FACTORS INFLUENCING ECONOMIC GROWTH IN INDONESIA: ERROR CORRECTION MODEL (ECM)

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Abstract: *The main objective of this study is to identify and analyze the effect of foreign direct investments (FDI), foreign debts, bank credit and labor force on the economic growth in Indonesia. Annual data during the period of 1985-2013 are used in this study and collected from Bank Indonesia, BKPM, and BPS. The study uses Error Correction Model (ECM). The result shows that foreign direct investment, bank credit and labor force positively and significantly influence the economic growth in Indonesia in short term and long term analyses. In the other hand, foreign debt negatively and significantly influences the economic growth in Indonesia in short term and long term.*

Keywords: *economic growth; foreign direct investment; foreign debt; bank credit; labor force*
JEL Classification: *F43, P45*

Abstrak: *Tujuan studi adalah mengidentifikasi dan menganalisis pengaruh penanaman modal asing (PMA), hutang luar negeri, kredit bank, dan angkatan kerja terhadap pertumbuhan ekonomi di Indonesia. Studi ini menggunakan data tahunan tahun 1985-2013 yang diperoleh dari Bank Indonesia, BKPM, dan BPS. Model yang digunakan dalam studi ini adalah Error Correction Model (ECM). Hasil studi menunjukkan bahwa penanaman modal asing, kredit bank, dan angkatan kerja berpengaruh positif dan signifikan terhadap pertumbuhan ekonomi di Indonesia dalam jangka pendek dan jangka panjang. Sebaliknya, hutang luar negeri berpengaruh negatif dan signifikan terhadap pertumbuhan ekonomi di Indonesia dalam jangka pendek dan jangka panjang.*

Kata kunci: *pertumbuhan ekonomi; penanaman modal asing; hutang luar negeri; kredit bank; angkatan kerja*
Klasifikasi JEL: *F43, P45*

INTRODUCTION

Economic growth is one indicator that is very important in the analysis of economic development that occurs in a country. Economic growth shows the extent to which economic activity will generate additional income to the communities in a given period. It is because economic activity is basically a process to produce output, measured with the GDP indicator.

Indonesia as a developing country tries to build the nation without expecting help from other countries. However it is difficult to sur-

vive in the middle of the swift currents of globalization that continue to grow rapidly. Under these conditions, Indonesia finally has to follow the flow by collaborating with other countries in the implementation of national development, especially the joint national economy.

Indonesia actually never had a promising economy in the early 1980s to middle 1990s. Based on data from BPS, Indonesia's economic growth since 1986 until 1989 continued to increase, *i.e.* 5.9 percent respectively in 1986, then 6.9 percent in 1988 and to 7.5 percent in 1989. Yet from 1990 to six years later the eco-

nomic growth rates fluctuated. However, at a certain point, the Indonesian economy finally collapses under the brunt of the economic crisis globally around the world. It is characterized by high rates of inflation, the value of the rupiah which continued to weaken, the high rate of unemployment, and coupled with the increasingly growing number of Indonesian foreign debt due to weaker exchange rate.

Since the crisis hit in the middle of 1997 it has become a big shock for the growth of the national economy. The monetary crisis affected the rate of economic growth in 1998 which experienced a minus of 13.1 percent and the increase of foreign debt from 269 trillion rupiah in 1997 to 573 trillion rupiah. Further indirect impacts of this crisis also hit the banking world one year later, when total bank credit in the form of consumption and capital declined from Rp487 trillion in 1998 to Rp225 trillion.

Indonesia's economic growth in 1999 starts growing positively despite only at the rate of 0.79 percent after a huge decline in 1998. Early signs of economic recovery has begun It seems, that monetary stability was under control, which was reflected in a low inflation rate and a stronger exchange rate, and political and social circumstances that have been more favorable.

A level of economic growth is determined, among others by the power of investment sector, foreign aid sector, and labor productivity. Economic growth requires an increase in investment funds that in turn require funding from both domestic and abroad. From these two sources of financing, domestic sources should be the principal source of financing, especially viewed from the context in which the long-term economic growth of a country should base their investment financing from domestic sources (Syaharani, 2011).

Because of the limited domestic resources owned while fund requirement for economic development is very large, and to overcome the lack of funds needed in the process of national development since *Pelita I* recent years, revenue funding is made from abroad, both in the form of foreign debt and foreign direct investment (FDI) (Kamaluddin, 2007).

The role of foreign aid and foreign capital to the progress, growth and economic development of developing countries has long been a heated debate among groups of the world economy. A group of economists in the 1950s and 1960s argued and believed that foreign aid has a positive impact on the economic development of a country without causing disruption in the aftermath of the debtor countries (Kamaluddin, 2007).

For developing countries such as Indonesia, the rapid flow of capital is a good opportunity to obtain economic development financing. However, if the funds are given through debt, then gradually foreign debts seem to be a boomerang for Indonesia because it leaves a lot of issues, especially foreign debts that have high interest rates. For a government, foreign debt payment is the largest consumption in the state budget in the last decade. While our country still has to pay for a wide range of other economic sectors that are also important and urgent (Anwar, 2011).

As an alternative to foreign debt, to get the funds from abroad can be done through Foreign Direct Investment (FDI). As well as with foreign debt, Foreign Direct Investment (FDI) is one of the sources of financing for

Table 1. Economic growth, foreign debt, banking credit and inflation in Indonesia 1995-2002

No.	Year	Economic Growth	Foreign debt (RpTrillion)	Banking Credit (RpTrillion)	Inflation
1	1995	8.24	148660.59	242423	9.4
2	1996	7.77	140660.59	306125	7.9
3	1997	4.59	269049.00	476841	6.2
4	1998	-13.24	573538.73	487426	58.0
5	1999	0.79	573140.40	225133	20.7
6	2000	4.86	782462.66	269000	3.8
7	2001	3.83	742320.80	307594	11.5
8	2002	4.25	700967.52	367410	6.8

Source: BPS and BI (data processing)

development and national economic growth. FDI is directed to replace the role of foreign debt to finance the growth and development of the national economy. The role of foreign capital becomes even more crucial given the fact that the amount of Indonesia's foreign debt has increased significantly.

Foreign Direct Investment (FDI) destination country is believed to be beneficial, especially in terms of development and economic growth. Much empirical evidence such as the experiences in South Korea, Malaysia, Thailand, China, and many other countries shows that the presence of FDI gave a lot of positive things to the economy of the host country. In the case of Indonesia, the most obvious evidence is the past under the new order. Indonesian economy may not be able to rise again from the destruction created by the Old Order and could experience an average economic growth of 7 percent per year during the period of the 1980s when no FDI. Of course many other factors that also serve as a source of growth drivers such as aid or foreign debt and the seriousness of the New Order government to build a national economy when it is reflected by the presence of *Repelita* and political and social stability. Literature theory also gives a strong argument that there is a positive correlation between FDI and economic growth in the recipient country (Tambunan, 2007).

The thought that supports that foreign capital has a positive effect on domestic savings and financing imports got a lot of challenges from the camp followers of dependency theory (dependencia). They concluded that only a small proportion of foreign capital has a positive effect on domestic savings and economic growth. The main hypothesis is the dependency theory of FDI and foreign debt in the short-term that increase economic growth; more countries depend on FDI and foreign debt, so the difference in earnings (income) becomes greater and in turn equity is not achieved (Anwar, 2011).

Foreign direct investment (FDI) is an alternative to meet the development needs of capital. In Indonesia, FDI regulated in the Act of Foreign Investment (UUPMA) which is a legal base of FDI to come to Indonesia. The Indonesian government attempted to encourage the business climate so as to attract the interest of private sector enterprises, especially for foreigners, so the Act No. 1/1967 on Foreign Direct Investment (FDI) was issued. The Act was refined in 1970 to be Act No. 11/1970.

In addition to investment, labor is a factor that affects the output of a region. A large labor force will be formed from a large population. However, population growth could cause significant negative effects on economic growth. According to Todaro (2000) rapid population growth gave rise to the problem of under development and make the prospect of the development becomes increasingly distant. Further, it is said that the population problem arises not because of the large number of family members, but because they are concentrated in the urban areas as a result of the rapid rate of migration from rural to urban. However, quite a number of people with high levels of education and have the skills to be able to encourage economic growth. As the total population of productive age is big it will be able to increase the amount of available work force and will eventually to increase the production output in a region (Rustiono, 2008).

Today the condition of Indonesian labor has always been central of attention in economic development. Previously Indonesia has experienced a period of rapid population growth, but the redundant characteristic colors the economic life in Indonesia. The implementation of equity-oriented to the development is also done with the direction to improve and increase the income of low-income communities. Because in the development the population also serves as the workforce development issues that will arise in employment. Hence the ever growing population in the presence of continued economic development needs more investment.

In addition, the problem of capital and labor, the banking sector as intermediary institutions that facilitate the distribution of funds from the excess (surplus) to that lack of funds (deficit) also takes an important position in the economic development, which is reflected through credit. Banking credit has an important role in financing the national economy and is a driving force of economic growth. Availability of credit allows households to make better consumption and enables the company to make an

investment that cannot be done with their own funds. In addition to the problems of moral hazard and adverse selection that are common, banks play an important role in allocating capital and monitoring to ensure that public funds are channeled to activities that provide optimal benefits. Regardless the recent rise in the role of financing through capital markets, financing through financial companies that include banks and financial institutions, bank credit is still dominating the total credit of the private sector with an average of 85 percent (Diah *et al.*, 2012).

Banking has a function to stimulate economic growth and expand employment opportunities through the provision of a number of funds and business development. Especially for businesses, a fund provided by banks is in the form of credit. Total demand for loans in a bank is affected by various factors, both in terms of the debtor and the creditor (bank) itself. Credit demand from the debtor (business) is influenced by the presence of an effort to increase business activity, either in the form of investment or working capital. In terms of banking, credit demand is influenced by factors such as interest rate loan, line of credit, SBI, government policies and services to the customers of the bank itself. In the end, if the bank that issues the funds through various financing can be put to better use then it will trigger good climate in economic and business climate and will trigger economic growth in general.

Some previous studies about the determinants of economic growth have in many countries. Liwan and Lau (2007) found that exports, investment and inflation have an influence on economic growth in Indonesia, Malaysia and Thailand, the only difference is positive or negative influence. Export has positive effect on economic growth in Indonesia, Malaysia and Thailand. Inflation negatively affects the economic growth of Thailand and Malaysia, but it has a positive effect on economic growth in Indonesia. The inflation rate in Indonesia is quite stable for several years, which carries a positive relationship between inflation and economic growth. The investment has a positive effect on economic growth in Indonesia, Malaysia and Thailand.

Mardalena (2009) found that the estimation is based on the results of the regression model, the variable of international trade (which includes exports and imports and net exports) has a positive and significant impact on the growth of economy while the variable investment (domestic and foreign) is positive but doesn't have significant effect on the level of significance of 5 percent of the economy growth. Anwar (2011) found that the negative effect of foreign debt to gross domestic product. Foreign investment has a positive effect on GDP.

Looking at the description of issues described above of course back in the end it boils down to one purpose of Indonesia's economic growth, which indicates the extent to which economic activity will generate additional income of the people in a given period. It is because economic activity is basically a process of using the factors of production to produce output. The purpose of this study is determines the effect of Foreign Direct Investment (FDI), foreign debt, bank credit, and labor force to the Indonesian economic growth in the short term and long term, respectively.

RESEARCH METHOD

In this study, the data used are quantitative data. This study used a literature study on the effects of foreign debt, Foreign Direct Investment (FDI), bank credit and labor force on economic growth in Indonesia. This study used a time series study of the years 1985-2013.

Variables used in the study consisted of four variables consisting of one dependent variable (Dependent Variable) and four independent variables (Independent Variable). The dependent variables are economic growth is denoted by "GDP". The independent variables are foreign direct investment (FDI), bank credit, foreign debt, and the labor force.

Data

This study uses secondary data time series in the form of annual data with an observation period from the 1985-2013. The data used in this study are as follows: 1) Data on economic growth rate used is gross domestic product (GDP) in constant prices year 2000 in Indonesia, based on the data obtained from BPS publications; 2) The

data on foreign direct investment (FDI) was obtained from the published reports of Indonesia's balance of payments issued by Bank Indonesia (BI) and the Investment Coordinating Board (BKPM); 3) The data of Labor Force are based on data obtained from BPS publications; 4) The data on the foreign debt is obtained by the government and the private sector of Indonesia's foreign debt statistics published by Bank Indonesia (BI); 5) The data of bank credit obtained from the publication of Bank Indonesia (BI).

Data Analysis

The method used in this study is the approach of Error Correction Model (ECM), because this model is able to test whether the empirical model is consistent with economic theory and in the solution of the time series variables are not stationary and spurious regression (Thomas, 1997). Spurious regression is chaotic regression, with a significant result regression of the data that is not related.

Error Correction Model (ECM) is a model used to see the effect of long-term and short-term of each of the independent variables to the variables bound. According to Sargan, Engle and Granger, Error Correction Model (ECM) is a technique for correcting short-term imbalance towards a long-term equilibrium, and can explain the relationship between the variables bound by the independent variables in the present and the past.

In determining the linear regression model approach through Error Correction Model (ECM), there are several assumptions that must be met as follows stationary test, integration degree test and cointegration test.

Stationary Test

Before estimating the time series data stationary test must be conducted. Estimation of non-stationary data will lead to the onset of super inconsistencies of regression and spurious regression, so actually a classic inference method cannot be applied (Gujarati, 1999).

The method recently used by a lot of econometrics to test the stationary problem is the data unit root test. The first unit root test was developed by Dickey-Fuller unit root test and

known as the Dickey-Fuller (DF). The basic idea of data stationary test by the unit root test can be explained through the following models):

$$Y_t = \rho Y_{t-1} + e_t \qquad -1 \leq \rho \leq 1 \qquad 1)$$

Where e_t is a random disturbance variable or stochastic with mean zero, constant variance and uncorrelated (nonautokorelasi) as OLS. The disturbance variable that has that nature is called the white noise disturbance variables (Gujarati, 1999).

If the value of $\rho = 1$ then we say that the random variable or (stochastic) Y has a unit root. If the time series data have a unit root, then the data are said to be moving at random and the data is said to have the nature of a random walk data is not stationary (Gujarati, 1999).

To test whether the data contain unit roots or not, Dickey Fuller regression models suggest to do the following:

$$\Delta Y_t = \phi Y_{t-1} + e_t \qquad 2)$$

$$\Delta Y_t = \beta_1 + \phi Y_{t-1} + e_t \qquad 3)$$

$$\Delta Y_t = \beta_1 + \beta_2 t + \phi Y_{t-1} + e_t \qquad 4)$$

Where t is the time variable.

In the model, if the time series contains a unit root, which means no stationary so null hypothesis is $\phi = 0$, while the alternative hypothesis is $\phi < 0$ which indicates the data stationary.

DF test in equation (2) and (4) is a simple model and can only be done if the time series data simply follow the pattern of the AR (1). For time series data that contain a higher AR where the assumption of no autocorrelation is not met, the Dickey Fuller developed a unit root test that incorporates elements of the higher AR and adds a variable lags differentiation in the right side of the equation. This test is known as Augmented Dickey Fuller (ADF) with the following formulation:

$$\Delta Y_t = \gamma Y_{t-1} + \sum_{i-2}^{\rho} \beta_i \Delta Y_{t-i+1} + e_t \qquad 5)$$

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \sum_{i-2}^{\rho} \beta_i \Delta Y_{t-i+1} + e_t \qquad 6)$$

$$\Delta Y_t = \alpha_0 + \alpha_1 T + \gamma Y_{t-1} + \sum_{i-2}^{\rho} \beta_i \Delta Y_{t-i+1} + e_t \quad 7)$$

where: Y = observed variables; ΔYt = Yt - Yt-1; T = time trend

To determine the stationary of data, the comparison between the values of the ADF statistic with the critical value is a statistical distribution τ. ADF statistic value indicated by the value of t statistic coefficient ϕY_{t-1}. If the absolute value of the ADF statistic is greater than the critical value, then indicates reject the null hypothesis that means the data is stationary. Conversely, if the absolute value of the ADF is smaller than the critical value, it indicates the data are not stationary (Indira, 2011).

Integration Degree Test

Integration degree test is a continuation of the unit root test. If after testing the unit root turns out the data is not stationary, then they are re-tested using the first difference value data. If the data have not been stationary first difference then we tested with data from both the differences and so on until the data is stationary (Gujarati, 1999).

Cointegration Test

If all the variables pass from the unit root test, the cointegration test is then performed to determine the likelihood of long-term equilibrium or stability among the observed variables. In this study the method used to test the Engel and Granger cointegration variables is by making the DF-ADF statistic test to see if the cointegration regression residuals were stationary or not. To calculate the value of the DF and ADF cointegration regression equation was formed first by the method of ordinary least squares (OLS). Regression equation which will be tested in this study were as proposed by (Nachrowi, 2006).

$$LnY_t = \beta_0 + \beta1 LnFDIt + \beta2 LnEDt +$$
$$\beta3 LnCREt + \beta4 LnLFt + et \qquad 8)$$

where: $\beta0$ = intercept/constant; $\beta1$, $\beta2$, $\beta3$ = regression coefficient, $LnYt$ = gross domestic product in period t; $LnFDI$ = Foreign Investment in period t; $LnEDt$ = Foreign Debt in period t; $LnLFt$ = Labor Force in period t; LnCREt = Bank lending period t; et = error term

The regression equation above was used to obtain residual value. Then the residual value (et) were tested using the Augmented Dickey Fuller to see if the residual value is stationary or not. The residual value is said stationary if the absolute value of ADF count is smaller or larger than the absolute critical value of McKinnon at α = 1%, 5%, or 10%, and it can be said that regression is cointegrated regression. In econometric variables, they are said to be mutually cointegrated in the long-term equilibrium. Testing is particularly important when the dynamic model will be developed. Thus, by using the model above the interpretation would not be misleading, especially for long-term analysis.

Error Correction Model (ECM) Analysis

A technique for correcting imbalances in the short term to the long-term equilibrium is called Error Correction Model (ECM). This method is a single regression connecting the first differentiation in the dependent variable (ΔY_t) and the first differentiation for all independent variables in the model. This method was developed by Engel and Granger in 1987. The general form of the ECM method (Nachrowi, 2006) are as follows:

$$\Delta Y_t = \beta_0 + \beta_1 \Delta X_{1t} + \beta_2 \Delta X_{2t} +$$
$$\beta_3 \Delta X_{3t} + \beta_4 u_{t-1} +{}_{et} \qquad 9)$$

To find the model specification with a model ECM which is valid, it can be seen in the results of statistical tests on the coefficients of the regression residuals β_4 or first, which would then be called Error Correction Term (ECT). If the results of the ECT coefficient test is significant, then the observed model specification is valid. In this study, ECM analysis model which is used can be formulated in full as follows:

$$Y_t = f\ (LnFDI_t, LnED_t, LnAK_t, LnKREt, ECTt_{-1}) \quad 10)$$

$$\Delta Ln\, Y_t = \beta_0 + \beta_1 \Delta\, LnFDI_t +$$
$$\beta_2 \Delta\, LnED_t + \beta_2 \Delta\, LnLF_t +$$
$$\beta_3 \Delta\, LnCRE_t + \beta_4 ECT_{t-1} + {}_{et} \qquad 11)$$

Description: $LnYt$ = Gross domestic product in period t; $LnFDI$ = Foreign 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

Based on the calculations of linear regression analysis of the ECM above, it can be seen that the value of the variable ECT (error correction term), which is a variable that indicates the balance of the investment. It can make an indicator that the model specification, whether or not through significance level of error correction coefficient (Wing, 2007). If the ECT variable α = significance at 5 percent, then the coefficient will be an adjustment in the event of fluctuations of observed variables which deviate from the long-term relationship. In other words, the model specification is already is authentic (valid) and can explain the variation in the dependent variable.

RESULT AND DISCUSSION

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, 1999).

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.

Unit root test is done one by one or all variables in the analysis that will be both dependent and independent variables. Unit root test results are obtained on the level, and it can be seen in table 2.

Table 2 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.

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 the unit root test to distinguish difference in the course and assumptions used are the same hypothesis.

Table 3 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 4 (Appendix) showed that five variables have been stationary at the second

Table 2. Augmented Dickey Fuller Resultant 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

Table 3. 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

level difference, the variable Y (GDP), CREDIT, FDI, Foreign Debt and AK, at a significance level of 5 percent. Therefore it can be said that all the data used in this study are integrated the second difference.

Long-Term Analysis

Cointegration Test. Cointegration test used in this study employed Engel and Granger method, by making the DF-AD F statistic test to see whether the co integration 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:

$$Y_t = \beta_0 + \beta_1 LnFDI_t + \beta_2 LnED_t + \beta_3 LnCRE_t + \beta_4 LnLF_t + e_t$$

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

$$Y_t = \beta_0 + \beta_1 LnFDI_t + \beta_2 LnED_t + \beta_3 LnCRE_t + \beta_4 LnLF_t$$

$$Y = 6.889323 + 0.026936\,FDI - 0.140683ED + 0.173240CRE + 1.464111LF$$

Based on table 5 it can be seen that the whole of each independent variable (FDI, Foreign Debt, CRE, LF) significantly affects the dependent variable (GDP). FDI has positive coefficient (0.026936), with a probability value

of 0089 or significant at 10 percent level. 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.

Table 5. 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

( ) shows standard error; ***significance at level 1%; **significance at level 5%; *significance at level 10%

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 and other issues that have not created a conducive of investment climate.

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. Foreign Debt have a negative coefficient (-0.140683), with a probability value of 0.0009 or significant at 1 percent level. 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; there 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 for the development cycle of the grant, which is always contained in the 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 (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 is a crisis in 1998 foreign debt rose sharply to reach 573 trillion from the 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.

Bank credit has a positive coefficient (1.464111), with a probability value of 0:00 or significant at the 1 percent level. 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).

The labor force has a positive coefficient (0.173240), with a probability value of 0.0002 or significant at the 1 percent level. These results are certainly 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

Tabel 6. Augmented Dickey Fuller result in residual equation

Variable	ADF t-statistic	MacKinnon Critical Value Result			Description
		1%	5%	10%	
e	-4.750964	-3.769597	-3.004861	-2.642242	Co integrated

aggregate productivity increases, so it will ultimately have an impact on economic growth of a region (Soeparno, 2011).

The result of the estimation of the long-term equation shows the v alue 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 non stationary. The result of data processing co integration test can be seen in Table 6.

Table 6 shows that the variable e has been stationary at the second difference level. This means there is an indication that the variable e for the data second difference and the long lag 1 does not contain a unit root, in other words the variable e is already stationary, so it is concluded that there is co integration 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.

Short-Term Analysis

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:

$$\Delta Y_t = \beta_0 + \beta_1 \Delta LnFDI_t + \beta_2 \Delta LnED_t +$$

$$\beta_2 \Delta LnLF_t + \beta_3 \Delta LnCRE_t +$$

$$\beta_2 \Delta LnLF_t + \beta_3 + \beta_4 ECT_{t-1} + {}_{et}$$

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; $LnCRE_t$ = 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 estimation methods can combine short-and long-term effects caused by fluctuations and time lags of each independent variable. Based on the results of the ECM test showed the following results on table 7.

Table 7. Engle Granger Cointegration test result for short-term

Variable	Coefficient (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

( ) standard error; ***significance at level 1 %; **significance at level ; 5 %; *significance at level 10%

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 percent level indicates that the resulting model is valid.

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.

Foreign Direct Investment (FDI) in the short-term have positive effect on economic growth and is symbolized by Gross Domestic Product (GDP) with a significance level of 5 percent with a coefficient of 0.026601. 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 percent level. This means that there is a tendency that FDI has more affect to economic growth in the short term. 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 percent with a coefficient -0.140683. 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.

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 percent with a coefficient 0.149893. 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. 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 percent with a coefficient of 0.840824. 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.

CONCLUSION

Based on the test results and analysis on the effects of Foreign Direct Investment (FDI), Foreign Debt, Bank Credit and Labor Force on economic growth in Indonesia in the long term and short term it can be concluded that: 1) Foreign Direct Investment (FDI) in the long-term has a positive effect on economic growth with a coefficient of 0.027 significant at the 10 percent level. While in the short-term FDI also has a positive effect on economic growth with the same coefficient of 0.027 and a significant level increased to 5 percent, meaning there is tendency FDI has more effect on the short term; 2) Foreign Debt in the long term and short term has the same effect, that is a negative effect on economic growth in Indonesia with a coefficient of -0.14 significant at the 1 percent level. This means that there is no change in the behavior both in the long and short term; 3) Banking credit in the long-term has a positive effect on

economic growth in Indonesia with 1.46 coefficient significant at one percent level, while the short-term bank lending also has a positive effect on economic growth with a coefficient of 0.15 significant at the one percent level. This means that bank credit is more influential in the long term; 4) The labor force in the long-term has a positive effect on economic growth in Indonesia with a coefficient of 0.17 a significant at the one percent level. While in the short term there is also a positive effect on economic growth with a coefficient 0.84 and significantly decreased to 5 percent level. This means that there is a tendency that the labor force is more influential in the long run.

To be able to enhance the growth of investment in Indonesia, the government should be able to seek a favorable investment climate, economic stability, improve the security of the state and the proper regulation so that investors, both foreign and domestic, can feel safe and keen to invest their capital so the result can increase economic growth. In terms of FDI, the government should be able to weigh the benefits of both short-term and long-term investment by foreigners. As well as more selective in choosing foreign companies to invest in Indonesia that gives more benefit.

The development foreign debt must be considered in order to remain in the normal position and the favorable economic development does not increase the burden of the Indonesian economy. For long-term debt can be detrimental to the economy because the risk is greater. The need for reevaluation of debt is undertaken in order to provide benefits rather than to the detriment of the country. Indonesia's economy is still vulnerable to outside influences, so the value of the exchange rate is still not stable to a great cause and should be considered by the government in taking foreign debt. Using *mudharabah* and *musyarakah* skim (Profit loss sharing) to increase basis for economic development that will encourage the real sector, and in turn will reduce national dependence on foreign fund (Foreign debt and FDI).

Bank credit should be noted again until covers all the lines, so it can create a balanced distribution of capital between large and small. So inequality of economic growth can be avoided. It is necessary to increase the labor productivity through increased budgetary allocation to education in order to enhance the quality of the workforce, provide skills training for workers and expanding employment opportunities so that output increases may ultimately spur economic growth in Indonesia.

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APPENDIX

Table 4. Augmented Dickey Fuller result at2nd Difference

Variable	ADF t-statistic	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