

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **A. Object of Research**

The objectives on this research are secondary data of Islamic Commercial Banks and Islamic Business Unit in Indonesia which include Profit Sharing Financing (PSF), Non Performing Financing (NPF), Return on Asset (ROA), Sharia Certificate of Bank Indonesia (SBIS), and Inflation (INF).

#### **B. Type of Data**

Type of data used in this research is quantitative data, it means that the data can be used be measured or counted directly in the form of information or explanation which stated by number (Muhadjir, 1996).

The quantitative data used in this research is secondary data. Secondary data means a primary data that has been processed and served by one party. Every data used in this research is monthly data that collected from Sharia Banking Statistic within period of December 2011-November 2016.

#### **C. Technique of Sampling**

The sampling technique in this research is time series design method; it means the research intends to figure out the stability and an explanation of an inconsistent condition (Sukardi, 2003). Based on the sampling technique above, so the sample that used in this research is part of a population in Sharia Banking Statistics in Indonesia within the last 60 months.

#### **D. Technique of Collecting Data**

Technique of collecting data is a technique used by the researcher to obtain the needed data which can answer the problem of the research (Purwanto, 2008). The collecting data technique used in this research is documentation study. Documentation study is collecting data technique by categorized and classified the relevant references which relate the problem of research. The collected data are data of Profit Sharing Financing (PSF), Non-Performing Financing on Profit Sharing (NPFPS), Return on Asset (ROA), Sharia Certificate of Bank Indonesia (SBIS) and Inflation (INF) within the period of December 2011-November 2016.

#### **E. Operational Definition of Research Variables**

This research used five variables, with one variable as the dependent variable and the rest as the independent variables. Dependent variable is a variable that being described or influenced by other variables (independent variable). Dependent variable in this research is Profit Sharing Financing (PSF). The independent variable is a variable that describe or influence other variable. Independent variable in this research is Capital Adequacy Ratio (CAR), Return on Asset (ROA), Sharia Certificate of Bank Indonesia (SBIS) and Inflation (INF). The operational definition of each variable used in this research will be shown as follow:

**Table 3.1 Variables Operational Definition**

No.	Variable	Definition	Measurement
1	PSF (Y)	Profit sharing is a system which applies revenue distribution procedure between fund provider and fund manager. Generally, profit sharing principle uses two contract, <i>al-musyarakah</i> and <i>al-mudharabah</i> .	Profit sharing financing position of Islamic Commercial Bank and Islamic Business Unit in Indonesia at the end of month stated in Billion Rupiahs.
2	CAR (X1)	A comparison between capital and Risk-Weighted Assets.	Position of CAR in Islamic Commercial Banks and Islamic Business Unit in Indonesia at the end of month and stated in percentage.
3	ROA (X2)	An analysis to measure the ability of banking management on gaining profit.	Position of ROA in Islamic Commercial Banks and Islamic Business Unit in Indonesia at the end of month and stated in percentage.
4	SBIS (X3)	Securities based on Islamic principles in the short-term with rupiah currency issued by Bank Indonesia	Position of SBIS in Bank Indonesia at the end of month and stated in Billion Rupiahs.
5	INF (X4)	An increase in price of goods and services which happens because of an increase in the supply of goods and services in the market.	Inflation position in Indonesia at the end of month and stated in percentage.

Source: Bank Indonesia (2016)

## F. Method of Analysis

The analysis methods used in this research are cointegration test and Vector Error Correction Model (VECM). This method used to see the relationship

among variables; Financing on agricultural sector (FAS), inflation (INF), Non-Performing Financing on agricultural sector (NPFAS), Depositors Fund (DEPF), Capital Adequacy Ratio (CAR), and Return on Asset (ROA). The relationship that will be analyzed is short term and long term relationship among variables. The data and the model in this research are in natural logarithm form, so that the estimation result can show the elasticity of the unit that stated in percentage. Therefore, the relationship among variables can show more rational results.

VECM is a derivative method of VAR (Vector Auto Regression). The assumption needed in VECM method is basically similar, unless the stationary problems. On the contrary with VAR, VECM must be stationed at the first difference level, as well as with all variables, they must be stationed at the first difference level (Basuki and Yuliadi, 2015).

To decide which model we should use to analyze the data on this research, there will be some procedures to be followed, such as: Stationary Data Test, Lag-Length Criteria Test, VAR Model Stability Test, Granger Causality Analysis, Cointegration Test, VECM Empirical Model, Impulse Response Function Analysis, and Variance Decomposition Analysis. The further explanation will be shown as follow:

1. **Stationary Data Test.** Generally, time series economics data is stochastic.

When the data is stochastic, it means the data has unit root. If the data has unit root in it, the data will fluctuate not in its average value, which further makes

it hard to estimate the model (Rusydia, 2009). Nowadays, Unit Root Test is one of a popular concept to test the stationary of time series data. This test is developed by David Dickey and Wayne Fuller; by using Augmented Dickey-Fuller (ADF) Test. The stationary data test that will be used in this research is ADF Test by using alpha 5%.

2. **Lag-Length Criteria Test.** Estimation of VAR is very sensitive on the lag-length used in the model. The lag-length used in the model can be decided with the criteria of Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), or Hannan Quinon (HQ). Besides that, the Lag-Length Criteria Test can be very useful when it comes to autocorrelation in VAR system. So by using Lag-Length Criteria Test, there will be no more autocorrelation problem (Nugroho, 2009).
3. **VAR Model Stability Test.** The test in VAR Stability must be conducted before we continue to a deeper analysis. Because if the estimation result of VAR which is combined with the correction model is not stable, the Impulse Response Function and Variance Decomposition will be invalid (Setiawan, 2007). VAR Model Stability Test can be conducted by measuring the roots of polynomial function or as known as roots of characteristic of polynomial (Johnston and Dinardo, 1997).
4. **Granger Causality Analysis.** This test is only become popular within the last few years in neuroscience. The purpose of this test is to know if the

endogenous variable can be treated as the exogenous variable (Basuki and Yuliadi, 2015). According to Granger causality, if a signal  $X_1$  “Granger-causes” a signal  $X_2$ , then past values of  $X_1$  should contain information that helps predict  $X_2$  above and beyond the information contained in past values of  $X_2$  alone. Its mathematical formulation is based on linear regression modeling of stochastic processes (Seth, 2007).

5. **Cointegration Test.** As stated by Robert Engle and Clive Granger, the existence of non-stationer variable will cause a long term relationship among variables in the system. Cointegration Test conducts to know the relationship among variables, especially in long term relationship. The method that will be used to analyze the cointegration relationship is Johansen Cointegration Test (Basuki and Yuliadi, 2015).
6. **VECM Empirical Model.** The next step—after cointegration test has already conducted—is error correction method. If there is a different in the integration degree among variables tested, the test will be conducted jointly between long-term equation and error correction equation. That difference in the integration degree on the co-integrated variables is called Lee and Granger as multi-cointegration (Hasanah, 2007). Yet, if there is no cointegration, the test will be continued by using first difference variable (Rusydziana, 2009). VECM is basically a restricted VAR model, because the data is not stationer yet co-integrated. The specification of VECM itself is restricting the long term relationship among endogenous variables and changing them to their

cointegration relationship, while keeping the existence of short term relationship.

7. **Impulse Response Function Analysis.** This analysis used to decide what endogenous variable should response on a shock from certain variable. IRF also shows the shock from one variable and how long it could last. Through IRF, a response of independent changes in the amount of one standard deviation can be seen. IRF also explores the impact of interference in the amount of one standard error as an innovation for one endogenous variable to others (Nugroho, 2009).
8. **Variance Decomposition Analysis.** Forecast Error Variance Decomposition (FEVD) elaborates the innovation in one variable on other variables' components in a VAR. The information in FEVD is a series proportion of movement which caused by shock, either it is from its own shock or others' shock (Nugroho, 2009).