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Macroeconomic Variables and Foreign Direct Investment in ASEAN 5

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Abstract

This study examines and analyzes the factors that influence Foreign Direct Investment (FDI) Inflow in ASEAN 5 (Indonesia, Singapura, Malaysia, Filipina, Dan Thailand). The difference between this study and previous research is in the area and a slight change in the variables. Interest rate, exchange rate, and export are used as independent variables. Meanwhile, the dependent variable is FDI (Foreign Direct Investment). This study was tested using the REM (Random Effect Model) method as the best method than PLS (Pooled Least Square) and FEM (Fixed Effect Model) method after through Chow and Hausman test. The method used in this study refers to the reference literature. The results show that interest rate, exchange rate, and export significantly affect FDI inflow in ASEAN 5. This study provides suggestions for policymakers to control price level/ inflation to maintain society's purchasing power and have trade cooperation with several countries to improve national productivity and export.

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INTRODUCTION

Association of Southeast Asian Nations (ASEAN) is a unique region, both in its strategic geographic location and competitive investment climate. Singapore is one of ASEAN's countries and used as a trade center in Asia's service sector by investors. Meanwhile, other ASEAN member countries such as Indonesia, Malaysia, Thailand, and Philippines still depend on manufacturing and agricultural production. One of the country's export partners, namely Indonesia, is China. Based on financial times, China's shift from manufacturing to increasing goods and services reduced Indonesia's energy export to China.

The condition of exports of Malaysia, Philippines, and Singapore have fluctuated export development graphs. Meanwhile, Thailand and Indonesia's export have decrease condition. A decline in Indonesia's export could impact Indonesia's trade balance deficit that is widening. That condition causes a decrease in Foreign Direct Investment (FDI) and domestic investment. Therefore, Indonesia must make some sectoral concentration to increase exports with the aim of increasing national productivity and reducing the trade balance deficit. This is should be done because capital formation depends on the value of national productivity. If a country can reduce its .trade balance deficit, it will have a better business climate and encourage massive economic growth for the country concerned. Countries with high national productivity show that these countries' investment climate is more stable than other countries with low productivity (Engel and Procher, 2012).

The level of GDP can persuate investor to invest in that country. Jhingan (2003: 377) states that when GDP grows, it will attract investors to invest their funds in a host country experiencing high economic growth. The relationship between capital formation and economic growth occurs because capital formation will increase capital goods' stock as explicit support for production activities. GDP and FDI have a two-way relationship (Chowdhury & Mavrotas, 2006). The relationship between the GDP and FDI is also in line with theory and empirical evidence, which is positive. This means that when GDP rises, it will also respond to an increase in FDI. In case of GDP trend, The GDP per capita trend of ASEAN-5 countries had experienced a decline in response to the economic crisis that occurred in 2008. This indicates that the economic crisis has had a significant impact on the development of growth in ASEAN-5 countries. Then, economic crisis can reduce investment in a country.

One of the country's important indicators is the interest rate (Mishkin and Eakins, 2009). The interest rate will affect the level of investment. The low interest rate will increase investment because of the low cost of capital, and vice versa. Apart from the interest rate, the exchange rate is also an important indicator in a country's economy. Kurniati et al. (2007) states that foreign investors' motives to invest in Asia and Indonesia are due to market potential, exchange rate stability that can reflect financial stability, and regional or bilateral agreements involving home and host countries of the incentives in investment. When the economic crisis occurs, the five countries improve interest rates in order to balance economic stability. In overcoming the economic crisis, Malaysia, Indonesia, Singapore, Thailand and Philippines also increased their interest rates.

In general, the FDI literature focuses on developing countries and discusses how FDI flows can increase the convergence of a country's welfare standards in capital transfers, labor absorption, and technology transfers (Javed et al., 2012). The Asian Development (2004) states that structurally FDI can increase many factors, such as global market integration and bilateral & multilateral relations between countries. Looking at previous research, FDI has a significant impact on the economy. Therefore, it is necessary to discuss the influence of several factors, especially interest rate, exchange rate, and total export on FDI.

Several previous studies related to several factors that influence FDI entry into a country have been conducted and reviewed in this study. Wadhwa & Reddy S (2011) argues that FDI is one factor that can improve the welfare of the host country because it will impact innovation and new technology, company managerial techniques, skills development, increased capital, job creation, and industrial sector development. That condition occurs because foreign direct investment is a business activity that carries out activities, including opening factories, buying land, buying

raw materials, bringing in machines that are run using funds or direct investment money (Todaro and Smith, 2003).

Vijayakumar et al. (2010) examined several factors that determine FDI inflows into BRICS countries (Brazil, Russia, India, China, and South Africa). They found that market size, labor costs, infrastructure, currency value, and gross capital formation were the main factors that encouraged. FDI entry into BRICS countries. Meanwhile, economic and trade stability does not affect the inflow of FDI. This study used annual data from the 1975 - 2007 period. The research was later developed by Ranjan & Agrawal, (2011), who also studied problems in BRICS countries for the period 1975 - 2009. This study obtained results that were quite similar to those of Vijayakumar et al. (2010), namely market size, labor costs, infrastructure, and growth prospects have a significant effect on FDI inflows. Coupled with trade openness and macroeconomic stability, which were considered not to affect the entry of FDI in previous studies.

RESEARCH METHODS

To determine the effect of interest rate, exchange rate, and export on FDI, this study uses panel data from the cross-section unit of the five ASEAN countries (Indonesia, Singapore, Malaysia, Philippines, and Thailand) and time series unit from 1986 until 2018. In this study, the formation of gross capital and labor does not affect FDI entry.

The entry of FDI into a country is influenced by several factors, including the return on investment, infrastructure, and trade openness. Based on the research conducted by Asiedu (2002), the high return on investment, better infrastructure, and trade openness will positively impact the level of incoming FDI. Other determinants of FDI according to research conducted by Tuman & Emmert (1999), namely market size, economic adjustment policies, and certain types of political instability. This research was conducted to analyze the determinants of FDI entering Japan. This research is supported by the results in Meidayati (2017) study, which examines the determinants of the level of FDI in ASEAN. The results in this study indicate that infrastructure in the form of telecommunications, market size, trade openness, and the labor force have a positive relationship with the level of FDI.

The difference between this study and previous research is in the area and a slight change in the variables. Then the method we use is the Random Effect Model, the same as the last reference research. This paper contains several chapters. Cahpter 1 presents the background of research. Chapter 2 presents the data and research methods used to achieve this contribution, chapter 3 presents and discusses the empirical findings, and chapter 4 provides conclusions and policy recommendations.

Table 1. Description of Variables

Variable	Definition	Sources of
Foreign Direct Investment (FDI)	Long-term investment that involves companies from the home country and the host country in the form of company mergers or acquisitions (FDI Inflow).	World Bank (Unit: Nominal Number)
Interest Rate	Differential Interest Rate = Real Interest Rate Country Xi - Interest Rate US. Countries Xi: Indonesia, Singapore, Malaysia, Philippines, and Thailand.	World Bank (Unit: Percentage)
Exchange Rate	An agreement known as an exchange rate of currency against current or future payments, between two currencies of countries or regions.	World Bank
Export	Trading activity in which domestic goods and services are sold and sent abroad to obtain profits (Total Export = Export of Goods + Export of Services)	World Bank (Unit: Percentage)

Next, to estimate the effect of interest rate, exchange rate, and export to FDI, this study first determines the most appropriate model among the PLS, FEM, and REM methods. All models have different definition. PLS model, which combines cross-section and time series data,

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \cdots . + \beta_n X_{nit} + \mu_{it} \quad \text{..... (1)}$$

FEM, which can deal with problems omitted on variables, adding a dummy variable is required so that it is possible to read changes in the intercept,

$$Y_{it} = \alpha_1 + \alpha_2 D_{2it} + \cdots + \alpha_n D_{nit} + \cdots . + \beta_2 X_{2it} + \beta_3 X_{3it} + \cdots . + \beta_n X_{nit} + \vartheta_{it} \quad \text{..... (2)}$$

REM is using the error term as a form of least square process efficiency.

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \cdots . + \beta_n X_{nit} + \mu_{it} + \varepsilon_{it} \quad \text{..... (3)}$$

Determining the most appropriate model is divided into several steps. The first step is to conduct the F statistical test, which aims to choose which model is better between PLS and FEM, with the following formula (Gujarati & C., 2009):

$$\text{F} = \frac{R2ur - R2r \,/\, (m)}{1 - Rrur \,/\, (nk)} \quad \text{..... (4)}$$

Where, R2ur is R2 from FEM model; n is Number of observations; R2r is R2 from PLS model; K is Number of independent variables; and m is Number of restricted variables.

The null hypothesis in the restricted F-test is as follows; H0 is Pooled Least Square (restricted), and H1 is Fixed Effect Model (unrestricted). The second step is to perform the Hausman test to select a better model between FEM and REM. The null hypothesis in the Hausman test is as follows: H0 is Random Effect Model (REM), and H1 is H1: Fixed Effect Model (FEM).

The third step is to perform multiple Lagrange test to find a better model between REM and PLS. In the end, the Random Effect Model (REM) was chosen for two reasons. The first reason is that when H0 is accepted in the Hausman test, REM is better used than the Fixed Effect Model (FEM) (Gujarati & C., 2009). The second reason is that the data variables are not time-invariant so that REM can be used in estimating this study. Several conditions must be met to use the REM method, namely the Classical Assumption test, which consists of; (1) multicollinearity test, (2) autocorrelation test, and (3) heteroscedasticity test. Thus, the equation used in this study is as follows:

$$lnFDI_{it} = \beta_1 + \beta_2 IR_{it} + \beta_3 TE_{it} + \varepsilon_{it} \quad \text{.....(5)}$$

Where, InFSIt is Total FDI in ASEAN-5; Economical is Interest Rate ASEAN-5; Erit is Exchange rate of the ASEAN-5; Teit is Total export of ASEAN-5; εit is error correction term.

RESULTS AND DISCUSSION

ASEAN has a foundation and a framework for overcoming the problems at hand. As a result, ASEAN is committed to carrying out regional cooperation to anticipate several possible variables that may hinder a sustainable economy's sustainability, particularly in terms of FDI.

Based on Table 2, ASEAN-5 FDI flows tend to fluctuate. The fluctuating FDI flows occurred from the European Union and Australia. On the other hand, the highest increase in FDI occurred in 2016, nearly US$ 25.2 billion. The FDI flow from the Republic of Korea has increased until 2016, amounting to US$ 7.0 billion, and decreased in 2017 to US$ 4.5 billion. Likewise, FDI flows from the United States and China continued to increase from 2013 to 2017.

In 2016, FDI entering from intra-ASEAN experienced an increase driven by increased investment from the manufacturing and financial industries. The primary sources of ASEAN-5 FDI flows come from the manufacturing and service industries. Japanese companies that are established in the ASEAN region in the manufacturing sector are examples of companies that can significantly increase capital flows from US$ 12,9 billion in 2015 to US$ 14,2 billion in 2016. There is also FDI from the Republic of

Korea, which flows in the manufacturing industry more than 50%. Then there is China, which also channels its capital in manufacturing, financial services, and property.

FDI flows can be considered as one of the variables that can affect the economic sustainability of a country. Therefore, this study was conducted to determine the determinants of ASEAN-5 FDI by looking at how much influence real interest rates, exchange rates and net exports have on ASEAN-5 FDI in 1986 to 2017.

Table 2. Flows of Inward ASEAN FDI by Source Country (US$ Billion)

Source Country	Year				
	2013	2014	2015	2016	2017
Indonesia	2,314.11	1,173.45	838.13	1,807.77	1,451.47
Philippines	-321.86	334.15	904.95	250.07	364.98
Malaysia	1,385.27	1,647.11	3,743.55	4,258.13	4,200.89
Thailand	1,022.15	3,598.46	1,084.66	2,613.89	1,863.54
Singapore	13,267.93	15,721.23	13,702.22	15,459.52	17,486.61
Total ASEAN-5	17,667.60	22,474.40	20,273.52	24,389.38	25,367.49
United states	11,457.92	21,141.27	22,912.45	15,690.98	26,775.31
China	6,165.21	6,811.74	6,571.77	11,272.10	15,495.39
Australia	2,165.47	4,032.08	1,407.15	861.95	700.47
Japan	24,608.62	13,436.07	12,962.34	14,037.83	16,139.97
Republic of Korea	4,302.70	5,257.24	5,608.82	6,284.38	4,610.48
Total EU	15,718.47	28,943.27	20,373.04	34,242.41	17,389.11

Source: ASEAN Org, 2017

In general, Table 3 displays the descriptive statistics of the variables used in this study during the period 1986 to 2017. Data consists of a cross-section unit consisting of Indonesia, Singapore, Malaysia, Thailand, and Vietnam and a time series unit consisting of 33 years with 30 observational data. In descriptive statistics, the average value of FDI is 22.36, with a standard deviation of 1.27, a minimum value of 18.55, and a maximum value of 25.27.

The average value of interest rate is 4.97, with a standard deviation of 1.27, a minimum value of -24.60, and a maximum value of 22.95. The average value of the exchange rate is 3.11, with a standard deviation of 2.30, a minimum value of 0.22, and a maximum value of 9.21. Finally, the average value of total export is 25.16, with a standard deviation of 1.03, a minimum value of 22.76, and a maximum value of 27.22.

Table 3. Descriptive Statistics

Variabel.	Mean	Std Dev.	Min	Max
lnFdi	22.36	1.27	18.55	25.27
Ir	4.97	4.64	-24.6	22.95
lnEr	3.11	2.3	0.22	9.21
lnTe	25.16	1.03	22.76	27.22
N	160			
N	5			
T	33			

Source: World Bank, processed data

Tables 4 and 5 show the estimation results using the Chow test and Hausman test. The Chow test results in Table 4 show that the p-value from the F-restricted test is 0.000. Based on the provisions of the Chow test hypothesis, if the p-value is <0.05, it means that H1 is accepted with the provisions H0: Pooled Least Square (PLS) estimation model, H1: Fixed Effect Model

(FEM) estimation model. So, a better estimation model to use is FEM.

Table 4. Chow Test

FE Output	D, f	Prob.
Prob> F	3	0,000

Source: Stata Output Results

Next, when the Chow test results show better FEM model to use, the next step is the Hausman test. The Hausman test was conducted to select a better method between FEM and REM

Table 5. Hausman Test

Test Summary	Coefficient		Difference
	FEM	REM	
Ir	-0.3127	-0.362	0.002
er	0.234	0.885	0.104
Te	0.956	0.978	0.026
hi-square (3)	4.07	α = 5%	
Prob	0.253		

Source: Stata Output Result

Where, the hypothesis of the Hausman test is as follows: H0 is Random Effect Model (REM) Estimation Model; and H1 is Fixed Effect Model (FEM) Estimation Model. The Hausman test results in Table 5 show that the p-value is 0.253. This value indicates that the p-value> 0.05 so that H0 is accepted, it means that the better estimation model to use is REM. REM estimation model is a better estimation model to use so that the discussion and analysis used is the Random Effect Model (REM).

Therefore, the regression equation of the effect of interest rate, exchange rate, and total export on FDI to ASEAN-5 countries (Indonesia, Malaysia, Thailand, Singapore, and the Philippines) in 1986 - 2018 is as follows:

$$lnFDI = 2.376 - 0.36IR_{it} + 0.08ER_{it} + 0.97TE_{it} + \varepsilon it \quad \text{..... (6)}$$

The interpretation of the equation is as follows. The constant value of 2,376 shows that if the variable interest rate (β1), an exchange rate (β2), and total export (β3) are zero or constant, then the ASEAN-5 FDI value is 2,376. If the interest rate drops by one percent, ASEAN-5 FDI will increase by 0.36%, ceteris paribus. If the real exchange rate increases by one percent, ASEAN-5 FDI will increase by 0.08%, ceteris paribus. If the total export of ASEAN-5 countries increases by one percent, ASEAN-5 FDI will also increase by 0.97%, ceteris paribus.

The result of the interpretation states that the interest rate has a significant negative effect on ASEAN-5 FDI. These results are in accordance with Marglin et al. (2011) research, which states that investment is based on expected returns and interest rate. In this study, it is stated that if the difference in interest rate is massive, it means that investment will decrease due to the high cost of capital so that investors suppress capital that is flowed to the destination country. Conversely, if the difference in the interest rate is small with the assumption that the return of the destination country is greater than that of the country of origin, investors will flow their capital because of the cheap cost of capital. The interest rate has a significant effect because investors' behavior in determining investment decisions sees the differential interest rate as a signal that needs to be taken into account in investing. In Mundell Fleming's model, a country's interest rate is determined by the world interest rate (Frenkel & Razin, 1987).

Related to one of the determinants of FDI that have been mentioned, namely expected of return on investment, the interest rate also can influence the level of FDI that enters a country. Interest rate is one of the signals taken into account by investors in determining the decision

to invest (Tran, 2013). Investors prefer to invest their money in countries with a higher interest rate to obtain a greater expected return. In an open economy, the differential interest rate represents the broader effect of interest rate on FDI. The differential interest rate is obtained through the difference between the interest rate of a country and the world interest rate. Apart from interest rates, volatility can also affect FDI flows. Based on Cavallari & d'Addona (2013) research, volatility in interest rates is negatively related to FDI. When there is an increase in the interest rate volatility, it will reduce the level of FDI.

The next interpretation results show that the exchange rate has a significant positive effect on the inflow of FDI into 5 ASEAN countries. These results are different from research conducted by Chang and Rhee (2011), which states that the exchange rate (real and nominal) significantly negatively affects FDI. In contrast to Wadhwa & Reddy S (2011) research, which states that the exchange rate can be a determinant of FDI inflows (for Singapore, Malaysia, and the Philippines), but not significant for Thailand. This research shows that the exchange rate has different effects and directions depending on each economic sector's reaction in all countries. It is further added by the study of Lily et al. (2014), which states that the relationship between exchange rate and FDI is still uncertain because the effect of the exchange rate on FDI inflows also depends on the purpose of the goods being produced.

Related to literature review, the exchange rate can also influence the inflow of FDI. The exchange rate can be interpreted as the amount of domestic money needed to get one foreign currency (Sukirno, 2010). Moosa (2002) states that countries with a more substantial exchange rate (currency) than other countries will tend to be preferred as a place to invest because countries with weak currencies generally have a greater risk. Multinational companies make changes in the exchange rate as a driving factor for foreign direct investment in a country to reduce their capital in establishing companies (Madura, 2009).

The results of the latter interpretation show that total export has a significant positive effect on ASEAN-5 FDI. These results are consistent with the results of research by Sun and Parikh (2001) and Banga (2006) which state that export performance has a significant positive effect on FDI inflows and depends on local economic conditions and market orientation in capital formation. In contrast to Safitriani (2014), export has a positive impact on FDI inflows only in the long term. Meanwhile, in the short term, the export will have a negative impact on FDI inflows. Therefore, it is necessary to control the price of goods/inflation rate so that people's purchasing power is maintained and helps export growth. Coordination between regional countries related to trade is also needed to increase export growth.

CONCLUSION

Based on the estimation results and discussion in the previous chapter, it can be concluded that the variables used in this study, namely interest rate, exchange rate, and total export, have a significant effect on FDI inflows to 5 ASEAN countries in different directions. The interest rate has a significant negative effect, while the exchange rate and total export have a significant positive effect on FDI.

Interest rates have a significant negative effect on FDI in ASEAN-5. This research is supported by Keynes theory which states that interest rates have a negative relationship with investment. An increase in the difference in interest rates will be responded to by a decrease in FDI, while a small difference will be responded to by an increase in FDI if the return received in the destination country is more than other countries. So that investors in making decisions in investing will look at the reference interest rate as a calculation for investing their capital as a form of FDI determinant.

The exchange rate has a significant effect on ASEAN-5 FDI. This study is in accordance with the research of Jaratin, et al (2014) which has revealed that the exchange rate has a significant effect on FDI depending on the purpose of FDI. If the purpose of FDI is for

production to serve the local market, it will have a positive effect, if FDI is for export production, it will have a negative effect.

Exports have a significant positive effect on FDI. This finding is supported by research by Kneller (2004) which reveals that exports encourage an increase in the production of local goods for export purposes. So with an increase in production for the export of goods, it will increase the flow of FDI inflows to the host country.

As for the suggestions given by this study, this study provides suggestions for policymakers to be more sensitive to the elements of interest rate, exchange rate, and export levels that significantly affect FDI flow in ASEAN-5. This sensitivity can be implemented by controlling the price of goods/ inflation rate to maintain people's purchasing power and coordinating/ cooperating trade between regional countries to increase export growth.

The limitation of this study is that it only uses three independent variables. Therefore, further research needs to add independent variables so that further research discussion becomes more complicated.

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APPENDIX

Table 6. Summary Descriptive

```
. xtsum lnfdi ir lner lnte
```

Variable		Mean	Std. Dev.	Min	Max	Observations	
lnfdi	overall	22.36414	1.278022	18.55752	25.27515	N =	160
	between		.6394398	22.04915	23.49914	n =	5
	within		1.138587	18.87251	24.2328	T-bar =	32
ir	overall	4.971656	4.649409	-24.60017	22.95688	N =	165
	between		.855683	4.095801	6.187579	n =	5
	within		4.585595	-25.81609	23.83273	T =	33
lner	overall	3.112236	2.30272	.2228845	9.211701	N =	165
	between		2.512497	.4525705	6.858329	n =	5
	within		.4707573	1.26176	5.465608	T =	33
lnte	overall	25.1688	1.030847	22.76475	27.22023	N =	165
	between		.6776855	24.15332	26.0319	n =	5
	within		.8324651	23.0359	26.42326	T =	33

```
. reg lnfdi ir lner lnte
```

Table 7. PLS Estimation Result

```
. reg lnfdi lnte lner ir
```

Source	SS	df	MS	Number of obs	=	160
				F(3, 156)	=	81.58
Model	158.607847	3	52.8692823	Prob > F	=	0.0000
Residual	101.093082	156	.648032578	R-squared	=	0.6107
				Adj R-squared	=	0.6032
Total	259.700929	159	1.63333918	Root MSE	=	.805

lnfdi	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnte	.8583336	.0688966	12.46	0.000	.7222431	.9944242
lner	.0099366	.0292048	0.34	0.734	-.0477512	.0676245
ir	-.0510517	.0178883	-2.85	0.005	-.0863863	-.0157171
_cons	.9843686	1.791161	0.55	0.583	-2.55369	4.522427

Table 8. FEM Estimation Result

```
. xtreg fdi interestrate totalExport exchangerate, fe

Fixed-effects (within) regression               Number of obs      =        69
Group variable: country                         Number of groups   =         5

R-sq:                                           Obs per group:
     within  = 0.0087                                         min =        13
     between = 0.0110                                         avg =      13.8
     overall = 0.0062                                         max =        14

                                                F(3,61)            =      0.18
corr(u_i, Xb)  = -0.3972                        Prob > F           =    0.9104

------------------------------------------------------------------------------
         fdi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
interestrate |   5.64e+07   5.75e+08     0.10   0.922    -1.09e+09    1.21e+09
 totalExport |  -5.20e+07   2.44e+08    -0.21   0.832    -5.41e+08    4.37e+08
exchangerate |    1197046    2041304     0.59   0.560     -2884794    5278887
       _cons |   1.55e+10   7.68e+09     2.02   0.048     1.28e+08    3.09e+10
-------------+----------------------------------------------------------------
     sigma_u |  2.040e+10
     sigma_e |  1.190e+10
         rho |  .74619864   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(4, 61) = 33.80                     Prob > F = 0.0000
```

Table 9. FEM Estimation Result

```
. xtreg fdi interestrate totalExport exchangerate, re

Random-effects GLS regression                   Number of obs      =        69
Group variable: country                         Number of groups   =         5

R-sq:                                           Obs per group:
     within  = 0.0084                                         min =        13
     between = 0.0098                                         avg =      13.8
     overall = 0.0053                                         max =        14

                                                Wald chi2(3)       =      0.39
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.9419

------------------------------------------------------------------------------
         fdi |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
interestrate |   1.06e+08   5.55e+08     0.19   0.849    -9.81e+08    1.19e+09
 totalExport |  -3.99e+07   2.37e+08    -0.17   0.866    -5.05e+08    4.25e+08
exchangerate |   781175.3    1760469     0.44   0.657     -2669281    4231632
       _cons |   1.58e+10   1.65e+10     0.96   0.338    -1.65e+10    4.82e+10
-------------+----------------------------------------------------------------
     sigma_u |  3.371e+10
     sigma_e |  1.190e+10
         rho |   .8892208   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```