CHAPTER V

RESULT AND ANALYSIS

A. Stationary Test

Before estimating the time series data stationary test is conducted prior data. Estimation of non-stationary data will lead to the emergence of super inconsistencies and spurious regression, so that the actual classical inference methods cannot be applied (Gujarati, 1995).

The method used in this study is the unit roots test. Stationary time series data shows a constant pattern over time. The unit root test used in this study is the Augmented Dickey Fuller test (ADF). If the value of the ADF t-statistic is greater than the MacKinnon critical value, then the variable does not has a unit root so it is stationary at a particular significance level. Conversely, if the value of the ADF t-statistic is smaller than the MacKinnon critical value, then the variable has a unit roots so it is not stationary at a particular significance level.

ADF t-statistic < t-critical = MacKinnon has a unit root / stationary not

ADF t-statistic > t critical = MacKinnon does not have a unit root / stationary

Unit root test is done one by one or all variables in the analysis that will be both dependent and independent variables. From the data processing program [illegible] unit root test results are obtained on the level, and it can be seen in Table

Table 5.1.
Augmented Dickey Fuller Result at Level

Variable	ADF t-statistik	MacKinnon Critical Values			Description
		1 %	5 %	10 %	
Ln GDP	-0.480123	-3.689194	-2.971853	-2.625121	Nonstasioner
Ln CRE	-0.943938	-3.689194	-2.971853	-2.625121	Nonstasioner
Ln FDI	-0.698373	-3.689194	-2.971853	-2.625121	Nonstasioner
Ln ED	-1.506046	-3.689194	-2.971853	-2.625121	Nonstasioner
Ln LF	-3.597341	-3.699871	-2.976263	-2.627420	Nonstasioner

Source: Processing Data (Appendix 3)

Table 5.1 shows that no variable is stationary either Gross Domestic Product (GDP), bank credit, Foreign Direct Investment (FDI), Foreign Debt or labor force at the level. This shows that the test data should continue with the degree of integration testing.

B. Integration Degree Test

Because the unit root test with observed data at level is not stationary, it is necessary to proceed with trials testing degree of integration. This test is intended to determine what degree of observed data is stationary. Because the degree of integration testing is a continuation of the unit root test, the test step is identical to

Table 5.2.
Augmented Dickey Fuller result at 1st Difference

Variable	ADF t-statistik	MacKinnon Critical Values			Description
		1 %	5 %	10 %	
GDP	-3.722986	-3.699871	-2.976263	-2.627420	Stasioner
CRE	-4.249008	-3.699871	-2.976263	-2.627420	Stasioner
FDI	-6.160319	-3.699871	-2.976263	-2.627420	Stasioner
ED	-4.638136	-3.699871	-2.976263	-2.627420	Stasioner
LF	-2.377881	-3.711457	-2.981038	-2.629906	Nonstasioner

Source: Processing Data (Appendix 3)

Table 5.2 shows the results of the unit root test on the 1st level difference which showed an improvement, but not all variables showed stationary. Still there is one variable that is AK (Labor Force) who have not stationary, it is necessary to continue testing the unit roots at 2nd level difference.

Table 5.3.
Augmented Dickey Fuller result at 2nd Difference

Variable	ADF t-statistik	MacKinnon Critical Values			Description
		1 %	5 %	10 %	
GDP	-6.518002	-3.711457	-2.981038	-2.629906	Stasioner
CRE	-6.021878	-3.724070	-2.986225	-2.632604	Stasioner
FDI	-5.878951	-3.752946	-2.998064	-2.638752	Stasioner
ED	-5.948012	-3.724070	-2.986225	-2.632604	Stasioner
LF	-15.33638	-3.711457	-2.981038	-2.629906	Stationer

Source: Processing Data (Appendix 3)

Table 5.3. showed that five variables have been stationary at the second

significance level of 5 percent. Therefore it can be said that all the data used in this study are integrated the second difference.

C. Long-Term Analysis

1. Cointegration Test

Cointegration test used in this study employed Engel and Granger method, by making the DF-ADF statistic test to see wether the cointegration regression residuals is stationary or not. To calculate the value of the DF and ADF equation first cointegration regression was formed by the method of ordinary least squares (OLS). Then after the regression equation residuals from the equation were obtained. Regression equation is formulated as follows:

$$Y_t = \beta_0 + \beta 1 LnFDIt + \beta 2 LnEDt + \beta 3 LnCREt + \beta 4 LnLFt + et$$

The results of equation Engle-Granger cointegration test is as follows:

$$Y_t = \beta_0 + \beta 1 LnFDIt + \beta 2 LnEDt + \beta 3 LnCREt + \beta 4 LnLFt$$

$$Y = 6.889223 + 0.026936 FDI - 0.140693 ED + 0.173240 CRE + 1.464111 LF$$

Table 5.4 The Result of Engle Granger Cointegration Test For Long-term

Variable	Coefficient (t-stat)
Constanta	6.889323 (7.510389)***
lnFDI	0.026936 (1.770024)*
lnED	-0.140683 (-3.770454)***
lnCRE	0.173240 (7.546343)***
lnLF	1.464111 (4.348201)***
R-square	0,993205
F- stat	887.0107***
DW stat	1.113695

***significance at level 1%
**significance at level 5%
*significance at level 10%

Source: Processing Data (Appendix 4)

Based on Table 5.4 above it can be seen that the whole of each independent variable (FDI, Foreign Debt, CRE, LF) significantly affects the dependent variable (GDP). The results of the analysis of the effect of each independent variable on the independent variable in the long term as well as its implementation in the Indonesian economy are:

a) The Effect of Foreign Direct Investment (FDI) Against Economic Growth (GDP)

FDI has positive coefficient (0.026936), with a probability value of 0089 or significant at 10 percent level, meaning that if the FDI went up by one percent GDP will rise or the economy grew by 0.026936 percent. These results are certainly consistent with the hypothesis that states that there is a positive effect between FDI and economic growth in the long run.

The results of this study demonstrate that in the long run there is a positive correlation between FDI growth rates in Indonesia. This is because high levels of FDI will increase production capacity, capability, which ultimately led to the opening of new jobs. Thus, the unemployment rate is reduced and the ordinary people's income will increase. The presence of FDI also allows the transfer of technology and knowledge from developed countries to developing countries.

However, when seen from the regression coefficient, variable of FDI in the long-term relationship indicates that is relatively small numbers and the significance level is quite low. This indicates that the contribution of FDI as a driving force of economic growth in Indonesia is still not optimal. This is because there are still many problems faced in their own country, such as upholding the rule of law, labor law, regional autonomy

Although the rate of investment in Indonesia is still relatively minimal compared to countries in Southeast Asia and various investment problems in Indonesia, but in fact the figure is still able to contribute to the development of Indonesia's GDP. This indicates that the multiplier effect of FDI is quite a positive impact on GDP growth.

b) The Effect of Foreign Debt (Foreign Debt) Against Economic Growth (GDP)

Foreign Debt have a negative coefficient (-0.140683), with a probability value of 0.0009 or significant at 1 percent level, meaning that if the Foreign Debt increased by one percent, the GDP will go down or the economy goes into a slump of 0.140683 percent. These results are certainly not consistent with the hypothesis that states that there is a positive effect between Foreign Debt and economic growth in the long run.

Although in theory there is positive effect of foreign debt to GDP, but based on the results of the analysis in the long run it turns negative effect on GDP as a result of several factors, including; ther still a large amount of foreign debt from year to year as well as the large amount of debt principal repayments and interest to be paid by the government. Since the *orde baru* government to *Indonesia bersatu* government, one of the economic policies that never changes is the use of foreign debt as a source

structure of the state budget (APBN). So it is not surprising that a buildup of foreign debt alone swelled from year to year. Every year, the government is obliged to pay the foreign debt. To pay the debt principal repayments and interest, the government was forced to seek new debt which is never sufficient in amount to pay the debt on any of the current budget. If we look at the fact that Indonesia's foreign debt continues to increase from year to year and to reach 2000 trillion more in 2013, it can be said that in such circumstances the Indonesian nation has entered into a debt trap, which forced the government to "dig a hole close the holes " to pay the of foreign debt each year.

In addition to the low added value of debt as a source of funds for development, such as foreign debt is not appropriate, make foreign debt negatively impacts the main objective of foreign debt capital increase that will have an impact on economic growth in Indonesia. Several studies have shown that the greater the debt of a country, the greater the potential for corruption and misuse of funds of the debt, (Radhi in Anwar, 2011).

Another factor is the cause of the increasing foreign debt but it is not a positive influence for Indonesia to borrow in dollars and the value of the rupiah against the dollar continues to fluctuate, so that the actual foreign debt increases but not the amount of the loan it is due to the increase in the exchange rate against the dollar. For example, when there

previous year amounted to 269 trillion, and the type we saw the rupiah against the dollar also raised sharply from 4650 in 1997 to 8025 in the next year, and continued to increase from year to year.

c) The Effect of Bank Credit Against Economic Growth (GDP)

Bank credit has a positive coefficient (1.464111), with a probability value of 0:00 or significant at the 1 percent level, meaning that in the long run if the total labor force increased by one percent of GDP will rise or the economy grew by 0.173240 percent. These results are certainly consistent with the hypothesis that states that there is a positive effect between bank credit and economic growth in the long run.

These results are consistent with the theory of the relationship between bank credit and economic growth, which states that banks credit can create and boost business and employment field. Bank credit can create and improve the distribution of the community's income. Indirect lending by the bank will increase state revenue from corporate taxes that are growing and developing its business volume (Herlina, 2011).

d) The Effect of Labor Force Against Economic Growth (GDP)

The labor force has a positive coefficient (0.173240), with a probability value of 0.0002 or significant at the 1 percent level, meaning that in the long term if bank credit increased by one percent, GDP will rise

consistent with the hypothesis that states that there is a positive effect between the labor force and economic growth in the long run.

These results are also consistent with the theory that states that labor is an input of the production process that will contribute positively to the aggregate output of a region from both cost and production. So there is a positive relationship between the amounts of labor force on economic growth. An increase in the labor force will increase production inputs so that aggregate productivity increases, so it will ultimately have an impact on economic growth of a region (Soeparno, 2011).

After knowing the influence of each independent variable on the dependent variable further, we observe the constant value. Constant value (C) in the model is positive (6.889323). This means that if all the independent variables are assumed to be zero, then the GDP in Indonesia is likely to increase by 6.889323 percent.

The results of the estimation of the long-term equation show the R-Square value 0.993205, meaning that 99.32 percent of the model of economic growth (GDP) can be explained by the independent variables, FDI, Foreign Debt, Bank Credit and Labor Force. While the remaining 0.73 percent is explained by other variables outside the equation.

The result of the estimation of the long-term equation shows the value of F-statistic 887.0107 with a probability value 0.00000. This value is smaller than 1 percent significance level so that it can be concluded that together there is significant influence between independent variables as a whole is made up of Foreign Direct Investment (FDI), Foreign Debt, Bank Credit and Labor Force to variable dependent Gross Domestic Product.

The results of the estimation of the long-term equation show that the value of DW (Durbin Watson) was 1.113695. This shows the model does not contain autocorrelation because the DW value is between -2 to +2.

After we did the test of ordinary least squares method (OLS) then we will have a residual variable, and then proceed to test the residual variable, whether stationary or nonstationary. The result of data processing cointegration test can be seen in Table 5.4.

Tabel 5.5. Augmented Dickey Fuller Result in Residual Equation

Variable	ADF t-statistik	MacKinnon Critical Value Result			Description
		1 %	5 %	10 %	
e	-4.750964	-3.769597	-3.004861	-2.642242	Cointegrated

Source: Processing Data (Appendix 4)

Table 5.4. Shows that the variable e has been stationary at the second difference level. This means there is an indication that the variable

root, in other words the variable e is already stationary, so it is concluded that there is cointegration between all variables included in the model Y (GDP). This has the meaning that in the long run there will be a balance or stability between observed variables.

D. Short-Term Analysis

1. Error Correction Model (ECM) Tests

Having escaped from the cointegration test, the next step is to form the equation error correction model (ECM). The equation to be set up as follows:

$$\Delta Y_t = \beta_0 + \beta_1 \Delta LnFDI_t + \beta_2 \Delta LnED_t + \beta_2 \Delta LnLF_t + \beta_3 \Delta LnCRE_t + \beta_4 ECT_{t-1} + et$$

Description:

Y_t = Gross Domestic Product in period t

LnFDI = Foreign Direct Investment in period t

LnEDt = Foreign Debt in period t

LnLFt = Labor Force in period t

LnCREt = Bank lending period t

ECT_{t-1} = error correction term in the previous period

The above equation is constructed based on the results of the test that all variables have been stationary in the second difference shown by the notation Δ. Error correction model (ECM) is used to estimate the short-term dynamic models of the variable gross domestic product. Use of ECM

fluctuations and time lags of each independent variable. Based on the results of the ECM test showed the following results:

Table 5.5 Engle Granger Cointegration Test Result for Short-term

Variable	Coefisien (t-stat)
Constanta	0.042764 (1.894009)*
DFDI(-2)	0.026601 (2.209709)**
DED(-2)	-0.140683 (-3.770454)***
DCRE(-2)	0.149893 (6.543326)***
DLF(-2)	0.840824 (1.983408)**
E(-2)	-0.604796 (-2.429299)**
R-square	0.827312
F- stat	20.12127*
DW stat	1.461093

***significance at level 1%
**significance at level 5%
*significance at level 10%

Source: Processing Data (Appendix 5)

The equation obtained from the ECM test is:

$$D(Y) = \beta_0 + \beta_1 DLnFDI(-2) + \beta_2 DLnED(-2) + \beta_3 DLnCRE(-2) + \beta_4 DLnLF(-2) + E(-2)$$

$$D(Y) = 0.042764 + 0.026601\ DLnFDI(-2) - 0.140683\ DLnED(-2) + 0.149893$$

The equation above is a dynamic model of economic growth (GDP) for the short term, where the GDP variable is not only influenced by the Foreign Direct Investment (FDI), foreign debt, bank credit and the labor force but also influenced by variable error term et. Coefficient et appears here significant value to be placed in the model as a short-term correction in order to achieve long-term balance. The smaller the value of e_t, the faster the process of correction to the long-term equilibrium. Therefore, the ECM variable e_t is often said to be a factor as well as inaction, which has a value less than zero, $e_t < 0$. In this model, the value of the coefficient e_t reached -0.604796, which indicates that the value of the Gross Domestic Product (GDP) is above long-term value. So that needs to be corrected each year by -0.604796 to achieve long-term balance. ECT value or E (-2) -0.604796 significant at the 5% level indicates that the resulting model is valid.

The test results of the dynamic model (short-term) Gross Domestic Product in Indonesia from 1985 to 2013 can be interpreted based on the estimation results in Table 5.5 are as follows:

1) The Effect of Foreign Direct Investment (FDI) Against Economic Growth (GDP)

   Foreign Direct Investment (FDI) in the short-term have positive effect on economic growth and is symbolized by Gross Domestic Product

From the above results it can be concluded if there is an increase in FDI by 1 percent, the economy will increase by 0.026601 percent. The result of this coefficient is almost the same as in the estimation of the long-term results, but has a higher level of significance. For the long-term estimate is only significant at the 10% level. This means that there is a tendency that FDI has more affect to economic growth in the short term.

2) The Effects of Foreign Debt Against Economic Growth (GDP)

Foreign debt in the short-term has a negative effect on economic growth symbolized by Gross Domestic Product (GDP) with a significance level of 1% with a coefficient -0.140683. From the results above it can be concluded if there is increase in Foreign Debt by 1 percent, the economy will decrease by 0.140683 percent. The results of this coefficient are equal to the estimation results in the long run, both in the level of significance and coefficient. This means that both the long-term and short-term foreign debt has the same effect.

3) Effects of Bank Credits Against Economic Growth (GDP)

Bank credits in the short-term have a positive effect on economic growth symbolized by the Gross Domestic Product (GDP) with a significance level of 1% with a coefficient 0.149893. From the above results it can be concluded if there is an increase of 1 percent of Credits then the economy will grow by 0.149893 percent. The results of this coefficient are larger than the estimation results in the long term, but have

the same significance level. This means that there is a tendency that bank credit more affects economic growth in the short term.

4) The Effects of Labor Force Against Economic Growth (GDP)

The labor force in the short-term have a positive effect on economic growth symbolized by the Gross Domestic Product (GDP) with a significance level of 5% with a coefficient of 0.840824. From the above results it can be concluded if there is an increase of 1 percent labor force, then the economy will grow by 0.840824 percent. The result of this coefficient is higher than estimated in the long term, but at the lower level of significance. This means that there is a tendency that the labor force has more have effects in the long-term over economic growth.

After knowing the influence of each variable in the short term, therefore it is need to know the influence of variables simultaneously. The estimation results of the short-term equation shows R-Square value of 0.827312, meaning that 82.73 percent of the economic growth model can be explained by variable changes in FDI, foreign debt, bank credit and the labor force in the previous year period. While the rest of 17:27 percent is explained by other variables outside the model.

The results of the short-term equation show the value of the F - statistic is 20.12127 with a probability value 0.0. This value is smaller than 1 percent significance level so that it can be concluded that together there is

significant influence between independent variables as a whole is made up of foreign direct investment, foreign debt, bank credit and the labor force to the dependent variable gross domestic product.

The estimation results of the short-term equation show that the value of DW (Durbin Watson) was 1.461093. This show the model does not contain autocorrelation because the DW value is between -2 to +2