

Relationship Between Government Spending and Private Investment in Indonesia

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Abstract

This research wants to prove whether expansive government spending associated with the development of private investment in Indonesia will lead to crowding out of investment or crowd-in. The data is used from 1990 to 2016, with the component of government expenditure divided into three, namely routine expenditure, capital expenditure, and regional transfer funds. The analytical tool used is Co-Integration and Error Correction Model (ECM) to describe short-term and long-term relationships. The results explain that the relationship between private investment and transfer expenditure to the regions occurs crowding out of investment, both for domestic private investment and foreign private investment and is significant both in the short and long term. For routine expenditures and capital expenditure expenditures have a positive relationship with private investment or occur crowd-in, and significantly occur in domestic investment both short and long term, while in foreign private investment is not significant. The relationship between private investment and credit interest rates is negative, meaning that if there is a fiscal expansion resulting in a budget deficit financed with loans, there will be a decrease in private investment caused by an increase in loan interest rates. While the relationship between private investment and GDP is positive. Increased economic growth will attract investors to increase their investment, so it seems that the stimulation of private investment into Indonesia sees better economic growth compared to government spending. The recommendation is that transfers to the regions need to be changed in spending patterns with better control, so that the use of these funds can stimulate the entry of private investment. Whereas for central government expenditure or routine expenditure and capital expenditure should be more focused on infrastructure development and maintenance, so that it can further increase the interest of private investment to invest in

Keywords: Government Expenditures, Private Investment, Interest, and GDP, Co-Integration, ECM

INTRODUCTION

Fiscal policy is one of the government's policies to find sources of income and regulate expenditure to finance the development of a country. Most countries, especially developing countries including Indonesia, fiscal policy has limited income constraints compared to the funds needed for development spending which from time to time continues to increase. So to cover the income shortfall must be financed with debt, both domestic debt and foreign debt. Closing the budget gap with debt can increase the real interest rate. Because the need for funds increases, it will cause money prices to rise, the increase in the price of money is reflected by rising interest rates in the monetary sector. An increase in interest will reduce private investment, known as the *Crowding-Out Effect*. The decline in private sector investment results in not achieving the target multiplier effect on national income. However, this condition does not theoretically always increase interest rates, especially if monetary policy can anticipate an increase in demand for money, namely by maintaining interest rates through increased money supply, so that the development financing deficit has the opposite impact of positive impact, and does not cause the urgency of the private role, this condition is called *Crowding-In Effect*. Government expenditure is one of the most important factors to increase economic growth. Through fiscal policy, government spending can provide various facilities to stimulate increased private investment through infrastructure development. With the availability of good facilities and infrastructure by the government, it will attract the private sector to invest their capital. The development of private investment can affect the high and low economic growth of a country. Therefore, to maintain the sustainability of

economic development (*sustainable economic development*) in Indonesia, the increasing role of private investment continues to be pursued from year to year.

The main source of development funding is from government revenue through tax and non-tax. However, because the source of income from taxes is insufficient resulting in a budget deficit. The budget deficit is financed from both foreign and domestic debt. Expansive fiscal policy can be seen from government spending that continues to increase, this reflects the government's efforts to maintain the sustainability of development in Indonesia. In general, expenditure plans are always above government revenue, because revenue development is slower, causing a deficit. To cover the budget deficit, the government must try to get it by finding loans, both domestic and foreign loans.

In addition to government spending as an implementation of fiscal policy, private investment is also a very important factor for increasing the economic growth of a region or country. If private investment increases, it will have an impact on increasing the use of available resources, for example increasing employment absorption, increasing use of capital goods, and raw materials. Increased economic activity, through a multiplier effect process, can increase domestic production capacity. To see the development of private investment, namely domestic investment (PMDN) and foreign investment (PMA)

Actually there are many factors that can affect the development of private investment in Indonesia, economically such as the presence of infrastructure, land availability, licensing, and domestic economic conditions, as well as being influenced by interest rates at home. As explained by *Mankiw* (2000), that in theory private investment behavior is inversely proportional to the interest rate. If the interest rate is high, the company would rather keep its money in the bank than invest it. The high interest rates on bank loans also reflect the high price of capital, thereby reducing investment enthusiasm among entrepreneurs. The opposite situation will occur if the interest rate is low.

One of the objectives of fiscal policy is to encourage increased public investment. Investment is one of the important factors in economic development activities. However, some researchers argue that fiscal policy results are not always as effective as expected. As explained earlier, the increase in government revenue is relatively slower than the planned increase in expenditure in each fiscal year, this condition has led to rapid growth in government debt as a source of financing the budget deficit.

In the book macroeconomics *Mankiw* (2000) explained that, according to the Monetarists, fiscal policy will only result in *crowding out* because an expansionary fiscal policy will only make the economy worse, even said to be more extreme part of the problem, and not part of the solution. Whereas Keynesians prefer expansive fiscal policy, because this step will increase output. Instead the Monetarists favor contractionary monetary policy. Meanwhile, according to the Neo-classical group, an increase in public spending, especially if financed by debt, will cause a declining movement effect on private investment (*crowding of investment*).

Differences in opinion from the two streams have been proven through various studies, for example conducted by Forgha and Mbella (2013) with the title *public expenditure and private investment in Cameroon*. The results of his research concluded that the impact of government spending financed with a budget deficit has an insignificant effect on private investment in Cameroon, possibly because it is *caused by rising interest rates*. The effectiveness of fiscal policy in some literature has caused debate. Although the government generally agreed to issue a fiscal deficit policy, this does not mean debate about the effectiveness of fiscal policy itself does not take place. There are parties who are pros, but not a few who are cons. For those who consider the effectiveness of the fiscal deficit policy is effective, especially its implementation for developing countries that really need government intervention. *The policy was chosen to provide fiscal stimulus, because it takes into account the narrow space of monetary policy in overcoming the crisis on the financial markets.*

On the contrary, related Ricardian Equivalence theory considers fiscal deficit policy will cause Crowding Out Effect. Feldstein (2009) mentions that one of the reasons for the ineffectiveness of fiscal stimulus is the long lag between decisions and their realization. The timeliness factor as required by Furman (2008) is difficult to fulfill. As a result, the new fiscal stimulus is effective after a long period of time, this condition will lead to changes in demand that

have not been anticipated in the economy that is just starting to grow as an effect of fiscal policy in the previous period.

Apart from the pros and cons, based on previous research which shows that the effectiveness of fiscal stimulus can vary depending on many factors. Fiscal stimulus policies that are successful in one country may not necessarily produce the same thing in another. Like the results of research conducted by Ilzetki, Mendoza, and Vegh (2009).

Related to the effectiveness of the expansionary fiscal policy above, when viewed from its impact on the aggregate effect of aggregate demand, one of which is seen from the factor of household consumption, according to Shapiro and Slemrod (2001), has not changed much. Gravelle (2002) concluded that expansive fiscal policy by cutting income tax rates, depends on the level of income of households that receive these incentives. While Mankiw (2000) in his macroeconomics as *the savers-spenders theory of fiscal policy*, explains that, kethics income increases, the group of high-income households would prefer to increase their savings.

If observed from the differences in the results of research on the effectiveness of expansive fiscal policy above, it means that it needs to be examined further how the effectiveness of expansive fiscal policy in Indonesia, both in terms of the time period of the research, the determining variables that influence the effectiveness itself, for example monetary policy about adopted the exchange rate, efforts to increase aggregate demand for public consumption through tax cuts. Increasing government spending that continues to increase, will have an impact on increasing government debt to cover the deficit that occurs. While the effectiveness of expansive fiscal policy towards other aggregate demand variables, namely the private sector through private investment activities, there have also been many researches with ambiguous results, both of which are urgent for the release of private investment due to rising interest, as well as those that increase investment, so the magnitude of the multiplier also different from various countries. Therefore from the description above, it has been shown that it is important to determine the impact of government spending on private investment. This research is very relevant in the context of limited public finances in terms of a small open economy, including Indonesia. The budget deficit is continually covered with funding sources that are more primary than debt, while debt will also be a burden on the next period's state budget. Therefore, the focus of the problem in this study is: how is the relationship between government spending and private investment in relation to development interests in Indonesia. Elaboration of problems is: a. What is the relationship between routine expenditure, capital expenditure, respective regional transfers with investment private, both domestic and foreign. b. What is the relationship between GDP and private investment, and c. How is the interest rate related to private investment?

RESEARCH METHODS

The type of data used in this study is secondary data. Data sources were obtained from various institutions such as the Central Statistics Agency (BPS), Bank Indonesia (BI), World Bank (WB), International Monetary Fund (IMF), and other sources related to this research. The data used for the purposes of the application model are annual time series data from 1990 to 2016.

The variables used in this study are private investment variables consisting of domestic investment or domestic investment (IvDN), foreign investment or foreign investment (IvA), central government expenditure on routine expenditure (GeP), government expenditure on capital expenditure (GeM), government expenditure on regional transfers (GeD), gross domestic product (GDP). loan interest rate (R).

Method of Analysis

This study uses macroeconomic data *time series*. Usually *Datotime series* macroeconomics contains a *trend* or unit root (*unit root*). Before being used for analysis, stationary data must first be tested at the data level. If the data level is not stationary, it will be followed by testing the data (*first diff*/*first diff*). After stationary data, to examine the relationship between various components of government expenditure and other variables with variations of private investment both short and long term, in this study will use econometric analysis tools, namely using the *Co-Integration model and error correction model* (ECM). The Co-Integration Approach is used to provide information about the long-term relationship between the dependent variable and the independent variable. While the ECM approach is used to provide information about the short-term relationship between the dependent and

independent variables, and explain the speed of adjustment from short-term imbalance to long-term balance.

Model Specifications

As explained above, **the** models used in this study are the Cointegration and ECM models. Mathematically the relationship between variables can be formulated in the following model.

$$IVSt = f (GePt, GeMt, GeDt, Rt, GDPt) (1)$$

Where it shows the data used is *datatime series*. Then proceed with the process of establishing the following regression equation. Regression Equation for Domestic Investment.

$$\ln IvD_t = \beta_0 + \beta_1 \ln GePt + \beta_2 \ln GeMt + \beta_3 \ln GeDt + \beta_4 R_t + \beta_5 \ln GDP_t + \epsilon_t (2)$$

- Regression Equation for Foreign Investment

$$\ln IvA_t = \beta_0 + \beta_1 \ln GePt + \beta_2 \ln GeMt + \beta_3 \ln GeDt + \beta_4 R_t + \beta_5 \ln GDP_t + \epsilon_t (3)$$

Where:

- IvDt= log Domestic Investment
- ln IvA_t = investment log Foreign,
- ln GeP_t = central government Routine expenditure log
- ln GeM_t = Central Government capital expenditure log
- ln GeD_t = expenditure log for regional transfers
- R_t = Interest rates for bank credit
- ln GDP_t = log Gross Domestic Product
- β₀, β₁, β₂, β₃, β₄, β₅ are Parameter
- β₀ is intercept, β₁, β₂, β₃, β₄, β₅

show the magnitude of influence of each independent variable indetermining the variation of the dependent cointegration variable equation, while describing ε_t is the equation error term. Equation (2) and equation (3) to answer the long-term relationship between variables. To estimate the short-term relationship between variables, the following Error Correction Model (ECM) equation will be used. ECM Equation for Domestic Investment

$$\Delta \ln IvD_t = \beta_0 + \sum_{i=1}^n \beta_1 \Delta \ln GeP_{t-i} + \sum_{i=1}^n \beta_2 \Delta \ln GeM_{t-i} + \sum_{i=1}^n \beta_3 \Delta \ln GeD_{t-i} + \sum_{i=1}^n \beta_4 \Delta R_{t-i} + \sum_{i=1}^n \beta_5 \Delta \ln GDP_{t-i} + \alpha ECT_{t-1} + \epsilon_t ... (4)$$

- ECM Equation for Domestic Investment or PMDN

$$\Delta \ln IvA_t = \beta_0 + \sum_{i=1}^n \beta_1 \Delta \ln GeP_{t-i} + \sum_{i=1}^n \beta_2 \Delta \ln GeM_{t-i} + \sum_{i=1}^n \beta_3 \Delta \ln GeD_{t-i} + \sum_{i=1}^n \beta_4 \Delta R_{t-i} + \sum_{i=1}^n \beta_5 \Delta \ln GDP_{t-i} + \alpha ECT_{t-1} + \epsilon_t (5)$$

RESULTS AND DISCUSSION

Stationary Test Results Stationary

Data testing on each variable is done by unit root or unit root test. The root unit test uses the Augmented Dickey Fuller (ADF) criterion. ADF Test Results at the level of the level of all the variables are presented in Table 3. The test results on the current level, all the variables have the data that has not been stationary at the degree of error of 5 percent, therefore the test continued at the level of the degree of integration of the (*first difference*). The test results show all data from each variable used in the model becomes stationary. The stationary criteria are characterized by the probability

value of the ADF calculation results of each variable greater than the critical value of the ADF at the 0.05 significance level, this result applies both to equations with intercepts without *trend* or with intercepts with *trends*. The results of unit root test calculations from diff1 data of all variables can be seen in Table 4.

Because all variables have been stationary in the same order I (1), it will be continued with the next test, namely cointegration union. The cointegration test was carried out through two stages, namely conducting OLS regression, then proceeding with the unit root test of residual regression results with level data. If the unit root test of the residual is stationary, it means that there is a long-term relationship in the wave movement of each variable used in the model. So that a cointegration system can be applied which is then used to estimate the relationship between variables, both in the short term and in the long term.

Cointegration Test for Domestic Investment

A cointegration test is conducted to see the long-term relationship between variables in the study. This test is conducted to determine the possibility of a long-term balance between the observed variables. The existence of cointegration relations in a system of equations illustrates that, in the system there are errors or imbalances in the short term, so that it requires correction of the imbalance towards the long term. In econometrics, it is known as *Error Correction* which describes the relationship between the short term and the long term (Mardani, 2013).

Cointegration test in this study uses a two-stage method developed by *Engle-Granger* (EG). First obtaining residuals from the estimated regression on the level data, then based on the residual data obtained, a stationary test is conducted. The results of the cointegration equation see attachment-3. Then proceed with the test *Engle-Granger*, namely by testing the residual results of the regression equation. From the calculation results of the test *unit root* on the residual obtained stationary results at a significance level of 5 percent (appendix-4). These results indicate that all variables used in the domestic investment model are cointegrated. In other words, all variables used in the model are related in their movement from time to time. By the same test and procedure for the foreign investment model, the results obtained are as in attachment-5 and attachment-6.

By obtaining stationary results on the residuals from the cointegration regression equation, we conclude that there will be a cointegration relationship in the system formed. Means can be continued with the error correction test that occurs from short-term imbalance to the long-term balance, which is known as the error correction model or Error Correction Model (ECM).

Estimation Results of the ECM Model for Investment Domestic And ECM for Foreign Investment, If we consider from Appendix-7, it can be explained that the ECM coefficients, both in the domestic investment equation and foreign investment, both ECM coefficients are statistically significant at the 5 percent level, and both are negative. Means the ECM specification model used is valid (Ekananda, 2016). The ECM coefficient value on domestic investment is 0.7388. This shows that short-term equilibrium fluctuations will be corrected towards long-term equilibrium, where around 73.9 percent of the adjustments occur in the first year (because the data used is annual) and around 26.1 percent of the adjustment process will occur in the next year period.

While the ECM coefficient on foreign investment is 0.5508. This shows that short-term equilibrium fluctuations will be corrected towards long-term equilibrium, where around 55.1 percent of the adjustments occur in the first year and around 44.9 percent of the adjustment process will occur in the period of the following year.

In the domestic investment model, the coefficient on the variable of central government expenditure or routine expenditure D (LGEP) is 0.407 and is positive, and significant at the 10 percent level, which means that in the short term central government expenditure has a positive effect on domestic investment. If central government spending rises by one percent, domestic investment will increase 0.4 percent. Means there is no *crowding out of investment*, but what happens is *crowding in*. Thus central government spending has a contribution in increasing domestic investment. For capital expenditure D (LGEM) is also positive at 0.57459, and significant at the 5 percent level. The interpretation is that if capital expenditure rises by one percent, domestic investment will increase 0.6 percent. This result is the same as routine expenditure, which does not occur *crowding out of investment*, but what happens is *crowding in*. In other words, if government

spending for capital expenditure rises, it will increase economic activity, including an increase in employment, production of goods and services, and an increase in public demand for goods and services, thereby increasing capital expenditure can stimulate increased investment. For the expenditure component of government transfers to the regions, the resulting coefficient is -1.03740, and is negative and significant at the 5 percent level. This means that in the short term government spending on regional transfers has a negative effect on domestic investment. If government transfers to the regions increase by one percent, it will reduce domestic investment by 1.04 percent. If it refers to Keynes's theory, it means there is a *crowding out of investment*. This condition can occur, because if government spending increases, and the increase in expenditure is financed with debt due to a budget deficit, it will cause demand for liquidity by companies to rise, thereby causing loan interest rates to rise, and investment demand will decrease.

This condition turns out to have a negative and significant coefficient in the long term (Appendix-8), meaning that over time, it will still occur *crowding out*. This occurs in addition to being caused by an increase in interest rates, spending on transfers to the regions provides less stimulus to increased domestic investment. In contrast to other components of government expenditure, namely central government expenditure and

capital expenditure, what happens is *crowding in* which can be a stimulant in increasing domestic private investment. Thus providing a positive impact on increasing economic activity. This situation can be seen from the positive and significant coefficient on the D gross domestic product (LGDP) variable. While the relationship of interest rates with domestic investment is reflected in the coefficient which is negative, according to Keynes's theory, an increase in interest rates will result in a decrease in investment demand.

Regarding foreign investment, the coefficient of variables of central government expenditure and capital expenditure are 0.307 and 0.421 respectively and are positive, but both are insignificant, which means that in the short term central government expenditure and capital expenditure have a positive effect on foreign investment. If central government spending rises by one percent, it will increase domestic investment by 0.31 percent, while an increase in capital expenditure by one percent will increase domestic investment by 0.42 percent. It means there is no *crowding out of investment*, what happens is *crowding in*, although it is not significant. While government spending on transfers to the regions resulted in -0.84, which was negative and significant at the 10 percent level. This means that in the short term, government spending on transfers to the regions will have a negative effect on foreign investment and domestic investment. In other words, if government transfers to the regions increase by one percent, it would actually reduce domestic investment by 0.84 percent, a huge effect. A decrease in investment will reduce economic activity. So there will be *crowding out of investment*. It turns out that in the long run (appendix-8), regional transfer expenditure still has a negative coefficient. This means that in addition to causing an increase in interest rates, spending on transfers to regions does not provide a stimulus to increase foreign investment or domestic investment in regions in Indonesia.

Judging from the relationship between GDP and foreign private investment, the positive and significant coefficient, which is 6.84, means that if GDP rises by one percent, it will result in an increase in foreign investment of 6.8 percent. Such is the importance of efforts to increase economic growth in Indonesia. While the relationship of interest rates with foreign investment remains the same, namely negative, both short-term and long-term that also occur in domestic investment.

If seen from the relationship between the components of government expenditure and domestic investment, all the variables are significant, central government expenditure, capital expenditure, and regional transfer expenditure. However, if seen from the sign of the coefficient, only the coefficient of expenditure transfers to regions that are negative. This condition does not experience changes in the sign to the long term. The same condition also occurs in the effect of the government expenditure component on foreign investment. The difference is only in central government expenditure and capital expenditure has insignificant effect, while the coefficient sign is the same. In other words, although the central government expenditure and capital expenditure are increased, it does not have a significant influence on the development of foreign investment. While the effect of transfer expenditure to the regions is negative and significant, meaning that if

regional transfer expenditure is increased, it will actually have the effect of reducing foreign private investment.

Short-term and Long-Term Relationship between Investment and Government Expenditure

the pattern of the relationship of the movement of variables in the short term to the pattern of movement in the long term during the study period, almost did not experience a significant change. For example the influence of government expenditure components, namely central expenditure, capital expenditure, and regional transfer expenditure on investment development in the short and long term is relatively the same, both seen from the sign of the coefficient, and viewed from the level of significance of each unchanged, remains *crowd in*. The effect of transfer spending to the regions on domestic and foreign private investment remains negative and significant, both in the short and long term, this means *crowding out*. This means that the pattern of the relationship between the variable private investment and components of government expenditure in the short term to the long term did not experience significant changes during the study period. A positive sign in the coefficient of government spending gives the sense that the higher spending on recurrent and capital expenditure will increase private investment, which means that government consumption (*public consumption*) have a relationship of substitution by private consumption (*private consumption*) and the effects of consumption or expenditure or government purchases of goods and services, and infrastructure can encourage increased production and private investment. This condition is in line with the findings (Lopez, 2001) ... *if public spending in consumption is a substitute of private consumption, the effect of public purchases would lead to a bigger private investment.*

If seen from the magnitude of the coefficient, the effect of capital expenditure on increasing investment is greater than the effect of routine spending. This is only natural, because routine spending is largely used

for the benefit of bureaucratic service consumption expenditure, while capital expenditure is more directed to spending on durable goods and infrastructure that has a direct bearing on the development of production and investment. Likewise, the relationship between government spending and foreign private investment has the same pattern of movement, in addition to having a positive sign, the coefficient also increases from the short run towards the long run, which indicates that, the pattern of positive relations is maintained with the movement of time from the short run towards the long run long. It's just that the effect of government spending, both routine and capital expenditure on foreign investment is not significant, in other words the response of foreign private investors to government spending is not as big as the domestic private response. This condition can be seen from the magnitude of each coefficient which is indeed smaller than the coefficient on domestic investment. Efforts to increase the interest of foreign investors need to conduct more careful research, whether caused by economic factors or non-economic factors, or possibly due to the distance between the investor's country of origin and the conditions in Indonesia, so it requires time to look at the effectiveness of the effects of government spending on foreign investment. In other words, it can add or change government expenditure variables in the model, so that it accommodates lag variables.

Another variable turns out, the influence of gross domestic product and interest rates also provides the same pattern of change from the short run to the long run equilibrium. The effect of GDP on private investment is significant. This means that the condition of economic growth in Indonesia is an indicator that guides the attractiveness of investors, both domestic and private. In theory, national income and investment development have a positive relationship (Mankiw, 2000). While the relationship between loan interest rates and investment produces a negative coefficient, this condition is in line with the theory.

CONCLUSIONS

The effect of regular expenses and capital expenditures to private investment, both to domestic investment and foreign investment is positive and significant, both in the short term and in the long run, means there is a crowd-in, only to do with foreign investment is not significant, both in the short and long term. On the other hand, the effect of government spending on transfers to the regions on

private investment, both on domestic investment and foreign investment is negative and significant, meaning that there is a *crowding out of investment*, both in the short term and in the long term. The pattern of movement of the effect of government spending on private investment from the short term to the long term does not change significantly. While the effect of GDP on the development of private investment in Indonesia is positive, this happens to domestic investment and foreign investment, both in the short and long term. While loan interest rates have a negative effect on private investment, it's just that the effect is not significant, both in the short and long term.

RECOMMENDATIONS

Central government expenditure and capital expenditure should be more focused on infrastructure development and maintenance. Expenditures financed with debt due to budget deficits must be sought to reduce, because in addition to burdening the state budget income and expenditure also the benefits of investment stimulus have not occurred optimally. to the regions more effectively, in the sense that the funds are sought to stimulate the entry of private investment into regions in Indonesia. so that regional transfer spending increases people's welfare.

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LAMPIRAN**Tabel 3.** Hasil Uji Stasionaritas ADF Periode Tahun 1990 - 2016 pada Tingkat Level I(0)

Variabel	Nilai Kritis	Prob.	Keterangan
LIVDN	0.05	0.8260	Tidak stasioner
LIVA	0.05	0.8157	Tidak stasioner
LGEP	0.05	0.9980	Tidak stasioner
LGED	0.05	0.9907	Tidak stasioner
LGEM	0.05	0.9854	Tidak stasioner
LGDP	0.05	0.9601	Tidak stasioner
R	0.05	0.2810	Tidak stasioner

LAMPIRAN-3Hasil Regresi Kointegrasi Engle-Granger Iv Domestik
Dependent Variable: LIVDN

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.288601	8.326458	-4.838624	0.0001
LGEP	0.756057	0.300093	2.519408	0.0199
LGED	-1.952132	0.358477	-5.445629	0.0000
LGEM	0.897062	0.289374	3.100013	0.0054
LGDP	3.852076	0.774100	4.976196	0.0001
R	-0.038560	0.029839	-1.292267	0.2103

LAMPIRAN-4Hasil Uji Stasioner terhadap residual Regresi
Kointegrasi Investasi Domestik

Null Hypothesis: ECM5 has a unit root		
Lag Length: 0 (Automatic based on SIC, MAXLAG=6)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.736380	0.0006
Test critical values:		
1% level	-2.656915	
5% level	-1.954414	
10% level	-1.609329	

LAMPIRAN-5

Hasil Regresi Kointegrasi Engle-Granger
Iv Asing
Dependent Variable: LIVA

Variable	Coefficien			
	t	Std. Error	t-Statistic	Prob.
C	-31.72891	9.242628	-3.432889	0.0025
LGEP	0.310702	0.333113	0.932724	0.3616
LGEM	0.404799	0.321214	1.260216	0.2214
LGED	-1.182754	0.397921	-2.972338	0.0073
LGDP	3.283000	0.859276	3.820659	0.0010
R	-0.023657	0.033122	-0.714240	0.4829

LAMPIRAN-6

Hasil Uji Stasioner terhadap residual
Regresi Kointegrasi untuk Investasi Asing

Null Hypothesis: ECM6 has a unit root		
Lag Length: 0 (Automatic based on SIC, MAXLAG=6)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.429189	0.0014
Test critical values: 1% level	-2.656915	
5% level	-1.954414	
10% level	-1.609329	

LAMPIRAN-7

Estimasi ECM Investasi Domestik dan Investasi Asing

Dependent Variable	DLIVN DLIVA			
	Coefficient	Prob.	Coefficient	Prob.
C	-0,0761	0,50840	-0,2365	0,0524
D(LGEP)	0,4066	0,09000	0,3070	0,2013
D(LGEM)	0,5745	0,02570	0,4214	0,1017
D(LGED)	-1,0374	0,01610	-0,8363	0,0574
D(LGDP)	3,6234	0,07200	6,8435	0,0022
D(R)	-0,034	0,43610	0,0602	0,1935
ECM(-1)	-0,7388	0,00240	-0,5508	0,0127
R-squared	0,6478		R-squared	0,5840
Adj R-squa	0,5366		Adj.R-squared	0,4527
F-statistic	5,8254		F-statistic	4,4470
D-W Stat	1,8452		D-W Stat	2,1531