CHAPTER III

RESEARCH METHODOLOGY

3.1. Research Population and Sample

This research uses the population of all of the listed manufacturing firms in Indonesian Stock Exchange (IDX) in the period of 2009-2014. The reason why manufacturing firms are chosen as the population is because in recent research of real earnings management, practiced by manufacturing firms has been conducted by Oktorina and Hutagaol in 2008 where they found manufacturing firms in Indonesia tend to be more engaged in real earnings management rather than non-manufacturing firms, where 97.44% manufacturing firms engaged in real earnings management and 75.51% non-manufacturing firms engaged in real earnings management.

Purposive sampling method is used in choosing the sample, which is choosing the sample from populations based on the certain criteria (Mustakini, 2007). These criteria are:

1. The financial statement is published in the research period (2009-2014).
2. The financial statement is published in Rupiah currency.

3.2. Type and Data Collection Method

Type of data that will be used is secondary data which are financial statements of the manufacturing firm from 2009-2014 that accessed from

Indonesian Stock Exchange (idx.co.id) and Indonesian Capital Market Directory (ICMD).

3.3. Operational Definition and Measurement of Research Variables

3.3.1. Independent Variables

Independent variable is a variable which is not affected by any other variable. In this research, ownership structure (institutional and managerial ownership), audit quality, and firm size serve as independent variables.

3.3.1.1. Institutional Ownership

Beiner et al., (2003) defined institutional ownership as the percentage of voting rights owned by institutions. Institutional ownership is where shares are hold by financial institutions i.e. insurance company, banking company, pension fund company, and investment banking company (Siregar and Utama, 2005).

$$\text{INST} = \frac{\text{Shares held by institutional firms}}{\text{Outstanding share capital}}$$

3.3.1.2. Managerial Ownership

According to Sujono and Soebiantoro (2007) in Sabrina (2010), managerial ownership is where shares are hold by the company's management measured by percentage of shares owned by management. The management is CEO, directors,

and managers of the firm (Alves, 2012). Managerial ownership is measured by percentage of shares owned by the management from total outstanding shares.

$$\text{MGOW} = \frac{\text{Shares held by the management}}{\text{Outstanding share capital}}$$

3.3.1.3. Audit Quality

According to DeAngelo (1981), audit quality is auditors' market-assessed capability to detect material misstatements in financial statements and report the material misstatements. A quality audit rendered by quality auditors is expected to give higher audit quality than non-quality audit, this is because quality auditors have more accurate and effective training and auditing procedures, auditor independency, and the amount of human resources compared to non-quality audit in order to provide certainty related to accounting numbers reported by the management. DeAngelo (1981) stated that the audit quality performed by public accountants can be assessed from the size of the firm conducting the audit. Audit quality is measured by public accounting firm or KAP of auditors which is distinguished into two categories: KAP Big-4 and KAP non-Big 4. Big accounting firm or KAP (KAP Big-4) will conduct the audit with the perceived higher quality than the small accounting firm or KAP (KAP non-Big-4). Big-4 KAP in Indonesia are:

1. KAP Purwantono, Sarwoko, and Sandjaja affiliated with Ernst and Young (E & Y);

2. KAP Haryanto Sahari & Co. affiliated with PricewaterhouseCoopers (PwC);

3. KAP Osman Bing Satrio & Co. affiliated with Deloitte Touche Thomatsu (DTT);

4. KAP Siddharta, Siddharta, and Widjaja affiliated with Klynveld Peat Marwick Goerdeler (KPMG).

Public accounting firm or KAP size is measured by nominal scale through dummy variable. Value 1 is representing the firm audited by KAP Big-4, whereas value 0 is for the firm audited by KAP non-Big 4.

3.3.1.4. Firm Size

Firm size is a value that indicates the size of the company, where it can be measured by using total assets. Assets, according to Kieso (2011), is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity. Total assets are chosen as a proxy of firm size because it is relatively more stable than any other measure to assess the size of the company (Sudarmadji and Sularto, 2007).

Firm size is obtained from the natural logarithm of total assets of the company in the research period.

$$\text{SIZE} = \ln(\text{Total Assets})$$

3.3.2. Dependent Variable

In this research, earnings management through real activities manipulation will serve as the dependent variable. According to Roychowdury (2006), real earnings management is departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations. There are three measurements of real earnings management: abnormal cash flows, abnormal production costs, and abnormal discretionary expenditures.

Managers who having a tendency to manage the earnings will try to temporarily increase sales during the year by offering price discounts and/or more lenient credit terms. This action is intended to generate additional sales from the next year into the current year. As a result, the total earnings in the current period are higher due to the positive margins. However, when the company re-establish the old prices, the increased sales volumes as a result of the discounts will disappear. The decreasing sales cause the cash inflow per sale becomes lower as margins decline. The lower margins due to price discounts will cause production cost relative to sales to be abnormally high and lower current-period CFO (Roychowdhury, 2006).

Managers of manufacturing firms are able to decide to produce more goods than necessary amount to meet specific demand. Because of higher production levels, fixed overhead costs are spread over a large number of units, lowering fixed costs per unit. This reduction of fixed costs per unit lead to the declining of total cost per unit if there is no any increasing in marginal cost per unit. This will

have an impact to lower COGS and the company reports better operating margins. Meanwhile, the company incurs production and holding costs on the over-produced items that are not sold in the same period. As a result, the incremental marginal costs incurred in the overproduction result in higher annual production costs relative to sales (Roychowdhury, 2006).

Discretionary expenditures such as R&D, advertising, and maintenance are generally expensed in the same period that they are incurred (Roychowdhury, 2006). Therefore, companies can reduce expenses reported or delay to the next year in order to increase the current earnings. If managers decide to reduce discretionary expenses, they should exhibit unusually low discretionary expenses, where discretionary expenses are defined as the sum of R&D, advertising, and SG&A expenses. SG&A are included because it often includes certain discretionary expenses such as employee training, maintenance and travel, etc. (Roychowdhury, 2006).

$$\frac{CFO_t}{Assets_{t-1}} = \alpha_0 \left(\frac{1}{Assets_{t-1}}\right) + \alpha_1 \left(\frac{Sales_t}{Assets_{t-1}}\right) + \alpha_2 \left(\frac{\Delta Sales_t}{Assets_{t-1}}\right) + \acute{\varepsilon}_t \quad (1)$$

$$\frac{PROD_t}{Assets_{t-1}} = \alpha_0 \left(\frac{1}{Assets_{t-1}}\right) + \alpha_1 \left(\frac{Sales_t}{Assets_{t-1}}\right) + \alpha_2 \left(\frac{\Delta Sales_t}{Assets_{t-1}}\right) + \alpha_3 \left(\frac{\Delta Sales_{t-1}}{Assets_{t-1}}\right) + \acute{\varepsilon}_t \quad (2)$$

$$\frac{DISX_t}{Assets_{t-1}} = \alpha_0 \left(\frac{1}{Assets_{t-1}}\right) + \alpha_1 \left(\frac{Sales_{t-1}}{Assets_{t-1}}\right) + \acute{\varepsilon}_t \quad (3)$$

Description:

- CFO = cash flow from operations as reported on the statement of cash flows

- PROD = production costs, defined as the sum of cost of goods sold and change in inventory
- Assets = total assets
- Sales = total sales
- DISX = discretionary expenditures, defined as the sum of advertising expenses, R&D expenses, selling, general and administrative expenses (SG&A). Discretionary expenses are expenses occurred due to management's discretionary (Carter, 2006). Salary and tax expenses are excluded as both of them are non-discretionary.

In this research, residuals are taken as level of abnormal cash flow from operations, abnormal production costs, and abnormal discretionary expenses. For the sake of convenience and uniformity, residuals of abnormal cash flow from operations and abnormal discretionary expenses are multiplied by -1 (Tabassum et. al., 2013). The higher the residuals means the higher level of real earnings management through cash flow from operations, abnormal production costs, or abnormal discretionary expenses. According to Tabassum et al. (2013), this research uses REM Index to measure the overall of real activities manipulation.

REM Index is calculated by using the equation below:

$$\text{REM Index} = -\text{residuals AbnCFO} + \text{residuals AbnProd} - \text{residuals AbnDiscExp}$$

Description:

Residuals Abn_CFO = Abnormal cash flow from operations residual

Residuals Abn_Prod = Abnormal production residual

Residuals Abn_DiscExp = Abnormal discretionary expenses residual

3.4. Data Analysis Methods

3.4.1. Descriptive Statistics Analysis

Descriptive statistics analysis gives a description related to the data based on mean, standard deviation, variance, maximum, and minimum (Ghozali, 2009). Descriptive statistics analysis is conducted to find out dispersion and distribution of data. Descriptive statistics analysis is conducted before data regression.

3.4.2. Normality Test

Normality test is intended to test whether data used in this research is normally distributed or not. If the data is found to be normal, then parametric statistics may be conducted, otherwise non-parametric statistics will be conducted if the data is not normal. In this research, One Sample Kolmogorov-Smirnov Test is used to test the normality of data. One Sample Kolmogorov-Smirnov Test is conducted by using these criteria:

1. If significance > 0.05, then data is normally distributed.
2. If significance < 0.05, then data is not normally distributed.

3.4.3. Classical Assumption Analysis

Classical assumption test is conducted to test whether there are multicollinearity, heteroscedasticity, and autocorrelation in regression analysis. If classical assumption criteria are fulfilled, then the model used in this research is free from classical assumption.

3.4.3.1. Multicollinearity Test

Multicollinearity test is conducted to test whether there is a correlation between independent variable in a regression model. A good regression model should not contain any correlation between independent variable (Ghozali, 2009). Multicollinearity can be detected by Variance Inflation Factor (VIF) and tolerance value (TOL) as a rule of thumb. Multicollinearity test is conducted by using these criteria:

1. If VIF < 10 and tolerance value > 0.1, then there is no multicollinearity.
2. If VIF > 10 and tolerance value < 0.1, then there is an indication of multicollinearity.

3.4.3.2. Heteroscedasticity Test

Heteroscedasticity test is conducted to test the regression model whether there is a dissimilarity of variance in residual from one observation to another observation. A good regression model should have a similarity of variance in residual (homoscedasticity) (Ghozali, 2009). Homoscedasticity happens when variance of residual from one observation to another observation is similar, where heteroscedasticity happens when variance of residual has a dissimilarity.

Heteroscedasticity test in this research is using Glejser Test. Glejser Test is conducted by regressing independent variable(s) by its residual value (Gujarati, 2003). Heteroscedasticity test is conducted by using these criteria:

1. If absolute residual significance value towards independent variable(s) > 0.05, then there is no heteroscedasticity.
2. If absolute residual significance value towards independent variable(s) ≤ 0.05, then there is an indication of heteroscedasticity.

3.4.3.3. Autocorrelation Test

Autocorrelation test is conducted to analyze whether in a linear regression model there is a correlation of error term in t period with error term in t-1 period (period before). If a correlation is found, then there is an autocorrelation problem (Ghozali, 2009). Autocorrelation occurs when there is a correlation in data time series and cross-sectional data, whereas this violates the classical assumption. In this research, autocorrelation test is conducted by using Breusch-Godfrey Test by using these criteria:

1. If probability Obs*R-squared > 0.05 then there is no autocorrelation.
2. If probability Obs*R-squared < 0.05 then there is an autocorrelation.

3.4.4. Hypothesis Testing

To test the hypotheses, this research uses the following multiple linear regression model:

$$EM = \beta 0 + \beta 1\ INST + \beta 2\ MGOW + \beta 3\ AQ + \beta 4\ FS + \varepsilon$$

Description:

- EM = total residuals of earnings management through real activities manipulation
- INST = institutional ownership
- MGOW = managerial ownership
- AQ = public accounting firm or KAP size in a dummy variable equal to 1 if KAP is one of KAP Big-4, 0 if KAP is not included in KAP Big-4
- FS = firm size
- ε = an error term

For hypothesis testing, this research will use multiple linear regression analysis to get the information about the relationship between independent variables and dependent variable. This research will use t-test to examine partially the significant level of each independent variable to dependent variable and F-test to examine the feasibility of the research model. The level of confidence is 95% so the level of significance is 5%.

Hypotheses in this research are:

H1 = Institutional ownership has a negative impact towards real earnings management.

H2 = Managerial ownership has a negative impact towards real earnings management.

H1 and H2 will be accepted if:

- Sig. < 0.05, which means institutional and managerial ownership have an impact towards real earnings management.
- $\beta < 0.00$, to support that institutional and managerial ownership have a negative relationship towards real earnings management.

H3 = Audit quality has a positive impact towards real earnings management.

H4 = Firm size has a positive impact towards real earnings management.

H3 and H4 will be accepted if:

- Sig. < 0.05, which means audit quality and firm size have an impact towards real earnings management.
- $\beta > 0.00$, to support that audit quality and firm size have a positive relationship towards real earnings management.

The coefficient of determination indicates how much the independent variables are able to explain variations in the value of the dependent variable. R^2 value ranges from zero to one. When $R^2 = 0$, it means that the independent variable is not able to explain variations in the value of the dependent variable, whereas $R^2 = 1$ means a variable dependent(s) is perfectly capable to explain variations in the value of the dependent variable.

The higher amount of independent variables in the estimated model the greater the value of R^2. Therefore, for multiple regression, Adjusted R^2 is used as a coefficient of determination.