# The Effect of Foreign Loans, Exchange Rate of Rupiah/ USD, Inflation, Fed Rate, and Exports to Indonesia's Economic Growth

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*Abstract---Indonesia is one of the countries experiencing economic growth problems. The purpose of this study is to examine and analyze the effect of foreign loans, the exchange rate of rupiah/ USD, inflation, the Fed Rate, and exports to Indonesia's economic growth. The method of research in this study is ECM with period 2004 quarter I-2016 quarter IV. The conclusion is that in the long term, the variable of rupiah/USD exchange rate(X2) has a significant negative effect on economic growth, The Fed Rate(X4) has a significant positive effect on economic growth, and exports(X5) have a significant positive effect on economic growth, while in the short term variable exports(X5) have a significant positive effect on economic growth.*

*Keywords---Economic growth, Foreign loans, Rupiah/USD exchange rate, Fed rate, Inflation, Exports, ECM.*

## I. Introduction

Economic growth as a continuous process of increasingly output. In the same line, economic growth has used an important indicator for measuring result of economic development [1]. The higher economic growth means the better of society welfare [2]. There are several factors could affect economic growth, such as foreign loans, Foreign exchange rates, inflation, the Fed rates and exports. Foreign loans can increase economic growth used to finance productive investment and not be used to pay off foreign loans [3]. The debt service ratio means the amount of interest payments and principal installments of long-term foreign debt divided by the amount of export receipts [4]. Debt service ratio reflects the ability of a country to settle its debt repayment obligations. Besides that, the fluctuations in the rupiah / USD exchange rate also had an impact on Indonesia's economic growth. Rupiah / USD exchange rate experienced a depreciation that could increase economic growth, because when the rupiah exchange rate depreciated it will encouraging exports to be higher than imports. The conditions are different when the rupiah exchange rate depreciates is stabilized by monetary policy. Bank Indonesia runs contractive monetary policies to control exchange rate movements. Debt service ratio explains the ability of a country to settle its debt repayment obligations. On the other hand, fluctuations in the rupiah / USD exchange rate also have an impact on Indonesia's economic growth. Rupiah / USD exchange rate depreciation can increase economic growth. This condition illustrates if the rupiah exchange rate depreciates then increases international trade by encouraging exports higher than imports. The conditions are different when the rupiah exchange rate depreciates is stabilized by monetary policy. Bank Indonesia applies contractionary monetary policy to control exchange rate movements.

Meanwhile, the Federal Fund Rate by the Fed, also encourages the appreciation of the Rupiah [5]. Third, investors have a positive perception of the outlook for the domestic economy along with maintaining macroeconomic stability, while also

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being influenced by the implementation of the Tax Amnesty Law [5]. Fourth, there are foreign exchange offerings which are export oriented and the continued easing of monetary policy in some developed countries [5].

Furthermore, inflation is one of the variables that affected on economic growth. According to Sukirno (2010: 65) inflation has a negative impact on economic growth because high inflation rates affect the level of domestic production, dampening the production of exported goods and making the economic growth decrease. Nualtaranee (2001) [6] shows that interest rate is the main factor for influencing of economic growth. Changes in interest rates will have an impact on the cost of capital, which lead to affected by the value of assets and investment decisions. The Fed's interest rate is one of instrument in monetary policy which is determined by the central bank of the United States. The Fed rate is the interest rate that is used as information by investors because it could affect the stability of the world economy [7]. Furthermore, the factor of exports also impact on economic growth [8]. Exports are sales of goods to abroad using the payment system, quality, quantity and other sales conditions that have been approved by the exporter and importer. Export expansion can promote the specialization of domestically produced export products, thus causing reallocation of resources from inefficient non-traded sector to higher productive export sectors [9].

## II.    Literature Review
*Theory of Classical Economic Growth*

According to Mankiw (2006: 56) [10] productivity (productivity) refers to the amount of goods and services produced by a worker per hour of work. According to Todaro and Smith (2010: 129) [11] the factors that determine economic growth are as follows:

1. Land and other natural wealth.

2. The amount and quality of the population and labor.

3. Capital goods and technology level.

4. Social systems and attitudes of the community.

In the other side, Smith explains that capital stock plays an important role in economic development. In addition, capital stock is an element of production that actively determines the level of output. [12].The function as follow:

$$\Delta Y = f (\Delta K, \Delta L, \Delta T)$$

Where:

$\Delta Y$        = level of economic growth

$\Delta K$        = the rate of increase in capital goods

$\Delta L$        = the rate of increase in labor

$\Delta T$        = the rate of increase in technology

*Theory of Neo-Classical Growth*

This model was introduced by Solow-Swan. Economic growth depends on the availability of production factors (population, labor, and capital accumulation) and the level of technological progress (technological progress). Solow examines that the role of technological progress in economic growth was very dominant [12]. Furthermore, Neoclassical growth theory can also be presented in Cobb-Douglass production function, where output is a function of labor and capital, while the level of technological progress is an exogenous variable. The assumptions used in this model are constant returns to scale, perfect substitution between capital (K) and labor (L), and the diminishing marginal productivity of each input [12] The production function of Cobb - Douglass can be described as follows:

$$Q\_t = T\_t \, K\_t^a \, L\_t^b$$

Where:

Q_t        : Production level in year t

T_t        : Technology level in year t

K_t^a      : Total stock of capital goods in year t

L_t^b      : Number of workers in year t

a          : Capital elasticity

b          : Labor elasticity

According to the growth theory of Traditional Neo Classical, output growth is always obtained from one or more than 3 (three) factors such as increases in the quality and quantity of labor, additional capital (savings and investment) and technological improvements [13].

*Theory of Classical Debt, Keynes, and Ricardian*

Keynesian suggest that the policy of increasing expenditure budgets financed by foreign funds loans will have a greater interest in economic growth because of the increase in aggregate demand as a further increase in the addition of capital [14]. This condition causes the tax burden in the present to be relatively weaker, This condition will cause an increase in disposable income [14]. Furthermore, increasing national income will encourage economic growth.

The third group after Keynes and classics who have arguments about economic growth and foreign loan funds is the Ricardian. The Ricardian theory is also called Ricardian equivalence. The equivalent value is that there is no difference between foreign tax and loan funds, because foreign loans are tax deferred [15]. The Ricardian equivalence theory argues that foreign debt policy to finance government budget deficits will not affect economic growth [16]. This condition occurs because the effect of the growth of government spending financed by public debt must be paid by the government in the future with tax increases. Therefore, the public will reduce current consumption to enlarge the savings used to pay tax increases in the future [17].

*Theory of Aggregate Demand and Aggregate Supply*

Theory of aggregate demand explains the relationship between amount of output demanded and the price level in an economy. Components in aggregate demand are consumption, investment, government spending, exports, and imports [10]. Government expenditure is an instrument of fiscal policy that can be regulated by the government. On the other hand,

consumption, investment, exports and imports depend on economic conditions. Meanwhile, the output relationship and price level depend on time. Prices in the short term are rigid while prices in the long run are flexible.

*Interest Rates and Economic Growth*

Udoka and Roland (2012) [18] argue that interest rates are one of the factors that influence a country's economic growth. The central bank of a country has the right to increase or decrease interest rates, depending on the economic situation of the country concerned. The central bank will raise interest rates, if there is high inflation and many currencies in circulation. Therefore, this condition causes the value of the currency to decrease and has an impact on the high prices of goods and services [19].

Furthermore, the contractive of monetary policy could reduce the amount of money in circulation. Based on the law of supply and demand, if the supply of money in circulation decreases, the demand for money invested in banks increases. The central bank will reduce interest rates to increase economic growth. Meanwhile, low interest rates will stimulate businesses to borrow money from banks to expand and develop their businesses.

*Export and Economic Growth*

Exports are economic activities that produce domestic goods for sale to another country [10]. Exports of goods and services are one of the most important sources of foreign exchange earnings, reducing the pressure of the balance of payments deficit, and creating employment opportunities [20]. Export activities are determined by the relative prices of domestic goods in the foreign market, the ability of domestic goods to compete in the world market, and the tastes of the population in other countries towards goods produced by a country [21].

*Exchange Rate and Economic Growth*

Exchange rate is defined as the price of a foreign currency in a domestic currency. This condition means an increase in the exchange rate or the price of foreign exchange will cause domestic currency depreciation. Conversely, if the number of units of domestic currency needed to buy one unit of foreign exchange decreases, it means that there is an appreciation [22]. There are three types of foreign exchange rates, namely: (1). The spot exchange rate is the prevailing exchange rate system is the rate at which the sale and purchase transaction occurs, (2) the forward exchange rate is the prevailing exchange rate system which is the exchange rate at the initial agreement, asset delivery and payment in the future, and (3 ) the prevailing exchange rate future exchange rate is an adjusted exchange rate every day during the contract period, asset delivery and payment will be made in the future [22].

## III. Methodology and Variable Identification

This study uses a quantitative approach using the Error Correction Model (ECM) method. The ECM method corrects the regression equation between variables that are not stationary individually to return to equilibrium in the long run, with the main condition there is a cointegration relationship between the variables [23]. There are several steps that need to be done in the ECM method (Error Correction Model). First, it starts with a stationary test. Second, Engle Grenger's co-integration

test. Third, we applied long-term and short-term tests. This research uses time series data start from 2004 quarter I to 2016 quarter IV. The details of the variables used in this study are as follows:

**Table 1.** Variable Identification

| Variable | Variable Type |
|---|---|
| Economic Growth | Dependent Variable |
| Foreign Loans | Independent Variable |
| Exchange Rate Rupiah/USD | Independent Variable |
| Inflation | Independent Variable |
| Interest Rate | Independent Variable |
| Export | Independent Variable |

Based on table 3.1, the amount of dependent variable is 1 and the independent variables are 5.

## IV. Results and Discussions

*Unit Root Test*

Based on the results of the study indicate that the time series data is not stationary. Therefore, the data contains unit root and causes spurious regression. This study uses the ADF test to test stationary of data.

**Table 2.** Stationary Test at Level and First Difference Level

| Variable | Prob. ADF at Level | Result | Prob. ADF at First Difference | Result |
|---|---|---|---|---|
| Economic Growth (Y) | 0.0210** | Stationary | 0.0000** | Stationary |
| Foreign Loans (X1) | 0.0350** | Stationary | 0.0000** | Stationary |
| Excahange Rate Ripuah/USD [Ln(X2)] | 0.9845 | Non Stationary | 0.0000** | Stationary |
| Inflation (X3) | 0.3912 | Non Stationary | 0.0027** | Stationary |
| The Fed Rate (X4) | 0.0796 | Non Stationary | 0.0336** | Stationary |

| Export [Ln(X5)] | 0.1854 | Non Stationary | 0.0000** | Stationary |

Note: **Stationary at α=5%

In Table 4.1, the results of stationary tests at the level of the first difference indicate that all variables (economic growth, foreign loans, Rupiah/USD exchange rate, inflation, fed rate, and exports) are stationary at the first difference and intercept. The stationary can be seen that these variables have a probability value of less than 5 percent. This result shows that all variables have no unit root problems.

*Engle-Granger Cointegration Test*

**Table 3.** Result of Augmented Dickey-Fuller Cointegration Test (ADF)

At Level and First Difference for Long-Term Residual Variables

| Level | *First Difference* |
|---|---|
| **ADF Prob** | **ADF Prob** |
| 0.0010 | 0,0000 |

Based on the hypothesis and testing criteria, H0 is rejected if the value of the long-term residual probability is less than 5%. Therefore, there is cointegration of the variables in the model.

Furthermore, Table 4.2 shows the results of the cointegration test. Based on table 4.2, Long-term residual probability value at I (0) is 0.0010 and at I (1) is 0.0000. This explains that there is cointegration of the variables in the model.

*Long Term and Short Term Estimation Results*

Long-term estimation results can be explained as follows:

**Table 4.** Long Term Estimation Results of Dependent Variables for Economic Growth (Y)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| X1 | 0.016433 | 0.013326 | 1.233209 | 0.2238 |
| LnX2 | -0.029652 | 0.005204 | -5.697396 | 0.0000 |
| X3 | -0.036366 | 0.028892 | -1.258700 | 0.2145 |
| X4 | 0.228502 | 0.061959 | 3.687990 | 0.0006 |
| LnX5 | 0.014345 | 0.002809 | 5.106975 | 0.0000 |
| C | 0.140677 | 0.045691 | 3.078885 | 0.0035 |

Where:

Y        = Economic Growth

X1       = Foreign Loan

X2       = Rupiah / USD Exchange Rate

X3       = Inflation

X4       = The Fed Rate

X5       = Export

Ln       = Natural Logarithm

Based on Table 4.3, It can be seen that the rupiah / USD exchange rate (X2) has a significant negative effect on economic growth, the Fed Rate (X4) has a significant positive effect on economic growth, and Export (X5) has a significant positive effect on economic growth. Interpretation of the long run coefficient as follows:

1. In the long run, increasing foreign loans by 1 percent, causing economic growth to increase by 0.016 percent
2. In the long run, increasing the rupiah exchange rate by 1 percent, causing economic growth to decline by 0.03 percent

**Table 5.** Short Term Estimation Results of Dependent Variables for Economic Growth (Y)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(X1) | 0.018398 | 0.014771 | 1.245513 | 0.2195 |
| D(X2) | -0.014343 | 0.014594 | -0.982783 | 0.3311 |
| D(X3) | -0.006749 | 0.031275 | -0.215788 | 0.8301 |
| D(X4) | 0.215201 | 0.177039 | 1.215558 | 0.2306 |
| D(X5) | 0.021436 | 0.010027 | 2.137895 | 0.0381 |
| ECT | -0.547801 | 0.128853 | 4.251375 | 0.0001 |
| C | -0.000184 | 0.000735 | -0.250485 | 0.8034 |

Where:

Y        = Economic Growth

X1       = Foreign Loans

X2       = Rupiah / USD exchange rate

X3       = Inflation

X4       = The Fed Rate

X5       = Export

Ln       = Natural Logarithm

D        = FirstDifference

Based on Table 4.3, it can be seen that the Export variable (X5) has a significant positive effect on economic growth, while the other variables have no significant effect on economic growth. This condition also shows that ECT in a short-term model has a negative and significant coefficient. Interpretation of Short Term Coefficients as follows:

1. Increasing foreign loans by 1 percent, causing economic growth to increase by 0.018 percent in the short term.
2. Increasing the rupiah exchange rate by 1 percent, causing economic growth to decrease by 0.014 percent in the short term.
3. Increased inflation by 1 percent, causing economic growth to decrease by 0.007 percent in the short term.

Based on the results of the analysis, the evidence of the hypothesis in this study that in the long-term variable rupiah / USD exchange rate (X2) has a significant negative effect on economic growth, the Fed Rate (X4) has a significant positive effect on economic growth, and exports (X5) have a significant positive effect towards economic growth, while in the short term the export variable (X5) has a significant positive effect on economic growth.

## V.    Conclusion and Policy Implication

Based on the results of the test and discussion, conclusions are obtained both short term and long term. In the long-term variable the rupiah / USD exchange rate has a significant negative effect on economic growth, the Fed Rate has a significant positive effect on economic growth, and exports have a significant positive effect on economic growth, while in the short term the export variable has a significant positive effect on economic growth. Whereas, it can be seen that Export variable (X5) has a significant positive effect on economic growth, while the other variables have no significant effect on economic growth. Furthermore, ECT contained in the short-term model has a negative and significant coefficient.

Based on the conclusions, some suggestions are given as follows:

1. Foreign loans do not have a significant effect on economic growth. Therefore, the authors expect the new debt collection policy to cover the old debt needs to be reviewed, because in the long run the policy of closing the old foreign debt by taking new debt can have implications for the increase in the total foreign debt from year to year that makes Indonesia will enter a debt trap, so that it will provide a huge burden on the APBN in the long run.

2. For further researchers, the author hopes to be able to expand the research period and compare with other countries.

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