CHAPTER III

DATA AND METODOLOGY

3.1 Research Variable and Data Type

This study aims to examine the effect of financing variables of Islamic Bank (independent variable) to the performance of Islamic Bank in Indonesia using the return on assets (ROA) (dependent variable). The data that will be used in this study are secondary monthly time series data starting from January 2011 to December 2013 from *Otoritas Jasa Keuangan* (OJK) Indonesia.

3.2 Data Colleting Method and Sources

The data are collected from *Otoritas Jasa Keuangan* (OJK) Indonesia. This following table show the datas and its sources:

Table 3.1

No	Variables	Source
1	(ROA) Return on Assets	Shariah Banking Statistics OJK from January 2011 to December 2013
2	*Mudharabah*	Shariah Banking Statistics OJK from January 2011 to December 2013
3	*Musharakah*	Shariah Banking Statistics OJK from January 2011 to December 2013
4	*Murabahah*	Shariah Banking Statistics OJK from January 2011 to December 2013
5	*Ijara*	Shariah Banking Statistics OJK from January 2011 to December 2013
6	*Istisna*	Shariah Banking Statistics OJK from January 2011 to December 2013
7	*Qard*	Shariah Banking Statistics OJK from January 2011 to December 2013

This study also obtains relevant information from many books, journals, newspaper and others used as reference.

3.3 Operational Definitions

The operational definition is used in order to avoid mistakes in interpreting the data. The operational definition of the variables in this study are as follows:

1. ROA is an indicator of how profitable of a company was relative to its total assets. ROA is displayed as a percentage. ROA gives an idea as to how efficient management was at using its assets to generate earnings and calculated by dividing a company's earnings by its total assets.

   In this study, the return on assets (ROA) was the return on assets (ROA) of Islamic bank in Indonesia from monthly data, January 2011 to December 2013. The data is percentage.

   The formula of return on assets (ROA) was:

   $$\mathbf{ROA} = \frac{Net\ Income}{Total\ Assets} \times 100 \qquad (1)$$

2. *Mudharabah* is a contract that provided by Islamic bank. *Mudharabah* (finance by way of trust) is a form of partnership in which one partner (*rabb al-mal*) finances the project, while the other party (*mudarib*) manages it (Gamal, 2006). This contract was financing variable.

   The data was taken from *financing composition of Islamic commercial bank and Islamic business unit* of *mudharabah* contract in Islamic bank in Indonesia from monthly data, January 2011 to December 2013.The data is in billion IDR.

3. *Musharakah* is a contract that provided by Islamic bank. *Musharakah* (partnership) which according to Gamal (2006), is often perceived to be the

preferred Islamic mode of financing, because it adheres most closely to the principle of profit and loss sharing. Partners contribute capital to a project and share its risks and rewards. Profits were shared between partners on a pre agreed ratio, but losses were shared in exact proportion to the capital invested by each party. This contract was financing variable.

The data used in this study was taken from *financing composition of Islamic commercial bank and Islamic business unit* of *musharakah* contract in Islamic bank in Indonesia from monthly data, January 2011 to December 2013. The data is in billion IDR.

4. *Murabahah* is a contract that provided by Islamic bank. *Murabahah* was the equivalent to asset financing in conventional banking. It was a cost plus mark-up contract. The parties to this contract are the Islamic bank and the borrower. The borrower would approach the bank to buy an asset on their behalf from a supplier at a predetermined price upfront. The bank would carry out its own due diligence before agreeing to take up the contract. This contract was financing variable.

   The data was taken from *financing composition of Islamic commercial bank and Islamic business unit* of *Murabahah* contract in Islamic bank in Indonesia from monthly data, January 2011 to December 2013. The data is in billion IDR.

5. *Ijarah* is a contract that provided by Islamic bank. *Ijara*(leasing) contract, like a conventional lease, *ijara* is the sale of *manfa'a* (the right to use goods) for a specific period. In Muslim countries, leasing originated as a trading

activity and later on became a mode of finance. *ijara* is a contract under which a bank buys and leases out an asset or equipment required by its client for a rental fee (Hassan & Mervyn, 2009). This contract was financing variable.

The data was taken from *financing composition of Islamic commercial bank and Islamic business unit* of *Ijarah* contract in Islamic bank in Indonesia from monthly data, January 2011 to December 2013. The data is in billion IDR.

6. *Istishna* is a contract that provided by Islamic bank. *Istisna* (commissioned manufacture), although similar to *bai bi-thamin ajil* transactions, *istisna* offers greater future structuring possibilities for trading and financing (Mohammad & Melvis, 2015). One party buys the goods and the other party undertakes to manufacture them, according to agreed specifications. Islamic banks frequently use *istisna* to finance construction and manufacturing projects. This contract was financing variable.

   The data was taken from *financing composition of Islamic commercial bank and Islamic business unit* of *Istishna* contract in Islamic bank in Indonesia from monthly data, January 2011 to December 2013. The data was in percentage. The data is in billion IDR.

7. *Qard al-hassan* is a contract that provided by Islamic bank. It was contract of loan for people in needs. It doesn't give profit at all to the contract provider because *qard al-hassan* is benevolent loan or interest-free loan, so

the borrower just need to pay back for what they borrow. This contract was social variable.

The data was taken from *financing composition of Islamic commercial bank and Islamic business unit* of *qard al-hassan* contract in Islamic bank in Indonesia from monthly data, January 2011 to December 2013. The data was in billion IDR.

3.4 Research Model & Analysis Method

3.4.1 Linear Regression Method

Regression analysis is a technique used in statistics for investigating and modeling the relationship between variables (Montgomery et al, 2012).

The analysis method was used linear regression method. The purpose was to identify the influence of the independent variable or the Islamic bank contracts to the dependent variable or the return on assets (ROA).

Regression analysis is interpreted as an analysis of the dependence of a variable to another variable that is the independent variable in order to make estimates or predictions of the average value of the dependent variable with a known value of the independent variable (Basuki, 2015)

In this study, the regression method was use the multiple regression because the independent variable had 6 variables (5 financing variables and 1 social variable) of Islamic Bank, with the dependent variable was the return on assets (ROA).

Econometric model is a statistical model that defines the statistical relationship between variables in particular phenomena. This study was use this following econometric model:

Model 1:

$$Y_i = a + \beta_i X_i + e_i \qquad (2)$$

Where

Y_i = represents tas return on assets (ROA) of Islamic Bank in Indonesia,

Xi = represents bank variables of Islamic contracts,

a represents Constanta,

β represents coefficients,

$_i$ represents the intercept,

e was the error term.

According to Gujarati (2006), a statistical model could be considered as a good model if it meets the following criteria:

1. Parsimonious. A model could never be perfectly capture the reality so that it becomes an urgency to do a bit of abstraction or simplification in the modeling. The inability of models to cover all reality requires it to make a particular model to explain reality into research purposes only.
2. Have a high identification. It means, in the available data, the parameters estimated have a unique value (single, stand-alone), there would be only have one parameter.
3. Harmony or *goodness of fit*. Especially for the regression analysis was to explain as much as possible variation of the dependent variable using

independent variables in the model. Therefore, a model said to be good if the indicator of measurement, the adjusted R-square got high value.

3.4.2 Classical Assumption Test

Before analyzing a regression model in this method, some classical assumption must be fulfilled to ensure the model was represent as a good model. There were assumptions that must be fulfilled in the regression analysis (autocorrelation and heteroscedasticity test). All the analysis would using *Eviews* program as the statistics tool.

3.4.2.1 Autocorrelation Test

Autocorrelation test was used to determine the presence of classic assumption deviation. Autocorrelation was the correlation between the residuals on one observation with other observations in the regression model (Basuki, 2015).

In this study, the autocorrelation test would use the serial correlation LM test. The Obs*R-squared statistic was the Breusch-Godfrey LM test statistic. This LM statistic was computed as the number of observations, times the (uncentered) from the test regression.

If the Obs*R-squared statistics > 0.05, there is no autocorrelation

If the Obs*R-squared statistics < 0.05, there is autocorrelation

When the autocorrelation test was completed, then the regression analysis was continue.

3.4.2.2 Heteroscedasticity Test

Heteroscedasticity was inequality variants of residuals for all observations in the regression model. Heteroscedasticity test was to detect deviations from the requirements of classical assumptions in the regression model. It means the regression model must meet the absence heteroscedasticity (Basuki, 2015).

In this study, the heteroscedasticity test was use the white test. White's test was general because it makes no assumptions about the form of the heteroscedasticity (White 1980). Because of its generality, White's test may identify specification errors other than heteroscedasticity (Thursby 1982). Thus White's test may be significant when the errors are homoscedastic, although the model is misspecified in other ways.

The probability for the white tests are:

If $X^2 > 0.05$, the data is free from heteroscedasticity

If $X^2 < 0.05$, the data is not free from heteroscedasticity

When the heterescedasticity test was completed, then the regression analysis could continued.

3.4.3 Regression Analysis

After get the result of the classical assumption test, then the regression analysis can be done. All the regression analysis were analyze use *Eviews* program. In OLS regression there would be some test to analyze the regression. The R-squared would be use to identify the percentage of how much the independent variables explain the profitability of Islamic Bank. The F-test would be use to identify the influence of the independent variables to the profitability of Islamic bank. The hypotheses will be tested based on the result in OLS regression. The T-test probability is the indicator for the hypotheses test.

3.4.2.1 Coefficient of Determination (R-Squared)

Coefficient of determination or denoted R^2 or r^2 and called (R-squared), was a number indicates the proportion of the variance in the dependent variable that is predictable from the independent variable in statistics.

The coefficient of determination was the square of the correlation between the predicted scores in a data set versus the actual set of scores. It can also be described as the square of the correlation between X and Y scores, with the X represent as the independent variable and the Y represent as dependent variable.

R-squared is a measurement in statistics of how close the data were to the fitted regression line. It is also known as the coefficient of determination, or the coefficient of multiple determinations for multiple regression. Whereas,

the percentage of the response variable variation that is explained by a linear model.

$$R - \text{squared} = \text{Explained variation} / \text{Total variation} \qquad (3)$$

R-squared is always between 0 and 100%. R-squared value was 0%, means the model explains none of the variability of the response data around its mean, while value was 100% indicates that the model explains all the variability of the response data around its mean. Generally, the higher the R-squared has the better the model fits the data (Frost, 2013).

Regardless of representation, an R-squared equal to zero means that the dependent variable could not be predicted using the independent variable. In reverse, if it equals one, it means dependent variable could predicted by the independent variable. A coefficient of determination that falls within this range measures the extent that the dependent variable was predicted by the independent variable.

3.4.2.2 F-Test

F-test would be used in the regression to identify the influence (all independent variables) to dependent variable (Basuki, 2015).

With the hypothesis:

H0: All independent variables not important in explaining the dependent variable

H1: At least one independent variable is important in explaining the dependent variable

With the criteria:

If the probability of F is more than 0.05 (>0.05), Ho is accepted

If the probability of F is less than 0.05 (<0.05), Ho is rejected

3.4.2.3 T-Test

In this study, t-test would be used in testing the hypothesis. T-test is an analysis of two population means through the use of statistical examination. T-test with two samples was commonly used with small sample sizes, testing the difference between the samples when the variances of two normal distributions were not known. T-test looks at the t-statistic, the t-distribution and degrees of freedom to determine the probability of difference between populations; the test statistic in the test is known as the t-statistic.

The formula used to calculate the test was a ratio of: The top portion of the ratio is the easiest portion to calculate and understand, as it is simply the difference between the means or averages of the two samples. The lower half of the ratio was a measurement of the dispersion, or variability, of the scores. The bottom part of this ratio was known as the standard error of the difference. To compute this part of the ratio, the variance for each sample was determined and divided by the number of individuals then compose the sample, or group. These two values were then added together, and a square root is taken of the result, afterwards.

Hypothesis is a statement about the nature of the population, while the hypothesis test is the procedure of proving the nature of the population based

on sample data (Basuki, 2015). Someone who conduct a research would use more sample data rather than the data population. Through sample could used as a tool of verification for population. In doing the research based on sample, a researcher must clearly state the hypothesis of the research conducted to be verified through a study of the sample data (Basuki, 2015). The hypothesis that wrong were stated as null hypothesis symbolized H0, and the correct hypothesis were stated as alternative hypothesis with the symbol H1 (Basuki, 2015).

Statistically, there was t-test to testing the hypothesis of the sample data. T-test is a procedure which the sample results could be used to verify or disprove the null hypothesis (H0). The decision was to accept or reject H0 based on statistics test value obtained from the data.

To test the influence of financing variables and social variables on ROA, the hypothesis used in this study were:

H0: independent variables is not statistically significant influence on ROA

H1: independent variables is statistically significant influence on ROA

With criteria:

If the T-test probability of a variable is more than 0.05 (>0.05), then H0 is accepted

If the T-test probability of a variable is less than 0.05 (>0.05), then H0 is rejected

If rejecting null hypothesis (H0) or accepting the alternative hypothesis (H1) it means the independent variable was statistically significant influence the dependent variable and vice versa. If accepting the null hypothesis (H0) and rejecting the alternative hypothesis (H1), means the independent variable is not statistically significant influence the dependent variable (Basuki, 2015).