CHAPTER III

RESEARCH METHODOLOGY

3.1 Population and Sample

According to Sekaran and Bougie (2009), population is the entire group of people, events or things that the researcher desires to investigate. It is also stated that sample is a subset of the population.

The population and sample of this research are 25 selected companies considered eligible to meet SRI KEHATI Index criteria. The presence of those companies will be evaluated twice a year, in April and October and the result will be publicized by BEI.

This research uses secondary data gathered from another party which do not directly obtain from the subject of observation. The data are the publicly available data. This research will also use a purposive sampling method to take the representative samples with the specified criteria. To be included in the sample, the firm must satisfy the following criteria:

1. Companies listed in Indonesia Stock Exchange (IDX) and meet SRI KEHATI Index over 5 years during the period of 2010-2014 respectively
2. Companies considered eligible to meet SRI KEHATI Index criteria and always listed in SRI KEHATI Index each publishment (2010-2014)

3. Companies published CSR disclosure in a form of annual report (sustainability report) or stand-alone CSR report on 2010-2014 respectively
4. Sufficient financial data was available in IDX database and Indonesian Capital Market Directory (ICMD) to calculate financial performances and other variables

Table 2
The Selection of The Sample

Explanation	Criteria	Quantity
Criteria 1	Companies considered eligible to meet SRI KEHATI Index criteria each publishment (2010-2014)	25
Criteria 2	Companies considered eligible to meet SRI KEHATI Index criteria but not always listed in SRI KEHATI Index each publishment (2010-2014)	(9)
	Total	16

Table 3
Research Sample

No.	Code	Company
1	AALI	Astra Agro Lestari Tbk.
2	ANTM	Aneka Tambang (Persero) Tbk.
3	ASII	Astra International Tbk.
4	BBCA	Bank Central Asia Tbk.
5	BDMN	Bank Danamon Indonesia Tbk.
6	BBNI	Bank Negara Indonesia (Persero) Tbk.
7	BBRI	Bank Rakyat Indonesia (Persero) Tbk.
8	BMRI	Bank Mandiri (Persero) Tbk.

9	INDF	Indofood Sukses Makmur Tbk.
10	KLBF	Kalbe Farma Tbk.
11	PGAS	Perusahaan Gas Negara (Persero) Tbk.
12	PTBA	Tambang Batubara Bukit Asam (Persero) Tbk.
13	TLKM	Telekomunikasi Indonesia (Persero) Tbk.
14	TINS	Timah (Persero) Tbk.
15	UNVR	Unilever Indonesia Tbk.
16	UNTR	United Tractors Tbk.

Source: SRI KEHATI Index

3.2 Data Collection Method

Data used for this research is secondary data of 25 selected companies which meet SRI KEHATI Index criteria in year 2010-2014 which include financial statement and corporate social responsibility disclosure. Data were both in form of qualitative and quantitative and were collected from:

1. SRI KEHATI Index publishment during the period of 2010-2014 respectively
2. www.idx.co.id to get data of companies' financial statement and annual report during the period 2010-2014
3. Indonesian Capital Market Directory (ICMD) to get data of 25 selected companies listed in SRI KEHATI Index criteria
4. The official website of each company to obtain data on extensive corporate social responsibility disclosure

3.3 Research Variables

According Sekaran (2007), variable is anything that can distinguish or bring variation in value. Values can be different at different times for the same object or person or at the same time for different objects or persons. On the other hand, Sugiyono (2003) elaborate research variable as anything defined by the researchers to be studied in order to obtain information about it, then drawn conclusions.

In this study, there are three types of variables which are used. The variables used are the independent variables, control variables and the dependent variable. Definition of each variable according Sugiyono (2003) are as follows:

3.3.1 Independent Variable

Independent variables also called stimulus variable, predictors, antecedents, it means the variables that affect the dependent variable. The independent variables in this study is Corporate Social Responsibility Disclosure Index (CSRDI).

3.3.2 Dependent Variable

The dependent variable is often called the output variable or criteria consequence. The dependent variable is a variable that is affected by the independent variable. The dependent variable in this study is the Return on Assets (ROA), Return on Earnings (ROE) and Price to Book Value (PBV).

3.3.3 Control Variable

Control variables are variables that are controlled or held constant so the effect of independent variables on the dependent variable is not influenced by external factors. In this study, the control variables used are Firm Size (SIZE) and Debt to Equity Ratio (LEV).

3.4 The Measurement of Variables

According to Sugiono (2009), research variable is an attribute, nature or value of people, object or activities which has a certain variation set by researcher to be learned and conclusion drawn.

3.4.1 Independent Variables

According to Sekaran and Bougie (2010), independent variable is one that influences the dependent variable in either a positive or negative way.

The independent variable in this study is Corporate Social Responsibility (CSR) as measured by the Index of Corporate Social Responsibility Disclosure (CSRDI). The measurement then conducted based on each company's disclosure index is calculated by dividing the number of the item with the company disclosed the expected number of items disclosed the company.

Approach to calculate CSRDI basically using dichotomous approach that every item of CSR in the research instrument rated 1 if disclosed, and the value 0

if it is not disclosed (Haniffa et al, 2005) in Sayekti and Wondabio (2007). Furthermore, the scores of each item is summed to obtain the overall score for each company. CSRDI calculation formula is as follows:

$$CSRDIj = \frac{\sum Xij}{nj}$$

Where:

$CSRDI_j$: *Corporate Social Responsibility Disclosure Index* company j

n_j : Item number of CSR for company j, $n_j = 78$

X_{ij} : Item number of CSR which is disclosed by each company (1 = if the i item disclosed; 0 = it i item is not disclosed)

3.4.2 Dependent Variables

Dependent variable is variable of primary interest to the researcher (Sekaran and Bougie, 2010).

The dependent variable in this study is the financial performance as measured by Return on Assets (ROA), Return on Equity (ROE) and Price to Book Value (PBV).

3.4.2.1 Return on Asset (ROA)

This ratio describes the return of the company of all assets used for business activities. ROA can be formulated as follows (Wild, Subramanyam and Halsey, 2005):

$$\textbf{Return on Asset} = \frac{\textbf{Earnings Before Interest} \,\&\, Tax}{\textbf{Total Asset}}$$

3.4.2.2 Return on Equity (ROE)

This ratio illustrates the return on equity of shareholders or the owners of the company. ROE can be formulated as follows (Wild, Subramanyam and Halsey, 2005):

$$\textbf{Return on Equity} = \frac{\textbf{Net Income}}{\textbf{Total Equity}}$$

3.4.2.3 Price to Book Value (PBV)

Price to Book Value is used to compare a stock's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value per share. PBV can be formulated as follows (Brigham and Houston, 2006):

$$\textbf{Price to Book Value} = \frac{\textbf{Market price per share}}{\textbf{Book value per share}}$$

3.4.3 Control Variable

To examine the relation between CSR and financial performance, it is necessary to control for other variables that might affect CSR or the firm's financial performance. This research used firm size and debt to equity ratio as control variables.

3.4.3.1 Firm Size

This research includes firm size (SIZE) as a control variable because larger firms would generate higher earnings-generating power from their economy of scale and learning ability than smaller firms. Furthermore, larger firms are more capable of investing in CSR activities. SIZE was measured by:

$$\textbf{Firm Size} = \textbf{Ln Total Assets}$$

3.4.3.2 Debt to Equity Ratio

This ratio, often called financial leverage (LEV), provides the information on the firm's ability to pay its debt and reflects the firm's risk. LEV indicates how much debt a company is using to finance its assets relative to the amount of value represented in shareholders' equity. LEV is related to CSR as well as financial performance. It is used to control the risk of the firm on the link between CSR and financial performance. LEV was measured by:

$$\textbf{Debt to Equity Ratio} = \frac{\textbf{Total Liabilities}}{\textbf{Shareholder's Equity}}$$

3.5 Data Analysis

3.5.1 Descriptive analysis

Descriptive analysis is used to determine the value of descriptive statistics in the form of maximum value, minimum value, average value and standard deviation value of each study variable.

3.5.2 Classical Assumption Test

Multiple linear regression model can be referred to a good model if it meets BLUE criteria (Best Linear Unbiased Estimator) based on Gujarati (1995) in Kuncoro (2013). BLUE criteria can be achieved when it meets classical assumption. The classical assumption that will be tested in this study, such as multicollinearity test, autocorrelation test, heteroscedasticity test and normality test.

3.5.2.1 Multicolinearity Test

Multicolinearity testing is used to know whether the regression model found a correlation between independent variables. A good regression model should not have correlation between independent variables. To detect the presence or absence of multicollinearity in the regression model, can be done by analyzing the matrix correlation of the independent variables. If there is a high correlation between independent variables (above 0.90) then it indicates the existence multicollinearity (Ghozali, 2011).

Multicolinearity can also be seen from the value of tolerance and the variance inflation factor (VIF). Both these measurements indicate each independent variable is explained by the other independent variables. Low tolerance value equal to the value of high VIF (for VIF = 1 / tolerance) commonly used cutoff value is the value of tolerance 0.10 or equal to the value of VIF 10 (Ghozali, 2011).

3.5.2.2 Autocorrelation Test

Autocorrelation test aims to test whether in a linear regression model correlation between error in period t with error in period t-1 (previous). This often occurs in the time series data. If there is a correlation, then called autocorrelation problem (Ghozali, 2011). There are several ways to detect the presence or absence of autocorrelation problem, the Durbin-Watson test, Lagrange multiplier test, the Q statistic test: Box-Pierce and Ljung Box. Durbin-Watson autocorrelation test is the most commonly used.

In the Durbin-Watson test, the hypothesis to be tested is (Ghozali, 2011):

H_0: there is no autocorrelation ($r = 0$)

H_1: there is autocorrelation ($r \neq 0$)

Decisions about the presence or absence of autocorrelation can be seen as following :

Null Hypothesis	Decision	Durbin Watson
There is no positive autocorrelation	Decline	$0 < d < dl$
There is no negative autocorrelation	No Decision	$dl \leq d \leq du$
There is no positive correlation	Decline	$4 - dl < d < 4$
There is no negative correlation	No Decision	$4 - du \leq d \leq 4 - dl$
There is no positive or negative autocorrelation	Accepted	$Du < d < 4 - du$

3.5.2.3 Heteroscedasticity Test

Heteroscedasticity test aims to test whether in the regression model there are inequality variance of the residuals of the observations to other observations (Ghozali, 2011). Consequence of heteroscedasticity in the regression model is estimator obtained become inefficient, both in small and large samples. One way that can be used to determine the presence or absence of symptoms heteroscedasticity is to look at the scatter plot graph.

If there is a specific pattern such as dots that form a particular pattern of a regular (wavy, widened then narrowed), it indicates heteroscedasticity or not. If there is no clear pattern, then there is no heteroscedasticity or not symptoms. To determine whether there is heteroscedasticity or not, can also use Glaciers Test, White Test and Park Test.

Glacier Test proposes to regress the absolute value of the residuals of the independent variables and the regression equation Gujarati (2003) in Ghozali (2011)

$$|Ut| = \alpha + \beta Xt + vt$$

Where:

$|Ut|$ = the absolute value of residuals

Xt = independet variable in the research

If independent variable significantly affects dependent variable ($|Ut|$), then there is any indication of heteroscedasticity (Ghozali, 2011).

3.5.2.4 Normality Test

Normality test is performed to determine whether the data comes from populations that are in a normal distribution or normal spreading (Widiyanto, 2013). Distribution normality test data can be analyzed with graphs and statistical analysis. In the chart analysis, normality can be detected by looking at the spread of the data (points) on the diagonal axis of a chart or view a histogram of the residual. The basis of the decision is lie on if the data is spread around the diagonal line and follow the direction of the diagonal line or histogram graph showing a normal distribution pattern, then the regression model meet the assumptions of normality and vice versa (Ghozali, 2011)

3.5.3 Regression Analysis

Regression analysis is a process to estimate to obtain a functional relationship between the random variable or random dependent and independent variables. In this study using simple linear regression, simple linear regression is a regression that only consist of one independent variable to explain the dependent variable (Maryatmo, 2011). Regression analysis with one independent variable is called simple linear regression analysis, while if more than one independent variable being tested is called multiple linear regression analysis.

In this study, the significance level used was of 5%. As an attempt to investigate whether the firm's CSR activities affect its financial performance, this study estimate the following regression model:

$$\mathbf{FP_{it} = \alpha_0 + \alpha_1 CSR_{it} + \alpha_2 SIZE_{it} + \alpha_3 LEV_{it} + \mu_{it}}$$

Where:

FP = financial performance, as measured by ROA, ROE, and PBV

CSR = Corporate Social Responsibility Disclosure Index (CSRDI)

SIZE = natural log of total assets

LEV = leverage, as measured by book value of debt to book value of equity

α_0 = constanta

αi = independent variable coefficient

$_i$ = object of analysis

$_t$ = time of analysis

μ_{it} = the error term

3.5.4 Statistical Regression Model

After performed classical assumption and the result meets the BLUE criteria, the next step is to test the t, F and Adjusted R^2.

3.5.4.1 Individual Significance Test (t test)

The t statistical test basically shows how far the influence of the individual variable in explaining the variation of the dependent variable (Kuncoro, 2013). The null hypothesis (H_0) to be tested is whether a parameter (β_i) is equal to zero, or:

$$H_0 : \beta_i = 0$$

It means, if independent variable is not a significant explanatory variable on the dependent variable. The alternative hypothesis (H_a), parameter of a variable is not equal to zero, or:

$$H_0 : \beta_i \neq 0$$

It means, these variables are a significant explanatory on the dependent variable. To test these two hypotheses, it is used t statistic. Criteria for rejection or acceptance:

1. If $p - value < \alpha$, then H_0 is rejected.
2. If $p - value > \alpha$, then H_0 is accepted.

3.5.4.2 Simultaneous Significance Test (F Test)

The F statistical test basically indicates whether all the independent variables included in the model have simultaneously influence to the dependent variable (Kuncoro, 2013). The null hypothesis (H_0) to be tested is whether all of the parameters in the model is equal to zero, or:

$$H_0 : \beta_1 = \beta_2 = \ldots \ldots = \beta_k = 0$$

It means, if an independent variable is not a significant explanatory on the dependent variable. The alternative hypothesis (H_a), not all parameters simultaneously equal to zero, or:

$$H_a : \beta_1 \neq \beta_2 \neq \ldots \ldots \neq \beta_k \neq 0$$

It means, all independent variable simultaneously is a significant explanatory on the dependent variable. Criteria for rejection or acceptance:

1. If $p - value < \alpha$, then H_0 is rejected.
2. If $p - value > \alpha$, then H_0 is accepted.

3.5.4.3 Coefficient of Determination

Coefficient of determination (Adjusted R^2) essentially measures how far the ability of the model explaining variations in the dependent variable. The value of determination coefficient is between zero and one. The lower value of Adjusted R^2 means the ability of independent variables in explaining the dependent variable is very limited. A value close to one means independent variables provide

almost all the information needed to predict the variation of the dependent variable.

The weakness of coefficient of determination is biased against the number of independent variables included in the model. Each additional one variable, the value of Adjusted R^2 increases no matter whether these variables influence significantly or not. Therefore, many researchers advocate to use value of Adjusted R^2. Unlike value of R^2, the value of Adjusted R^2 may go up or down if an independent variable is added into the model. Implications of the equation is (Gujarati, 1995):

1. For $k > 1$ and Adjusted R^2, if the number of independent variable increases, Adjusted R^2 will go up by the amount of increase is less than R^2.
2. Adjusted R^2 can be negative even if R^2 always be positive. If Adjusted R^2 is negative, then the value is treated as zero.
3. In general, when an additional independent variable is a good predictor, it will cause a variance value rise, and Adjusted R^2 will increase. Conversely, if the additional independent variable does not increase the variance, then Adjusted R^2 will decrease. This means that additional new variables are not a good predictor.