# CHAPTER IV

# DATA ANALYSIS AND DISCUSSION

This chapter represents the results and discussion of research and analysis of the data that has been processed by using EViews.

**Study Case on The Significance of Islamic Banking on Indonesia's Economic Growth**

The result of the time series data (quarterly) from World Bank, Bank Indonesia, Badan Pusat Statistik and Trading Economics such as Gross Domestik Product (GDP) as the dependent variable, Total Investment (INV), Total Financing (TF), Inflation (I), Export (EX) and Import (IM) as independent variables are shown below:

## 4.1 Multiple Linear Regression

The result of multiple linear regression equation is shown as follow:

$$GDP_t = \beta_0 + \beta_1 INV_t + \beta_2 TF_t + \beta_3 I_t + \beta_4 EX_t + \beta_5 IM_t + \varepsilon$$

$$\widehat{GDP_t} = -1185651 + 1.417 + 2.331 + 3196.782 + 2.489 + 32.642$$

## 4.2 Normality Test

This test examines whether the dependent and independent variables have a normal distribution relationship which will determine whether the data used in this study is valid or not. The result of this study can be explained as shown in diagram below:

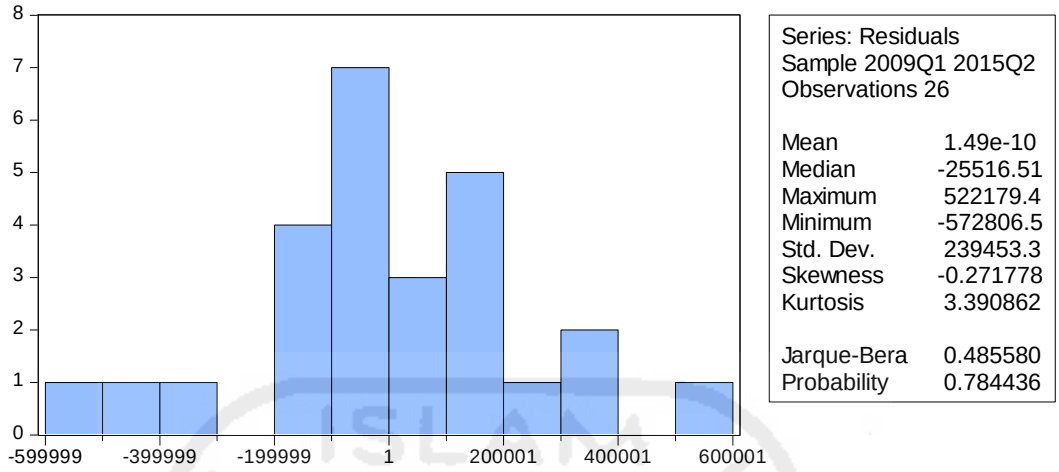


Diagram 4.1 Normality Test Result

As shown in the diagram above, the probability of normality test is higher than 0.05 (0.784 > 0.05). With this, a conclusion has been made, the data used in this study is valid.

### 4.2.1 Multicollinearity Test

**Table 4.2.1**

**THE RESULT OF MULTICOLLINEARITY TEST**

| Variable | Centered VIF |
|---|---|
| INV | 1.305 |
| TF | 2.810 |
| I | 1.764 |
| EX | 3.150 |
| IM | 4.844 |

The results of multicollinearity test can be seen in column Centered VIF. The value for variable INV, TF, I, EX and IM are 1.305, 2.810, 1.764, 3.150 and 4.844. Because of the value of each variable is not more than 10, it can be said that multicollinearity does not exist.

### 4.2.2 Heteroscedasticity Test

**Table 4.2.2**

**THE RESULT OF HETEROSCEDASTICITY TEST**

| | |
|---|---|
| Prob. F | 0.0001 |
| Prob. Chi- Square (5) | 0.0025 |
| Prob. Chi Square (5) | 0.0057 |

When the value of Prob. F is greater than α 5% (0.05), then $H_0$ is accepted, which means there is no heteroscedasticity, whereas when the value of Prob. F is smaller than α 5%, then it is known that $H_0$ is rejected and the presence of heteroscedasticity can be found. As shown in the diagram above, the value of Prob. F is smaller than α 5% (0.0001 < 0.005). Based on hypothesis, $H_0$ is rejected and there is heteroscedasticity. Since it contains heteroscedasticity problem, it needed to be "heal". In order to make the result free from heteroscedasticity problem, one of the ways that can be use id to transform the linear model into a log- linear. The result of the log- linear model is shown as below:

$$\log(GDP_t) = \beta_0 + \log(INV_t) + \log(TF_t) + \log(I_t) + \log(EX_t) + \log(IM_t) + \varepsilon$$

**Table 4.2.2.1**

**THE RESULT OF LOG LINEAR HETEROSCEDASTICITY TEST**

| | |
|---|---|
| Prob. F | 0.0000 |
| Prob. Chi- Square (5) | 0.0009 |
| Prob. Chi Square (5) | 0.0008 |

The results as shown in Table 4.2.2.1 show the presence of heteroscedasticity after went through a healing process by turning a linear model into a log- linear model. Another healing process result is shown as below:

**Table 4.2.2.2**

**THE RESULT OF WHITE HETEROSCEDASTICITY TEST**

Dependent Variable : GDP
Method : Least Squares
Sample : 2009Q1 2015Q2
White heteroscedasticity- consistent standard errors & covariance

| Variable | Coefficient | St. Error | t- Statistic | Prob. |
|---|---|---|---|---|
| INV | 1.417 | 1.097 | 1.292 | 0.2109 |
| TF | 2.331 | 0.543 | 4.290 | 0.0004 |
| I | 3196.782 | 49123.560 | 0.065 | 0.9488 |
| EX | 2.409 | 9.742 | 0.247 | 0.8072 |
| IM | 32.642 | 6.503 | 5.020 | 0.0001 |

By comparing α 5% with the value of probability, we can conclude whether the variables used in this study are significance towards the dependent variable or not. If the value of probability is greater than α 5%, it means the independent variables do not have a significance effect on dependent variable and vice versa. As shown in Table 4.4, independent variable TF and IM, both probability values are smaller than 0.05 (0.0004 < 0.05) and (0.0001 < 0.05), showed a significance effect on dependent variable, GDP. As for the other independent variables, INV, I and EX, the probability of each variable is greater than α 5% which ended up with not being significance towards dependent variable.

In long- run period, we can estimate all variables tent to move towards it equilibrium. In other words, in short- run period, variable which represents

Islamic Banking (TF) and other independent variables and dependent variable (GDP) are tend to adjust each other to each a balance equilibrium.

### 4.2.3 Autocorrelation Test

This test is done in order to detect if there is a correlation problem in this study and the result is shown below:

**Table 4.2.3**

**THE RESULT OF AUTOCORRELATION TEST**

| Breusch- Godfrey Serial Correlation LM Test | |
|---|---|
| Prob. F | 1.8722 |
| Obs*R- squared | 4.4772 |

From the diagram above, the results show no presence of autocorrelation. This is because the value of Prob. F and Obs*R- squared are greater than 0.05 (1.8722 > 0.05) and (4.4772 > 0.05). We can conclude it by saying the data used is free from autocorrelation.

## 4.3 Statistical Analysis

### 4.3.1 Coefficient of Determination

The coefficient (R squared) indicated the proportion of the variance in the dependent variable that is predicted from the independent variables.

**Table 4.3.1**

**THE RESULT OF COEFFICIENT OF DETERMINATION**

| | |
|---|---|
| R- squared | 0.8854 |

From the table above, the variation of independent variables (INV, TF, I, EX and IM) are able to explain the dependent variable (GDP) by 88.54% and the remaining 11.46% is explained by other variables.

### 4.3.2 F- test

F- test is conducted by comparing the result of Prob. F with table F in order to see the effect of all independent variables on the dependent variable and the result of this study is shown as below:

**Table 4.3.2**

**THE RESULT OF F TEST**

| | | |
|---|---|---|
| Prob (F- statistic) | 0.0000 | Significant |

The result of Prob (F- statistic) is smaller than 0.05 (0.0000 < 0.05), it means that the independent variables (INV, TF, I, EX and IM) simultaneously significance on dependent variable (GDP).

### 4.3.3 t- Test

The result of this study is observed through the probability of each independent variable from t- test. Thus, when the probability is significance or

the other way round, we can make our conclusion with hypothesis of this study that once made in previous chapter.

$$\widehat{GDP_t} = 1.4175INV_t + 2.3315TF_t + 3196.782I_t + 2.4087EX_t + 32.6423IM_t$$

(1.0968) (0.5435) (49123.56) (9.7423) (6.5027)

$R^2 = 0.8854$

**Table 4.3.3**

**THE REGRESSION RESULT FROM EVIEWS**

Dependent Variable : GDP
Method : Least Squares
Sample : 2009Q1 2015Q2

| Variable | Coefficient | St. Error | t- Statistic | Prob. |
|---|---|---|---|---|
| INV | 1.417 | 1.097 | 1.292 | 0.2109 |
| TF | 2.331 | 0.543 | 4.290 | 0.0004 |
| I | 3196.782 | 49123.560 | 0.065 | 0.9488 |
| EX | 2.409 | 9.742 | 0.247 | 0.8072 |
| IM | 32.642 | 6.503 | 5.020 | 0.0001 |

$R^2$ values is 0.8854 (88.54%), which means that the independent variables are able to explain the impact of 88.54% on dependent variable. From the above results, we can see independent variable TF has a positive result (2.331), meaning total financing is significance to GDP. The statistical result above, a comparison between α 5% and the value of probability can made. If the value of probability is greater than α 5%, it means there is no significance relationship between dependent and independent variables and vice versa. As for the result as shown in Table 4.8, a further explanation is shown below:

- The probability of INV is higher than α 5% (0.2109 > 0.05), it means INV does not have a significance effect on dependent variable, GDP.

- The probability of TF is smaller than α 5% (0.004 < 0.05). It means TF is significance on dependent variable, GDP. If variable TD increased by 1%, then GDP will increase by 0.2331 (note that other variables are constant) and vice versa.

- The probability of I is higher than α 5% (0.9488 > 0.05), it means I does not have a significance effect on dependent variable, GDP.

- The probability of EX is higher than α 5% (0.8072 > 0.05), it means EX does not have a significance effect on dependent variable, GDP.

- The probability of IM is greater than α 5% (0.0001 < 0.05), it means IM do have a significance effect on dependent variable, GDP.

Based on the probability values that have been compared with α 5%, we can conclude that independent variables TF and IM have a significance effect on GDP. Both variables contribute to the growth of Indonesia's economic and mutually influence between each other. Focusing on Islamic banking (TF), if there is a growth in the Islamic financial sector, it will somehow has a positive impact on economic growth. Likewise, the economic growth will affect positively on the development of Islamic banking. In Indonesia, the government has a policy that encourage investment, which in turn is able to develop the financial sector, both conventional and Islamic banking.

### 4.4 Unit Root Test

In statistics and econometrics, the unit root test is used to test whether the time series data used in a study is stationary or not. Augmented Dickey- Fuller test is commonly used in unit root test. The result of each variable will be shown below:

**Table 4.4**

**THE VALUE OF PROBABILITY OF UNIT ROOT TEST**

| Variable | Level | 1st difference |
|---|---|---|
| GDP | 0.6362 | 0.0008 |
| INV | 0.0712 | 0.0327 |
| TF | 0.0000 | 0.0000 |
| I | 0.1039 | 0.0000 |
| EX | 0.1888 | 0.0000 |
| IM | 0.0582 | 0.0001 |

From the table above, most of the variables used in this study are not stationer at level since the probability of each variable is greater than α 5%, except for independent variable, total financing (TF). TF is stationer at level as shown in the table where the value of probability is smaller than α 5% (0.0000 < 0.05). Then, a second stationarity test has been made by testing each variable on first difference. As for the result, all variables are stationer at first difference.

## 4.5 Error Correction Model (ECM)

### 4.5.1 Estimation of Long- term Equation

**Table 4.5.1**

**THE RESULT OF LONG- TERM EQUATION**

| Variable | Probability |
|---|---|
| INV | 0.3323 |
| TF | 0.0001 |
| I | 0.9382 |
| EX | 0.8418 |
| IM | 0.0247 |
| Prob (F-statistic): 0.0000 | |

The value of Prob (F-statistic) is smaller than 0.05 (0.0000 < 0.05), it means the independent variables are simultaneously significance to dependent variable. The significance of each variable does not need to be below 0.05 because it depends on the theoretical of a study. In this case, this study will focus on total financing (TF) for it is a variable which represents Islamic banking. Based on the probability values as shown in Table 4.10 that have been compared with α 5%, we can conclude that independent variables TF and IM have a significance effect on GDP.

Both variables contribute to the growth of Indonesia's economic and mutually influence between each other. Focusing on Islamic banking (TF), if there is a growth in the Islamic financial sector, it will somehow has a positive impact on economic growth. Likewise, the economic growth will affect

positively on the development of Islamic banking. In Indonesia, the government has a policy that encourage investment, which in turn is able to develop the financial sector, both conventional and Islamic banking.

### 4.5.2 Cointegration

**Table 4.5.2**

**THE PROBABILITY VALUE OF RES**

| Phillips-Perron Unit Root Test on RES | |
|---|---|
| Prob. | 0.0217 |

The result above showed res variable is stationer at level or in other words, stating that variable GDP, INV, TF, I, EX and IM are cointegrated with each other.

### 4.5.3 Estimation of Short- term Equation

**Table 4.5.3**

**THE RESULT OF SHORT TERM EQUATION**

| Variable | Probability |
|---|---|
| D(INV) | 0.2496 |
| D(TF) | 0.3020 |
| D(I) | 0.2375 |
| D(EX) | 0.4801 |
| D(IM) | 0.3124 |
| RES(-1) | 0.0055 |
| Prob (F-statistic)<br>0.1308 | |

The value of Prob (F-statistic) is greater than 0.05 (0.1308 > 0.05), it means the independent variables are not simultaneously significance to dependent

variable. Based on the probability values as shown in Table 4.5.3 that have been compared with α 5%, we can conclude that none of the variables used in this study are significance to dependent variable on a short- run economic growth. In a nutshell, there is a 65% of imbalance on a short- term effect on INV, TF, I, EX and IM on GDP that have been corrected every period.