term and variable, for both independent and dependent variables, whether the data
is spread normally. A good regression model is the normal distribution of data or nearly normal. This study uses Jarque-Bera to measure whether or not the data is normally distributed (Widarjono, 2013).

To detect whether the residual is normally distributed or not, that is by comparing the value of Jarque Bera with $X^2$ table, namely:

a. If the value $\text{JB} > X^2$ table, then the residual distribution is not normal.

b. If the value $\text{JB} < X^2$ table, then the residual normally distributed.

2. **Multicollinearity Testing**

At a regression model, we often see the close relationship among the independent variables. Multicollinearity test aims to test whether the regression model found a correlation among the independent variables (independent). In a good regression model should not have happened a correlation among the independent variables (Ghozali, 2011). As a rule of thumb, if the correlation coefficient is high at over 0.85 then we assume there is a multicollinearity in the model (Widarjono, 2013).

3. **Heteroscedasticity Testing**

Heteroscedasticity test aims to test whether in the regression model occurred inequality variance from one observation to another observation. If the residual variance of an observation to another observation remains then it is called homoscedasticity, and if it is
difference it called heteroscedasticity. A good regression model that is homoscedasticity or not happen heteroscedasticity (Ghozali, 2011).

Heteroscedasticity testing in this study using the method of White. This method does not require assumptions about the normality of the disturbance variables. A White test based on the number of samples \( n \) multiplied by \( R^2 \) that will follow the distribution of chi-squares with the degree of freedom as the independent variable, which not included in the contants of regression auxiliary (Widarjono, 2013).

Criteria for decision-making in this test are:

a. If the value of chi-squares \( (nR^2) \) count that is smaller than the value of chi-square table \( (X^2) \) then it is assumed there is no heteroscedasticity.

b. If the value of chi-squares count is greater than the value of chi-square table \( (X^2) \) it is assumed that there is heteroscedasticity.

4. Autocorrelation Testing

Autocorrelation test aimed to testing whether a linear regression model was no correlation between bullies error in period \( t \) with an error in period \( t - 1 \) (previous) (Ghozali, 2011). This study is using the Duwbin-Watson test, to examine wheter there is an autocorrelation or not. The Duebin-Watson test is camparing the DW value with the value in the table at level of \( k \) (the number of independent variables), \( n \) (number of samples), and \( \alpha \) (significance level) that exist.
Figure 3. Decision areas of Durbin-Watson Statistical Test. 

It can be seen in Figure 3 above, the decision whether or no autocorrelation that if the DW test > du and DW test <4 - du, we conclude that the proposed model does not occur autocorrelation at a certain significance level (Widarjono, 2013).

D. Hypothesis Testing

1. T-Statistical Testing

T-statistical test basically shows how far the influence of the explanatory/independent variables in explaining the variations of dependent variable individually (Ghozali, 2011).

Hypothesis criteria:

Ho; βi = 0, meaning no significant effect between independent variable on the dependent variable (value companies) individually.

Ha; βi ≠ 0 means there is significant influence between independent variable on the dependent variable (value companies) individually.
Testing criteria, if \( t \text{ count} > t \text{ table} \), \( H_0 \) is rejected and \( H_a \) accepted this means that there is a relationship between independent variables and the dependent variable (value companies).

In the output regression, the partial test can also be done by looking at the value of probability. When the probability value (0.000) < \( \alpha \) (0.05) then the hypothesis is accepted.

2. **F-Statistical Testing**

According to Ghozali (2011), F-test shows that all independent variables in the model are intended to have the simultaneous effect on the dependent variable. This test uses additional control variables that were entered into the regression model. The control variables are the dividend policy (DEV), debt policy (DER), and growth (GRO).

Criteria hypothesis:

\( H_0: \beta_i = 0 \), means there is no significant effect between the independent variables on the dependent variable (value companies) simultaneously.

\( H_a: \beta_i \neq 0 \) means there is a significant relationship between the independent variables on the dependent variable (value companies) simultaneously.

Testing criteria, if the value of F count > F table, \( H_0 \) is rejected and \( H_a \) accepted this means that there is a relationship between independent variables and the dependent variable (value companies).
In the output regression, the simultaneous test can also be done by looking at the value of probability, when the probability value (0.000) $< \alpha$ (0.05) then the hypothesis is accepted.