CHAPTER IV

RESULT & ANALYSIS

In this chapter, there will be some tests on the factors influencing the economic growth in Indonesia. In which, the dependent variables are Economic Growth represented by gross domestic product, while the independent variables are foreign direct investment (FDI), net export, infrastructure, and inflation rate. The variables data are taken from the period of 1981 to 2014 and will be tested by using Error Correction Model (ECM) approach that aims to test the model specification and suitability theory with the current phenomenon. This tests will be run using E-views 4.

A. Research Variable Overview

1. Indonesian Gross Domestic Product Overview.

Economic performance in a country can be seen through economic growth yearly. Economic growth is an indicator to perceive a country’s performance whether in a good or bad performance. In narrow word, economic growth means that the increase in total production of both goods and services in a country. This is measured by the change in real gross domestic product (GDP) each year.
Indonesia’s GDP has fluctuated annually over the years during the study period in 1981 until 2014. Based on the graph above, the lowest growth occurred in 1998 which decreased to US$ 95,445,548,106 million from US$ 215,748,853,372 million, as a result from Asia Financial Crisis in 1997-1998. After the crisis, Indonesia boost the economic growth on 1999 with the GDP amount of US$ 140,001,352,568 million and kept increasing in the year of 2000 by the amount of US$ 165,021,012,077.81.

In this research, there is also another crisis occurred in the period of time, that is a global crisis in 2007-2008. The growth of Indonesian GDP decreased on 2008 but as not worse as the previous crisis. After the 2008 crisis,
the GDP growth and amount increase for a while but later the growth is more
stable. In the following years the growth decrease slowly.

2. Foreign Direct Investment (FDI) Overview in Indonesia.

Foreign direct investment (FDI) is one of the funding source that can be
used as financing for development and economic growth. FDI substitute the
external debt as a source of financing. FDI means that foreign investment
activities directly undertaken by or under the provisions of this law and used to
run a company in Indonesia, and the owners of the capital directly bear the risk
of the investment.

![Foreign Direct Investment](image)

Source: World Bank

**FIGURE 4.2**

Indonesian Foreign Direct Investment in 1981-2014

Based on the data from World Bank, Indonesia has become the largest
foreign direct investment realization among the ASEAN-4-Nations. The
realization of foreign direct investment (net-inflows) in Indonesia always increase from 2011 until 2014 if compare with the ASEAN-4-Nations Malaysia, Thailand, and Philippines.

Based on the graph above, the development of Foreign Investment in the early 1991 until 1993 is not increase significantly, the amount is also increase in decent percentage. Because of Asia Financial Crisis in the year 1997-1998 the amount of FDI is dramatically decreasing from 6,194,000,000 million US Dollar to 39,047.24 million US Dollar. Until 2003, the amount of FDI is stagnant. Starting from the year of 2004 the FDI’s amount is increasing. From 2004 until 2009 the amount fluctuates, while from 2009 until 2014 the amount dramatically increased. The increasing happens because the economic situation in Indonesia after the global crisis doesn’t suffer a lot. Another reason will be the safe political condition in Indonesia that attracts the investors investing their fund here.

3. Indonesian Export Overview.

Export is the activity of selling and sending goods from the origin country to other countries. Beside investments, Export also play an important role in the economic activities in Indonesia. Export is one of component in aggregate spending in the open-economy.
Based on the graph above, we conclude that the performance of Indonesian Export from the early 1981 until 2014 has fluctuated. At the same time the amount of export in Indonesia over 34 years is increasing as well.

The amount of export is increasing dramatically in 2009 until 2011. The amount of export on 2009 is 127,243,000,000 million US Dollar became 215,578,000,000 million US Dollar. The dramatically increment occurred after the dramatically reduction in the year between 2008 and 2009 caused of the Global Financial Crisis. In the contrary, after the highest net export in 2011, the reduction occur each year.

Source: World Bank

**FIGURE 4.3**

Indonesian Export in 1981-2014
4. **Indonesian Infrastructure Overview.**

In the micro level, Infrastructure can promote the economic growth. Infrastructure can be categorized as capital accumulation. So, infrastructure can be used as inputs to production indirectly. In this research, the infrastructure that is stressed is length road.

![Graph showing the change in length road in Indonesia from 1981 to 2014.](image)

**FIGURE 4.4**

Indonesian Infrastructure in 1981-2014

Based on the graph above, the length road in Indonesia always increase from 1981 until 2014. The more advance the country is, the more government realize to build more road. Until 2014 the total length road in Indonesia is 295,968 km, this is the amount of length road from 2 conditions, which is in
good and bad condition. This is surely, the thing that government does to make the economic distribution runs well

5. **Indonesia Inflation Overview.**

    Inflation is an increase in the general price level of commodities and services during a specific time period. Inflation is regarded as a monetary phenomenon due to the impairment of the monetary calculation unit to a commodity. Inflation becomes one of the government pays most attention on.

![INFLATION RATE](image.png)

Source: World Bank

**Figure 4.5**

Indonesian Economic Inflation in 1981-2014

Based on the graph above, the Inflation in Indonesia fluctuated from 1981 until 2014. The highest inflation rate occurred dramatically in 1998 with the rate is 58.3% caused by the Asia Financial Crisis in 1997-1998. In this condition, the Indonesian economics dramatically goes down and the income
per capita is reduce as well. Not only Indonesia economic that hit by the crisis, but also Indonesian Political condition. The After the crisis, the inflation rate returned to normal year of 2000 became 3.7%.

B. Classical Assumption Test

1. Autocorrelation Test.

In this study, to determine whether there is autocorrelation in a model or not, then it will be used the Lagrange Multiplier test (LM test). This test useful to determine there is a correlation between the independent variable with the disturbance variable. If the \( \text{Obs}^*R^2 \) value less than the table value, so there is no autocorrelation in the model. Besides that, the autocorrelation can be seen by the \( \chi^2 \) probability value. If the probability value is more than the value of \( \alpha = 10\% \), it is safe to say that; there is no autocorrelation problem (Basuki & Yuliadi, 2014)

<table>
<thead>
<tr>
<th>Breusch-Godfrey Serial Correlation LM Test:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>1.900620</td>
<td>0.170455</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>4.355401</td>
<td>0.113302</td>
</tr>
</tbody>
</table>

Based on the test above, the LM test in short term with the smallest Akaike value on the first lag can be seen that the probability value of \( \text{Obs}^*R^2 \) is 0.113302. Because the probability value of the \( \text{Obs}^*R^2 \) is
more than $\alpha = 10\%$, so there is no autocorrelation problem in the Error Correction Model.

2. **Normality Test.**

   The aims of normality test is to know the variable normally distributed or not. This test can be done through *Jarque-Bera* test (J-B test). If the J-B test is more than $\alpha = 10\%$, so it shows that the data normally distributed. But, if the J-B test is less than $\alpha = 10\%$, so the data is not normally distributed.

   **TABLE 4.2**
   The *Jarque-Bera* Test (J-B test) Result

<table>
<thead>
<tr>
<th>Jarque-Bera Test:</th>
<th>Jarque-Bera</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.257058</td>
<td>0.533376</td>
</tr>
</tbody>
</table>

   Based on the table 4.2 above, it can be seen that the $p$-value of J-B test is 0.533376. The result shows that the $p$-value is more than $\alpha = 10\%$, so it means that the data in the Error Correction Model is normally distributed.

3. **Heteroskedasticity Test**

   Heteroskedasticity is one of the regression problems which becomes the factor of disturbance has no similar variant. In other word, there is no consistency in its variant. It means that the *heteroskedasticity* has no similar variant for all the research. Because the *heteroskedasticity* problem, the result will be bias. In this research, the heteroskedasticity will be tested by the *White*
Heteroskedasticity (cross term) test. If the probability of $\text{Obs}^*R$-Squared is smaller than the critical value of $\alpha = 10\%$; so that, there is heteroskedasticity occurred in the Error Correction Model. But, if the probability $\text{Obs}^*R$-Squared is more than the critical value of $\alpha = 10\%$; so that, there is no heteroskedasticity occurred in the model.

TABLE 4.3
The White Heteroskedasticity Test Result

<table>
<thead>
<tr>
<th>White Heteroskedasticity Test:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>1.764043</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>24.62452</td>
</tr>
</tbody>
</table>

Based on the table 4.3, the probability of $\text{Obs}^*R$-Squared in Error Correction Model is 0.216175. The probability of the $\text{Obs}^*R$-Squared is more than $\alpha = 10\%$. It can be concluded that there is no heteroskedasticity problem in Error Correction Model.

4. Multicollinearity Test.

Multicollinearity is useful to test the regression model whether it has correlation among independent variables or not. Multicollinearity can be detected by seeing the coefficient value of independent variables in the matrix result. If the value of coefficient is less than 0.8, it means there is multicollinearity problem in the variables. But, if the coefficient value is less
than the 0.8, it can be concluded that there is multicollinearity problem in the variables.

**TABLE 4.4**

The Multicollinearity Test before Being Transformed into First Difference Form (D)

<table>
<thead>
<tr>
<th></th>
<th>LOG(FDI)</th>
<th>LOG(EX)</th>
<th>LOG(INFR)</th>
<th>LOG(INFL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(FDI)</td>
<td>1.000000</td>
<td>0.279857</td>
<td>0.142291</td>
<td>-0.490062</td>
</tr>
<tr>
<td>LOG(EX)</td>
<td>0.279857</td>
<td>1.000000</td>
<td>0.941287</td>
<td>-0.085691</td>
</tr>
<tr>
<td>LOG(INFR)</td>
<td>0.142291</td>
<td>0.941287</td>
<td>1.000000</td>
<td>-0.019662</td>
</tr>
<tr>
<td>LOG(INFL)</td>
<td>-0.490062</td>
<td>-0.085691</td>
<td>-0.019662</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

Based on the table 4.4 above, it shows that the correlation among two independent variables is more than 0.8. It can be said that the regression model has a multicollinearity problem. If the regression model has a multicollinearity problem, so it can be corrected by transforming the data into first difference form. The first difference form will erase the multicollinearity although in the X1 level and X2 multicollinearity exists, that doesn’t mean in the first difference level, the correlation is still high (Basuki, 2017).

**TABLE 4.5**

The Multicollinearity Test Has Been Transformed into First Difference Form (D)

<table>
<thead>
<tr>
<th></th>
<th>D(LOG(FDI))</th>
<th>D(LOG(EX))</th>
<th>D(LOG(INFR))</th>
<th>D(LOG(INFL))</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(LOG(FDI))</td>
<td>1.000000</td>
<td>0.226470</td>
<td>-0.221967</td>
<td>-0.435172</td>
</tr>
<tr>
<td>D(LOG(EX))</td>
<td>0.226470</td>
<td>1.000000</td>
<td>-0.114974</td>
<td>-0.128113</td>
</tr>
<tr>
<td>D(LOG(INFR))</td>
<td>-0.221967</td>
<td>-0.114974</td>
<td>1.000000</td>
<td>-0.006369</td>
</tr>
<tr>
<td>LOG(INFL)</td>
<td>-0.435172</td>
<td>-0.128113</td>
<td>-0.006369</td>
<td>1.000000</td>
</tr>
</tbody>
</table>
After transforming into First Difference form, it can be conclude that the correlation among two independent variables is less than 0.8. It means that there is no multicollinearity problem in the regression model.

C. Dynamic Assumption Test

1. Stationary Test.

Stationary test is the first step in dynamic assumption test before estimating time series data. If the estimation is not stationary, it will cause the spurious regression and the model cannot be used.

The concept that used to test the stationary is a unit root test. A variable is said to be stationary if the average value and variance constant over time and the value of the covariance between the two time periods only depending on the difference or interval between the two time periods is not the actual time when the covariance is calculated (Gujarati, 2003).

This study will be used Augmented Dickey-Fuller test to determine whether a time series data contains the root unit or non-stationary. If the ADF t-statistic value is more than the critical value, so that the variable has a unit root, then it can be said that the variable is stationary in the certain level. In the contrary, if the ADF t-statistic is less than the critical value, so that the variable has no a unit root, then it can conclude that the variable is non-stationary.
Unit root test can be tested through each variable that will be analyzed either dependent variable or independent variables. This can be seen by the table below:

**TABLE 4.6**

The Unit Root Test Result in Level Degree by *Augmented Dickey-Fuller Test* Method

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF T-Statistic</th>
<th>Critical Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>LOG(GDP)</td>
<td>0.173178</td>
<td>-3.646342</td>
<td>-2.954021</td>
</tr>
<tr>
<td>LOG(FDI)</td>
<td>-2.488691</td>
<td>-3.646342</td>
<td>-2.954021</td>
</tr>
<tr>
<td>LOG(EX)</td>
<td>0.527809</td>
<td>-3.646342</td>
<td>-2.954021</td>
</tr>
<tr>
<td>LOG(INFR)</td>
<td>-3.169615</td>
<td>-3.646342</td>
<td>-2.954021</td>
</tr>
<tr>
<td>INFL</td>
<td>-4.792234</td>
<td>-3.646342</td>
<td>-2.954021</td>
</tr>
</tbody>
</table>

Based on the table 4.6, the result shows the unit root test through the Augmented Dickey-Fuller (ADF) test method. The result shows that there is only one variable which is stationary in level degree, and the rest variables are non-stationary in this degree because the ADF t-statistic is less than the critical value.

If the data is not stationary in level degree, so that the data cannot be used in the model, because it will cause of the spurious regression. In conclusion, in order to get the stationary variables, it is urgent to do the unit root test in the first difference degree.
2. Integration Degree Test.

The integration test is a continuation of the unit root test, if the data is not stationary in the level degree. So that, the unit root test will be tested into first difference degree. The integration degree test will be used the Augmented Dickey-fuller method. But if the data is not stationary in first difference degree, so that it will continue into second difference, until the data is stationary. Then, the result of the unit root test in first difference degree can be seen from the following table:

**TABLE 4.7**

The Unit Root Test Result in First Difference Degree by *Augmented Dickey-Fuller Test Method*

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF T-Statistic</th>
<th>Critical Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(GDP)</td>
<td>-5.639789</td>
<td>-3.65373</td>
<td>-2.95711</td>
</tr>
<tr>
<td>LOG(FDI)</td>
<td>-8.162684</td>
<td>-3.65373</td>
<td>-2.95711</td>
</tr>
<tr>
<td>LOG(EX)</td>
<td>-5.368711</td>
<td>-3.65373</td>
<td>-2.95711</td>
</tr>
<tr>
<td>LOG(INFR)</td>
<td>-4.741483</td>
<td>-3.65373</td>
<td>-2.95711</td>
</tr>
<tr>
<td>INFL</td>
<td>-6.970533</td>
<td>-3.661661</td>
<td>-2.960411</td>
</tr>
</tbody>
</table>

The table 4.7 shows that the unit root test result in the first difference degree by the ADF test. The result shows that the all variables are already stationary in first difference degree, including foreign direct investment, net export, infrastructure, and inflation rate. All in all, based on the ADF test, the data that is used in this research integrated in the first difference degree.
3. **Co-integration test.**

Co-integration test is the next procedure that should be passed after the integration degree test. In this test, there will be a test of time series data validation through co-integration test. Co-integration test is required to provide an early indication that the model has a long-term relationship in this study.

The method that is used in the co-integration test is the Engle-granger (EG). The co-integration test can be done, if the all variables integrated in the same degree. The first step of the co-integration test is by doing the regression of the ordinary least square equation between dependent variable and independent variables. The result from the co-integration test is that we can obtained the residual. The regression equation is as follow:

\[
\log(GDP) = \beta_0 + \beta_1 \log(FDI) + \beta_2 \log(EX) - \beta_3 \log(INFR) - \beta_4 \text{INFL} + e
\]

The result of the Eagel-Granger co-integration test is as follow:

\[
\log(GDP) = \beta_0 + \beta_1 \log(FDI) + \beta_2 \log(EX) - \beta_3 \log(INFR) - \beta_4 \text{INFL} + e
\]

\[
\log(GDP) = 2.162427 + 0.028365 \log(FDI) + 1.053247 \log(EX) - 0.223223 \log(INFR) - 0.010121 \text{INFL}
\]
Based on the table 4.8 above, the variable of FDI, export, and inflation rate give the significant result on GDP (economic growth) at level 10%. Meanwhile, the infrastructure variable is not significant. The determination coefficient (R-squared) is 0.980389 which means the endogenous variable can be explained in linear way by the independent variables in the equation for about 98% and the remaining which is 2% can be explained with the other factors outside equation.

From the regression equation, then it will be estimated the residual variable, as explain below:

\[
\text{ect} = \text{LOG(GDP)} = \beta_0 + \beta_1 \text{LOG(FDI)} + \beta_2 \text{LOG(EX)} + \beta_3 \text{LOG(INFR)} + \beta_4 \text{INFL} + e
\]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2.162427</td>
<td>0.700476</td>
<td>0.0044</td>
</tr>
<tr>
<td>LOG(FDI)</td>
<td>0.028365</td>
<td>0.006596</td>
<td>0.0002</td>
</tr>
<tr>
<td>LOG(EX)</td>
<td>1.053247</td>
<td>0.087556</td>
<td>0.0000</td>
</tr>
<tr>
<td>LOG(INFR)</td>
<td>-0.223223</td>
<td>0.149462</td>
<td>0.1461</td>
</tr>
<tr>
<td>INFL</td>
<td>-0.010121</td>
<td>0.002681</td>
<td>0.0007</td>
</tr>
<tr>
<td>R-squared</td>
<td></td>
<td>0.980389</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td></td>
<td>0.977684</td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td></td>
<td>1.122951</td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td></td>
<td>362.4409</td>
<td></td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td></td>
<td>0.000000</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 4.8**

The Result of Co-integration Test in Long Term
If the residual variable is already obtained, it will be followed by testing it. The test aims to observe whether the variable is stationary or not. Form the result of data processing can be seen as follow:

**TABLE 4.9**

The Unit Root Test Result toward the Residual Long Term Equation

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF T-statistic</th>
<th>MacKinnon Critical Value 1%</th>
<th>MacKinnon Critical Value 5%</th>
<th>MacKinnon Critical Value 10%</th>
<th>Prob.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ect</td>
<td>-4.512906</td>
<td>-3.6463</td>
<td>-2.954</td>
<td>-2.6158</td>
<td>0.0010</td>
<td>Stationary</td>
</tr>
</tbody>
</table>

Based on the table 4.9, the variable passed because of the probability is lower than critical value 1%, 5%, 10% which is 0.0010. Thus, it proofs that the co-integration occurs in the model, so that Error Correction Model can be performed. And it also means that the stability occurs in the variable of this research.

**4. Error Correction Model Test.**

The next step is to create the Error Correction Model (ECM) equation. The equation that will be formulated by this following equation:

\[ \Delta LOG(GDP) = \Delta \beta_0 + \Delta \beta_1 LOG(FDI) + \Delta \beta_2 LOG(EX) + \Delta \beta_3 LOG(INFR) + \beta_4 INFL + \Delta \beta_5 ECT - 1 + e \]

Information:

LOG(GDP) = Gross Domestic Product (reps of economic growth)

LOG(FDI) = Foreign Direct Investment
LOG(EX) = Export
LOG(INFR) = Infrastructure (in KM²)
INFL = Inflation rate
ECT-1 = Residual Equation

The equation is formulated based on the variable which is stationary in first difference degree that is being showed as Δ notation. The Error Correction model aims to determine the short term model of Economic Growth (GDP). By using the ECM, it can combine the short term effect and long term effect that is caused by the fluctuation and time lag from each variable. Based on the ECM result, then it will obtain the following result:

**TABLE 4.10**
The Result of Error Correction Model Estimation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.034813</td>
<td>0.023264</td>
<td>1.496471</td>
<td>0.1461</td>
</tr>
<tr>
<td>D(LOG(FDI))</td>
<td>0.012275</td>
<td>0.004883</td>
<td>2.513597</td>
<td>0.0182</td>
</tr>
<tr>
<td>D(LOG(EX))</td>
<td>0.557367</td>
<td>0.112073</td>
<td>4.973265</td>
<td>0.0000</td>
</tr>
<tr>
<td>D(LOG(INFR))</td>
<td>-0.052909</td>
<td>0.373788</td>
<td>-0.141547</td>
<td>0.8885</td>
</tr>
<tr>
<td>D(INFL)</td>
<td>-0.011567</td>
<td>0.00131</td>
<td>-8.830922</td>
<td>0.0000</td>
</tr>
<tr>
<td>ECT(-1)</td>
<td>-0.417701</td>
<td>0.137322</td>
<td>-3.041768</td>
<td>0.0052</td>
</tr>
</tbody>
</table>

R-squared 0.855998 Mean dependent var 0.071001
Adjusted R-squared 0.829331 S.D. dependent var 0.193346
S.E. of regression 0.079875 Akaike info criterion -2.053732
Sum squared resid 0.172262 Schwarz criterion -1.781640
Log likelihood 39.88658 F-statistic 32.09946
Durbin-Watson stat 1.456933 Prob(F-statistic) 0.000000
The equation from error correction model can be seen as follow:

$$\Delta \log(GDP) = \Delta \beta_0 + \Delta \beta_1 \log(FDI) + \Delta \beta_2 \log(EX) - \Delta \beta_3 \log(INFR) - INFL - \Delta \beta_5 ECT - 1 + e$$

$$\Delta \log(GDP) = 0.034813 + 0.012275 \log(FDI) + 0.55736 \log(EX) - 0.052909 \log(INFR) - 0.011567 INFL - 0.417701 ECT(-1) + e$$

The table 4.10 shows the dynamic model of gross domestic product in short term, where the variable of gross domestic product as the denotation of economic growth is not only influence by FDI, export, infrastructure, and inflation rate but also influence by the error correction term (ECT) variable. The less value of ECT the faster of correction process through the long run equilibrium. Besides that, the error correction term variable is also said as the factor of inaction which has a value less than zero (ECT<0). In this research the value of ECT is less than zero. The coefficient of ECT reach -0.417701 which means the gross domestic product higher than its long term value.

Based on the calculation above through error correction model, the constant value about 0.034813 which means that if all the variables are constant, so that the gross domestic product or the economic growth is about 0.034813 %. Then, the estimation result in long term shows that the value of R-squared is 0.855998 which means 85.59% of GDP(economic growth) model can be explained by these variables, namely: FDI, export, infrastructure (in
KM$^2$), and inflation rate. Meanwhile, 14.41% of the model can be explained by the other factors outside the model.

D. The Result Analysis.

**TABLE 4.11**

The Accumulation of Dependent Variable influence on Independent Variables in Both Short and Long Term

<table>
<thead>
<tr>
<th>Variable</th>
<th>Short Term</th>
<th>Long Term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Probability</td>
</tr>
<tr>
<td>C</td>
<td>0.034813</td>
<td>0.1461</td>
</tr>
<tr>
<td>LOG(FDI)</td>
<td>0.012275</td>
<td>0.0182</td>
</tr>
<tr>
<td>LOG(EX)</td>
<td>0.557367</td>
<td>0.0000</td>
</tr>
<tr>
<td>LOG(INFR)</td>
<td>-0.052909</td>
<td>0.8885</td>
</tr>
<tr>
<td>INFL</td>
<td>-0.011567</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

1. **The Influence of Foreign Direct Investment (FDI) on Economic Growth (GDP).**

The coefficient value of FDI in short term is 0.012275 which means that if there is an increase on Foreign Direct Investment about 1%, so that the gross domestic product will increase about 0.012275% with the assumption that the other variables are constant. The coefficient value of FDI is positively influence and significantly influence on economic growth in short term. The result is significant because the probability value is lower than the critical value 10% which means that the FDI variable influences the gross domestic product.
(economic growth). On the whole, the regression result appropriate with the hypothesis in this research.

The coefficient value of FDI in long term is 0.028365 which means that if there is an increase on foreign direct investment about 1% so that the gross domestic product will increase about 0.028365% with the assumption that the other variables are constant. The probability of the coefficient is 0.0002 which means that the FDI variable is significantly and positively influence the gross domestic product or economic growth in Indonesia in long term between 1981 until 2014.

Comparing to the previous research done by Pranoto(2016), the foreign direct investment have insignificant and positive effect on the gross domestic product in Indonesia 2004 until 2013. An influence of the positive FDI’s changing is caused by the FDI role on the new factory establishment. Meaning, the output will also increase and or gross domestic product will increase too. The increase also causes the increase of the work probability. The increase of work probability will increase the society budget. In the end, it will increase the demand in domestic product. The negative impact is caused there are still problem about the policy for the foreign investors who want to invest their money in Indonesia. The similar researches which have the relevant result with this research conducted by: Irsania & Noveria (2014), Koojaroenprasit (2012), and Mofrad (2012).
Additionally, the result appropriate with the UU No.25 year 2007 that represents about the purpose of investment are to increase the national economic growth, to create a vocation, and to increase the sustainable economic development, and to increase the capacity and capability of national technology.

The results are consistent with the theory of economic growth in classical flow, the theory Harrod-Domar. This theory states that the investment is a key in the economic growth process and to grow the economy required an additional investment as the stock capital.

Based on the aggregate demand theory, the AD curve movement to the right shows the increasing demand in the economic due to the increasing factors of national income, including: consumers demand, company and government. While from the aggregate demand, the GDP usage namely; the household consumption, the investment (I), government spending (G), and net export means the goods and services export (X) minus the goods and services import (M). The aggregate demand in the economy can be describe by the equation \( Y = C + I + G + (X - M) \). So, it means that if the investment increase the national income will increase and the will achieve an economic growth if the investment continuously growth every year.

This research shows that foreign direct investment positively and significantly influence the gross domestic product weather in short and long term which is relevant with the research done by Mofrad (2012). The rapid
growth of the FDI may improve the economic growth, because the capitalization is a media to mobilize the saving, then disburse the industry that is considered more productive to increase the economic growth.

2. The Influence of Export on Economic Growth (GDP).

   The coefficient value of export in short term is 0.557367 which means that if there is an increase on export about 1% so that the gross domestic product will increase about 0.557367% with the assumption that the other variables are constant. The coefficient value of export is positively and significantly influence on economic growth in short term. The result is significant because the probability value is lower than the critical value 10% which means that the net export variable influences the gross domestic product or economic growth. In short the regression result appropriate with the hypothesis in this research.

   The Coefficient value of export in long term is 1.053247 which means that if there is an increase on export about 1% so that the gross domestic product will increase about 0.925555 % with the assumption that the other variables are constant. The coefficient value of export is positively and significantly influence on economic growth in long term. The result is significant because the probability value is lower than the critical value 10% which means that the export variable influences the gross domestic product or economic growth. In short the regression result appropriate with the hypothesis in this research.

   This result is relevant with a number of researches such as Pranoto (2016), Koojaroenprasit (2012) and Mohfrad (2012). Based on Pranoto (2016),
the positive and significant influence of export on Indonesia GDP leads to the export value; the higher the value of export, the higher economic activity from that country will be. The existence of export activity in Indonesia is possibly producing various goods and services which exceed the production amount that is needed by the country. Besides, with export activity; it will increase the Indonesia economic rate and the state income (GDP). Thus, it can stimulate the economic growth.

According to this research the long-term relationship between export on GDP or economic growth, meaning that the decision making to stimulate export leads to long term effect. It means, if the government keeps increasing export activity, in the long-term the effect will likely become a factor to increase Indonesia gross domestic product. It is also to increase the economic growth. Typically, in the theory export is one of the component in the aggregate expenditure equation in an open economy. Moreover, the coefficient of export variable is greater in the long term and short than other variables, of course, this could be a sign that the role of export is truly an effect on economic growth.

Exports are one of components in aggregate spending in the open-economy. Aggregate expenditure in an open economy means that the household expenditure on domestic production, investment, government spending, spending on imported goods and foreigner who spend the export goods. The aggregate expenditure can be expressed by $AE = C_{dn} + I + G + (X - M)$. 
Based on (Adisasmita, 2013), export can be described as the autonomic factor. It means that export is a factor to increase the income and economic growth directly. To reach the high export level, then it needs the strategy to increase the appropriate export value and appropriate investment with the high technology to be implemented punctually.

3. The Influence of Infrastructure (Road Length) on Economic Growth (GDP).

The coefficient value of infrastructure (road length in Km$^2$) in short term is -0.052909 which means that if there is an increase on infrastructure on road length 1% so that the gross domestic product will decrease about 0.052909 % with the assumption that the other variables are constant. The coefficient value of infrastructure is negatively and insignificantly influence on economic growth in short term. The result is insignificant because the probability value is more than the critical value 10% which means that the infrastructure on road length variable is not influence the gross domestic product (economic growth) in long term. In brief, the regression result is not appropriate with the hypothesis in this research.

The coefficient of infrastructure (road length in Km$^2$) in long term is -0.223223 which means that if there is an increase on infrastructure on road length 1% so that the gross domestic product will decrease about 0.223223% with the assumption that the other variables are constant. The coefficient value of infrastructure is positively and insignificantly influence on economic growth
in long term. The result is insignificant because the probability value is more than the critical value 10% which means that the infrastructure on road length variable is not influence the gross domestic product (economic growth) in long term. In brief, the regression result is not appropriate with the hypothesis in this research.

The research finding is relevant with the research from Wibowo (2016) stated which infrastructure doesn’t have significant impact on the development in Indonesia from 2006-2013, while for the other types of infrastructure, the result shows the positive and significant relationship. On the other hand, other results show the different findings. Sojodi, et al. (2012) found that the road length significantly influence the economic development. The different might cause by the different slot-time of the research, or the scope region.

The negative sign from the length of road coefficient in the short run may be caused the slot-time to build road will not happen between 2-3 years. As the public-housing stated in the plan, it needs exactly around 5 years to build a road. So it the short run, government needs to raise capital and the growth cannot be seen yet. That leads to the negative sign of the coefficient, it also caused, by the huge capital from government that is used for establishing the road.

In this research, the statistic relationship is negatively insignificant in short and long run. It might be caused that the road length solely doesn’t support the economic activity nationally. In fact, most major cities Indonesia already
have sufficient road length and don’t need any additional access. The quality of road becomes much more important to advance the economic activity among regions. With the good road quality, the economic goods distribution is hoping to be delivered faster, without any risks of traffic. On the contrary, the bad quality of road will impede the goods distribution.

Indonesia government keeps adding budget for the road infrastructure in Indonesia. It can be seen that there might be the problems from the budget allocation that cause the bad quality of road. Even though more quantities of road are built but the road quality get worsen. The road maintenances are almost nowhere. The high budget allocation should be adjusted with its process so that the economic growth can be achieves based on the target. It has been known that there are still many areas which have not been touched by a government that has not had proper access road to economic activity. Fortunately given negative marks are not affecting infrastructure relationship significantly to economic growth in Indonesia in the period of observation. In essence, the negative effects provided by the road infrastructure will not have a significant impact on economic growth in Indonesia both long term and short term.

The result also means that the policy of increasing the number of roads in Indonesia in the period 1981-2014 negatively due to increased spending on infrastructure, particularly in road maintenance and increase the number of roads in Indonesia. Moreover, equalization amount roads in Indonesia is considered not good, because there are still many areas that do not have good
road access. Then, with a number of existing roads are still many possible road conditions are not good. As already discussed above, this negative relationship does not affect the economic growth in Indonesia, it's likely due to capital for financing the road not only from gross domestic product, but also from investments that have been made to the road construction.

The Indonesian government has increased infrastructure spending way to 70 trillion Rupiah per year (USD 7 billion per year), representing 40% of total spending on infrastructure. However, the level of investment of this magnitude cannot pursue increased demand and growth in the last ten years. Productivity and efficiency management of national roads are still less than optimal. The spending of national roads has tripled in real terms between 2005 and 2011, but output which is generated in the road length only rose 20% whether if counted from the existing road or the road under construction.

4. The Influence of Inflation Rate on Economic Growth (GDP)

The coefficient value of inflation in short term is -0.011567 which means that if there is an increase on inflation rate 1% so that the gross domestic product will decrease about 0.011567% with the assumption that the other variables are constant. The coefficient value of inflation rate is negatively and significantly influence on economic growth in short term. The result is significant because the probability value is lower than the critical value 10% which means that the inflation rate variable is influence the gross domestic
product (economic growth) in long term. In brief, the regression result is appropriate with the hypothesis in this research.

The coefficient of inflation rate in long term is - 0.010121 which means that if there is an increase on infrastructure on road length 1% so that the gross domestic product will decrease about 0.010121 % with the assumption that the other variables are constant. The coefficient value of inflation rate is negatively and significantly influence on economic growth in long term. The result is significant because the probability value is more than the critical value 10% which means that the inflation rate variable is influence the gross domestic product (economic growth) in long term. In brief, the regression result is appropriate with the hypothesis in this research.

The research is relevant with Kasidi & Mwakanemeda (2013) that inflation has negative and significant influence on the economic growth in Tanzania. Other researches also show the significant relationship between inflation and economic growth, namely; Acyumida & Eko (2013) dan Izuchukwo & Patricia (2015).

The finding in the research is relevant with the hypothesis stated that inflation has negative relationship on Indonesia economic growth. Inflation is an economic phenomenon that cannot be avoided anywhere. With high inflation, the society welfare reduces, where the increasing price will not balance with the income causing the society cannot fulfill their needs. During the inflation, government will increase the interest rate in order to increase the
saving from society. However, with the high interest rate, the investors losing their interests to invest in Indonesia, that leads to the lower aggregate spending and slowing the growth. Besides investment, inflation will also reduce the export performance that reduces the economic performance as well. Low inflation is considered has no effect on the economy, while hyperinflation becomes a huge problem for a country.

Based on the theory, besides inflation give a bad effect on the country, inflation can also give a bad effect on the individual and society. Firstly, inflation will reduce the real income of the people who have a fixed income. Generally, the increasing of wage level not as fast as the increasing of price level. Therefore, inflation will decrease the individual real wage who have the fixed income. Secondly, inflation will reduce the amount of wealth (money-from). Thirdly, inflation makes the distribution of wealth unwell.