THE ANALYSIS OF INDONESIA ECONOMIC GROWTH: A STUDY IN SIX BIG ISLANDS IN INDONESIA

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ABSTRACT

This study attempts to investigate and analyze the factors determining and influencing the Indonesia's economic growth, and to see economic growth in the six bog islands in Indonesia, using extension of the Solow-Swan model and endogenous growth models, by also adding the factors of education (EDU), the potential sectors utilization (PSU) as well as several other factors that Foreign Direct Investment (FDI), Political Stability and Security (STAB). The results of this study found that the variable of FDI, PSU, EDU and STAB, in general, have effect on the economic growth in Indonesia and on the existing six big islands. Not all of these variables affect the 6 islands which is due to the different characteristics of each island. It can be concluded that the FDI, is still one of the important sources for Indonesia, and six big islands to encourage economic growth of Indonesia's economic growth and six big islands in Indonesia against the use of potential sectors especially in natural resources. Political Stability and Security (STAB), the condition of Indonesia, and six big islands, are quite vulnerable to shocking security, making it have a strong effect on economic growth. Education (EDU) generally is able to contribute significantly to the economic growth of the islands. In Bali and Timor, education (EDU) can not encourage economic growth.

Key words:Economic Growth, FDI, Education, PSU, Stability, Fixed Effect Model (FEM), General Least Square (GLS).

ANALISIS PERTUMBUHAN EKONOMI INDONESIA: STUDI PADA ENAM KEPULAUAN BESAR DI INDONESIA

ABSTRAK

Penelitian ini menganalisis faktor-faktor yang menentukan dan berpengaruh pada pertumbuhan ekonomi Indonesia, dan sekaligus mengetahui pertumbuhan ekonomi di enam pulau besar di Indonesia dengan menggunakan Solow-Swan model dan endogenous growth models dengan menambah faktor pendidikan (PDDK), pemanfaatan sektor potensial (PSP) dan juga faktor lain misalnya foreign direct investment (FDI), stabilitas ekonomi politik (STAB). Hasilnya menunjukkan bahwa FDI, PSP, PDDK, dan STAB, secara umum berpengaruh pada pertumbuhan ekonomi Indonesia dan enam pulau besar yang ada. Namun, tidak semua faktor tersebut berpengaruh pada enam pulau besar, karena karakteristiknya yang berbeda. Hanya saja, FDI masih merupakan faktor penting untuk Indonesia dan enam pulau besar dalam menumbuhkan perekonomian, khususnya dalam pemanfaatan sumber alam. Stabilitas (STAB) di Indonesia dan enam pulau besar masih rawan, dan berpengaruh juga pada pertumbuhan ekonomi. Kemudian faktor pendidikan (PDDK) juga berkontribusi pada pertumbuhan ekonomi. Namun di Bali dan Timor pendidikan (PDDK) tidak begitu berpengaruh.

Kata Kunci: Economic Growth, FDI, Education, PSP, Stability, Fixed Effect Model (FEM), General Least Square (GLS).

INTRODUCTION

One of the discourses in Indonesia is economic growth. This discourse covers problems deal with unemployment, inflation or rising prices of goods at the same time, poverty, income and so forth. Economic growth is important in the context of a country's economy as it can be one measure of growth or achievement of the nation's economy.

The development of economic growth in Indonesia has shown a positive trend from the year 1984-1997. For example, in 1998 it showed a decrease in economic growth that is - 13.12%. It was due to financial crisis and the economic crisis in mid-1997, which continues to be a multidimensional crisis. This affected economic growth in Indonesia in 1998. In 1999-2003 the economy could grow again, although not as fast as in the previous years.

Indonesia's economy was better and more stable during 2003 as reflected in such an increase. Though the economic growth is still not sufficient to absorb the additional labor force, the number of unemployment still increases, in a sluggish world trade resulting in growth Indonesia's export volume, especially non-oil commodities, which is relatively low. In such situation, the nominal exports were greatly assisted the raising oil and non-oil commodity prices in the international market and the total value of exports in 2003 was increased significantly and became the main pillar of the current account surplus for 2003 (Bank Indonesia 2003).

Success of economic policy in any nation can be measured by the achievement of economic growth as planned such as reducing unemployment and having inflation stabilization. As such, any country should strive to achieve the optimal rate of economic growth by way of various policies in the economy. To do so, there must be surely the sectors that become the driving force for economic growth.

Some components of Gross Domestic Product (GDP) are the driving force for economic growth or an increase in GDP, including investment. Therefore, the policies adopted by the government of a country must be sought to create conditions that can create all things believed to increase in GDP, for achieving optimal conditions so that the desired economic growth can be achieved. Lipsey and Sjoholm (2002) study, whether foreign investors in the manufacturing sector pays lower wages than local investors investing in Indonesia found that foreign firms pay higher prices to provide increased educational labor than domestic investors.

Other studies by Borenzstein, Gregorio, Lee (1995), use panel data models of how foreign direct investment FDI can affect economic growth. By doing so, a proportion of GDP, government spending, human capital stock are measured and the results shows FDI has a positive impact on economic growth despite it also depends on the human capital stock put in an investment purposes.

Investment in Indonesia is divided into two parts, namely the main manufacturing investment and natural resources investment. The investment particularly the foreign direct investment was divided into islands Indonesia islands in the western region of Indonesia, especially Java and more focus on the manufacturing sector. This is supported by some factors such as adequate infrastructure available in Java, a lot of labor, low wages, and the level of education. Thus, FDI can provide a multiplier effect, directly or indirectly spurring economic growth in the western region of Indonesia.

The above condition differs from other provinces in the east such as the island of Sulawesi, Papua, and Maluku which rely on the use of natural resources.

The regions belong to FDI in Indonesia have different characteristics, but in general, the sector has been concentrated on the exploitation of the potential which is based on natural resources (BKPMN 2008). In recent years, foreign investors are less keen to invest in Indonesia due to the unstable economic and political conditions. In addition, the economic growth in each of 6 major islands is driven by economic and non-economic variables with different character-

2

istics. Therefore, it makes economic growth in the six major islands have great influence.

The modern theory of economic growth, the crucial factors is not only L (labor) and K (Capital), but also the growth of T (contained in the capital goods and machinery), entrepreneurship (Kw), raw materials (BB), and material (Mt). In addition to this, other factors that the modern theory also considered to be very influential to economic growth are the availability and condition of infrastructure, laws and regulations, political stability, government policies (which include mirrored by government spending), the bureaucracy, and the basis of international exchange (TOT).

The role such factors above can be traced through the cases in the countries in the African continent. According to the results of existing studies (Tambunan, 1996), cessation of economic development in these countries is partly due to the low quality of its L, political instability, war, the government's financial deficit and the lack of infrastructure. Study by Ramirez et al. (1998) departed from the presence of two-way relationship between economic growth and human development (human development).

The most crucial one is from economic growth to human development. Both are from human development to economic growth. As based on the previous studies, the development will be carried out in this study. Development Model Analysis conducted by some previous researchers can be taken into account. Research conducted by Gani (1997) in Saleh, about the factors of economic growth in Papua New Guinea with a single equation but with four specifications of the model estimated in the period (1970-1992). Results show that empirically physical and human capital did not provide a significant result to the economic growth. Beside that, a study conducted by Sarwedi (2002) shows that the economic variables (GDP, Growth, Wage and Exports) have a positive relationship with FDI, while the non-economic variables, namely political stability have a negative relationship.

The above studies are consistent with the empirical findings of Schneider and Frey (1986) stating that political stability has a negative relationship with FDI. The analysis model used by Sarwedi is characteristic in a country, which is combined in a period of short-term and long-term using ordinary least square (OLS) calculations. This is done by applying the model Error-Correction Model (ECM) and Granger. What makes it different is that the Causality Test of the variables in this study includes the use of potential sectors, in which education factor affects the economic growth in Indonesia, particularly economic growth of the islands in Indonesia.

THEORETICAL FRAMEWORK
Economic Growth

The economy is basically a long-term macro-economic issue in which each period the people try to improve their abilities to produce goods and services. The goal can be in the form of an increase in real output (national income) and living standards (real income per capita) through the provision and deployment of the factors of production. Thus, economic growth is a function of a neoclassic production with the assumption that all inputs to the production as a whole can be grouped into three factors: capital, labor, and technology. The production function describes how the three factors combine economic input to produce output as measured by Gross Domestic Product (GDP).

Growth Theory: Neo-Classical Model

Unlike the Harrod-Domar model, neoclassical models allow the inter-factor substitution labor for capital. Neoclassical growth theory starts with the Solow-Swan models developed by Solow (Solow 1956) and TW Swan (Swan 1956) with the use of the Cobb Douglas production function, mathematically expressed as follows:

$$Y = F (Kt, At, Lt). \qquad (1)$$

In this case, it states that the output is a function of the number of input factors such as capital (K), labor (L) and technology productivity factor (A). From this equation it

can be said that the increase in output of goods and services, which is reflected by the Gross Domestic Product (GDP) can occur through an increase in labor supply, an increase in physical capital and increased productivity at all times.

Solow Growth Theory
Solow Swan Model
Solow growth theory uses the production function approach that has been developed by Charles Cobb and Paul Douglas, known as the Cobb-Douglas. Some economists who believe that the Solow growth model is the starting point for most economic analysis, even for models fundamentally different from the Solow model, which is easier to be understood by the Solow growth model. This model focuses on four variables: output (Y), capital (K), labor (L) and "knowledge" or "effectiveness of labor" (A). At any given time, the economy has a number of capital, labor, and knowledge output combinations.

Endogenous Growth Theory and Total Factor Productivity (TFP)
This endogenous growth theory is proposed by Lucas and Romer. According to Lucas, the accumulation of human capital, as well as the accumulation of physical capital, determines an economic growth. Yet, according to Romer, economic growth is influenced by the level of human capital through technological growth. Thus, the modified aggregate productions function:
$$Y = AF (K, H, L). \qquad (2)$$
H is the accumulation of human resources, education, and training. According to Mankiw, Romer and Weil (1992) the contribution of each input to the equation is proportional to the national output. Investment on human resources through the education sector will generate higher national income compared with the less investment in the sector.

Model of Mankiw-Romer-Weil
The Solow-Swan model assumes that the factors affecting the long-term economic growth are labor effectiveness, A and Capital are ex-

ogenous. From the empirical testing, especially using U.S. economic growth data, it turns out the estimation of Solow model produces capital share of output level which is too high. Mankiw-Romer-Weil (MRW) found that physical capital is less accurate in measuring the contribution of capital to economic growth. Therefore, MRW improves the Solow-Swan model by changing the specification of the production function by incorporating human capital factors.

New Growth Theory or the Modern Theory
As referred to the modern theory framework, there are some fundamental differences compared to the neoclassical theory. In the modern theory, the quality of L is more important than quantity. L The quality is not only educational level, but also of the quality of their health. Currently, the educational level and health conditions are the two independent variables that are important in the empirical analyzes for econometric approach on economic growth (Faisal 2002).

In the case above, the levels of education are usually measured by the percentage of highly educated L to L or the number of people enrolled in a certain level of education, such as elementary education. However, the soundness is usually measured by life expectancy. Similarly, K, quality (which reflects the progress T) is more important than quantity (accumulated K). Also Kw, including the ability to innovate, is one of the crucial factors of economic growth.

Previous Studies
It is essential to see some of the empirical studies conducted by the previous researchers. For example, research by Rana-Dowling (1988) for developing countries during 1965 - 1982 uses simultaneous equations. They concluded that the flow of foreign capital contributes to economic growth, foreign direct investment contributes to growth through both capital formation and increase the efficiency of investment, and foreign debt contributes higher than the flow of foreign capital

does (Rana-Dowling 1988; Iwasaki 1986).

Rana and Dowling (1988) use simultaneous equations consisting of a model of economic growth and savings. The results of this study indicate that the countries in Asia have general rate of economic growth which is significantly influenced by the performance of exports, domestic savings, and foreign direct investment. Political and economic stability in general are all the factors that determine in attracting foreign investment to spur economic growth in Asian countries.

When the microeconomic research found little evidence on the influence of foreign capital on economic growth, many macroeconomic studies show a positive relationship between FDI and economic growth. Carkovic and Levine (2002) use the model equations and the Dynamic Panel Data bank for concluding that the flow of FDI is not a major factor for economic growth. Still research and Ross Levine Maria Carkovic they illustrate that FDI increased dramatically since 1980 and many countries rely on tax incentives and subsidies to attract foreign capital. Rational economic explanations and frequently used are FDI and portfolio inflows improve the transfer of technology that would accelerate overall economic growth in the country.

Based on the research by Nagesh Kumar and Jaya Prakash Pradhan (2002) on the relationship between FDI and economic growth in 81 developing countries, including Indonesia, there are some evidences. For Indonesia's statistical theory based (Granger Causality between FDI and Economic Growth), it can be seen the relationship between FDI and economic growth is bi-direction or the influence towards each other.

A study by Atrayee Ghosh Roy and Hendrik F. Van den Berg (2006) suggests that the relationship between FDI and economic growth is complex. Simple regression equation was used but unable to describe the actual conditions. Due to a two-way (bi-directional) between FDI and economic growth, it can be explained by the simultaneous equations model. So Roy and Berg

(2006) using a simultaneous equations model to capture the bi-direction relationship between FDI share of GDP and economic growth. The model is estimated using time-series data covering the period 1970-2001. Effect of FDI / Y on economic growth is positive and statistically significant.

Thus, the growth of FDI has a positive contribution to economic growth and the level of social welfare in the long term over the period 1970-2001 in USA. The estimates also stated that it is impossible to determine the relative rate of growth of FDI to GDP. Negative coefficient on GDP growth in the FDI equation or Y implies that the elasticity of FDI to GDP is less than one. He said the role of FDI in technology transfer usually focus on developing countries. Yet somehow, the flow of FDI was the highest among developed countries. So, these countries are ready or almost ready for the latest technological developments.

RESEARCH METHOD
The Object of the Research
The primary focus of this study is on Indonesia and 6 big islands in this country. Thus, the observed objects of this research are the provinces that are in the 6 big islands.

Data of the Research
This study used panel data approach. The data were in Indonesia during the period 2002-2008, with an annual database. The panel data were used in the form of annual time series data in the time period from 2002 to 2008 (7 years) and a cross section of some 28 provinces. So, the total data is 196 (7 x 28). The type of data used in this study is secondary data. These data consist of six variables that include economic growth, foreign direct investment, and the frequency of riots, educational level, employment and potential sectors.

Research Model
Panel data can explain the two kinds of information: information cross-section on the difference between the subject and time se-

ries information that reflects changes in the subject of time. When both these types of information are available, the analysis of panel data can be used. With repeated observations of the cross section data are sufficient; the analysis of panel data allows one to study the dynamics of change with the time series data. The combination of time series and cross section can increase the quality and quantity of the data with the approach that was not possible by using only one of these data (Gujarati 2003).

The data constraints: when the estimated regression time series data or cross-sectional, observation is found to be too small to produce efficient estimates. One solution to produce an efficient estimation is the linear regression model of panel data.

Testing the Panel Unit Root
In the data in the form of a panel or group, the data is necessary to test stationary with panel unit root tests. This is to see the stationery data, as well as to determine the level of integration (order of integration) of the group data. Time series data is used primarily on stationary problems. When the analysis of the data is not stationary, it will produce spurious regression and less meaningful conclusions (Enders 1995 and Thomas 1997).

Thus, the first step is to test and make the data into stationer. This study uses five types of unit root tests by means of Eviews Software version 6 such as (i) Levin, Lin and Chu (2002), (ii) Breitung (2000), (iii) In Pesaran and Shin (2003), (iv) the Fisher-type tests using ADF and PP tests (Maddala and follow Wu (1999) and Choi (2001), and (v) Hadri (1999) and Endy Dwy T and Donni F Grace 2006.

Selection of Model Estimation in Panel Data
As stated by Judge in Insukindro 2003, if the source data comes from a sample, the estimation of the random effect panel model is sufficient. However, if the data source is an aggregate one, the tendency is the fixed effect. Thus, the Hausman test is a model applied to decide the Data Panel model is the Random effect or Fixed Effect.

The main difficulty of the panel data model (merging observation time series and cross-sectional observations) is confounding factors which potentially contain the disturbance caused by the use of time series observations. The observation of cross-cutting and the interference is caused by the second. The use of cross-sectional observations yields the potential not to be consistency in terms of parameter regression, due to different data scales.

The use of time series observations bring about the autocorrelation among observations. Estimation techniques being adopted is GLS (Pindyck 1998). Thus this study uses GLS approach. This approach called panel data regression approach used for creating autocorrelation between observations approaches both orderly and cross-sectional (Insukindro et al. 2003).

Operational model GLS method, in this study:

$$GE*_{it} = \beta_0 + \beta_1 FDI *it + \beta_2 PSU *it + \beta_3 STAB *it + \beta_4 EDU *it + \varepsilon *it \qquad (3)$$

Description:
GE   : Economic Growth
FDI   : Foreign Direct Investment
PSU   : Potential Sector Utilization
STAB : Security and Political Stability
EDU   : Education

DATA ANALYSIS AND DISCUSSION
Testing the Panel Unit Root
When the variables are not yet stationary at the level, differencing data is done to reduce the data with previous data in order to obtain data in first differences or second difference with being stationary. The 6 variables above do not pass the test at the stage level. After the second test, there are 4 variables that are qualified to be stationary i.e. GE, FDI, EDU, and STAB as shown in Table 1. Conversely, the PSU does not pass at this stage, so that the next phase of testing on the second difference, the outcome variable is stationary. From the calculation, it can be seen that there is a stationary variable and pass Unit

6

Table 1
Panel Unit Root Test Results on the Level, First Difference and Second Difference

Variables	Types of Unit Root Test	Level	First Difference	Second Difference
GE	LLC, Breitung, IPS, ADF & PP	Non Stationary	Stationary	
FDI	LLC, Breitung, IPS, ADF & PP	Non Stationary	Stationary	
PSU	LLC, Breitung, IPS, ADF & PP	Non Stationary		Stationary
STAB	LLC, Breitung, IPS, ADF & PP	Non Stationary	Stationary	
EDU	LLC, Breitung, IPS, ADF & PP	Non Stationary	Stationary	

EDU=PDDK
PSU=PSP

Table 2
Results of the Estimation with GLS method (REM and FEM)

Dependent Variable: GE for the Period 2002 – 2008

Independent variables	Random Effects	Fixed Effects
Constant	3.314145	-2.197084
FDI	-4.40E-05	0.000488
PSU	-2.52E-09	-3.04E-10
STAB	0.044120	-0.033371
EDU	2.86E-05	0.000133
R^2	0.012918	0.755028
F stat	0.624894	16.30531
Durbin-Watson	3.146797	1.594428

Source: Processed data.

Root Test.

Based on the results of GLS estimation in Table 2, the fixed effects model (FEM) shows better results than the random effects model (REM). It can be seen from the value of R-square (R^2) which is fixed effects model (FEM) to be better than the random effects model (REM). In addition, for selecting the best model, it uses the Hausman test (Gujarati 2003). For this study, estimated by Hausman test program Eviews version 6 and the results can estimate the value of Chi-square. The conclusion of the Hausman test is that when the null hypothesis (H0) is accepted, the model used is the random effects model (REM) and vice versa when the null hypothesis (H0) is rejected, the model used is the fixed effects model (FEM).

The Results of Hausman
The results of the Hausman test yield the Chi-square value is presented in Table 3. Based on the Hausman test, it can be drawn

a conclusion for the best models that is fixed effects model (FEM).

Estimation of the GLS Method
The results of economic growth estimation in Indonesia can be seen in Table 4. The results of FDI variable estimation indicate that FDI has positive and statistically significant for GE. The findings are consistent with the hypothesis that there is a positive effect of FDI on GE. This indicates that FDI, Foreign Direct Investment (FDI) plays an important role in promoting economic growth Indonesia and 6 big islands. The result of variable estimation shows that the utilization of the sector and the potential negative effect is not statistically significant to economic growth (GE). The variable of Education (EDU) has a positive sign. It can be described that education contributes positively to and statistically has significant effect on economic growth (GE). The result is certainly consistent with the hypothesis that there is a positive effect of education (EDU) on economic

Table 3
Hausman Test for Fixed Versus Random Effects

Correlated Random Effects - Hausman Test
Pool: DESCRIPTIVE
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

Source: Processed data.

Table 4
Results of Economic Growth Estimation in Indonesia

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-2.197084	1.239175	-1.773022	0.0781
FDI	0.000488	0.000165	2.958764	0.0035
PSU	-3.04E-10	3.43E-10	-0.885422	0.3772
STAB	-0.033371	0.035249	-0.946725	0.3452
EDU	0.000133	1.95E-05	6.787244	0.0000
Fixed Effects (Cross)				
R-squared	0.755028	Mean dependent var		30.46467
Adjusted R-squared	0.708722	S.D. dependent var		21.47494
S.E. of regression	3.865225	Sum squared resid		2450.154
F-statistic	16.30531	Durbin-Watson stat		1.594428
Prob (F-statistic)	0.000000			

Source: Processed data.

growth (GE). The political and security (STAB) variable shows that this variable negative effect.

The Economic Growth (GE) in Sumatra
The 4 independent variables in Table 5 show that economic growth (GE) in Sumatra has a positive relationship and statistically has significant effect. Yet, variable of STAB has a negative relationship with economic growth.

The Economic Growth (GE) in Java
The 4 variables in Table 6 show that economic growth is affected by FDI in Java, STAB, EDU (education) are proved by the positive relationship among the three variables with the economic growth in Java. Of the three variables, only 2 independent variables have a significant influence. These are the variable FDI, PSU, and EDU. On the contrary, the variables of PSU have a negative relationship statistically toward the economic growth in the island in Java province. This

means that the provincial government's ability to manage potential in Java has already in been maximal. Yet, this is not able to drive economic growth. This needs creativity and innovation so it is no longer raw materials but finished goods that already have added value.

The Economic Growth (GE) in Kalimantan
The 4 independent variables in Table 7 indicate that economic growth (GE) in Kalimantan has a positive relationship like FDI, PSU, EDU (education).

However, the only variable that has statistically significant effect on economic growth is PSU and EDU or education.

The Estimation of Economic Growth (GE) in Sulawesi
The 4 independent variables in Table 8 provide evidence that economic growth (GE) in Sulawesi Island have a positive relationship as FDI, PSU, STAB and EDU (education). But

Table 5
Results of Economic Growth Estimation in Sumatra Island

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-2.629553	1.163271	-2.260481	0.0282
FDI	0.002638	0.001028	2.566157	0.0133
PSU	4.34E-07	3.92E-08	11.05408	0.0000
STAB	-0.098960	0.030181	-3.278850	0.0019
EDU	4.50E-05	1.79E-05	2.519250	0.0150
Fixed Effects (Cross)				
R-squared	0.705953	Mean dependent var		14.64640
Adjusted R-squared	0.635382	S.D. dependent var		13.35172
S.E. of regression	1.769452	Sum squared resid		156.5480
F-statistic	10.00341	Durbin-Watson stat		1.768296
Prob (F-statistic)	0.000000			

Source: Processed data.

Table 6
Estimation of Economic Growth in Java

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-2.356651	2.758312	-0.854382	0.3992
FDI	0.000296	0.000126	2.355363	0.0248
PSU	-2.06E-10	2.33E-10	-0.882929	0.3839
STAB	0.117306	0.064011	1.832593	0.0762
EDU	9.44E-05	3.38E-05	2.791683	0.0088
Fixed Effects (Cross)				
R-squared	0.586936	Mean dependent var		5.782433
Adjusted R-squared	0.470762	S.D. dependent var		1.589320
S.E. of regression	0.611829	Sum squared resid		11.97873
F-statistic	5.052209	Durbin-Watson stat		1.376001
Prob (F-statistic)	0.000287			

Source: Processed data.

the PSU and EDU variable have no statistically significant effect on economic growth.

The Estimation of Economic Growth (GE) in Bali and Timor
The 4 independent variables in Table 9 show that economic growth (GE) in Bali and Timor has a positive relationship as the 2 variables: FDI and PSU while EDU (education) and STAB have a negative relationship with economic growth.

The Estimation of Economic Growth (GE) in Maluku and Papua
Again the 4 independent variables in Table 10 reflect that economic growth (GE) in Maluku and Papua have a positive relationship as the two variables EDU (education and PSU. These have a significant effect on economic growth. The FDI variable and STAB have a negative relationship on economic growth.

CONCLUSION, IMPLICATION, SUGGESTION AND LIMITATIONS
In general, it can be concluded that the FDI is considered one of the important sources for Indonesia and 6 big islands to increase economic growth; Indonesia Economic Growth and 6 big islands in Indonesia is dependent on the utilization of potential sectors especially in natural resources in which are the powerful motivating factors; Safety Stability Factor (STAB), the condition of the State of Indonesia and 6 big islands is quite vulnerable to being instable, thus this is the strong influence on economic growth; The factor of Education (EDU), generally is able to contribute significantly to the economic growth of Indo-

9

Table 7
Estimation of Economic Growth in Kalimantan

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-2.963213	3.070705	-0.964994	0.3461
FDI	0.000496	0.002626	0.188768	0.8522
PSU	3.20E-07	1.28E-07	2.512753	0.0207
STAB	-0.336768	0.229978	-1.464348	0.1586
EDU	7.10E-05	4.65E-05	1.525845	0.1427
Fixed Effects (Cross)				
R-squared	0.847050	Mean dependent var		5.752286
Adjusted R-squared	0.793517	S.D. dependent var		3.115135
S.E. of regression	0.632057	Sum squared resid		7.989928
F-statistic	15.82304	Durbin-Watson stat		2.318380
Prob(F-statistic)	0.000001			

Source: Processed data.

Table 8
Estimation of Economic Growth in Sulawesi

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-2.355103	1.696320	-1.388360	0.1803
FDI	0.000657	0.001144	0.574593	0.5720
PSU	9.82E-08	1.46E-07	0.671339	0.5097
STAB	0.271747	0.063577	4.274278	0.0004
EDU	0.000109	2.90E-05	3.758234	0.0012
Fixed Effects (Cross)				
R-squared	0.790394	Mean dependent var		7.969157
Adjusted R-squared	0.717032	S.D. dependent var		3.141358
S.E. of regression	0.819323	Sum squared resid		13.42582
F-statistic	10.77390	Durbin-Watson stat		1.141791
Prob (F-statistic)	0.000014			

Source: Processed data.

nesia. However, the other islands such as the island of Bali and the island of Timor, this factor can not encourage economic growth.

This study contributes to the development of Economics in which this study has contributed to and completed the assessment studies on economic growth especially on the factors triggering economic growth.

This study provides additional knowledge regarding the application of macroeconomic theory on the issues related to economic growth, particularly on the economic growth among the six big islands in the territory. The economic growth should be driven by the sectors which are considered more productive. The policy made must also encourage the economic growth because it important for improving the quality of education. The policy utilizing the potential sectors

should also be accompanied by the living standard and environment sustainability. The policy also enables the nation to maintain political and security stability without caring any individual characteristics. It is required that the Indonesian government and local governments in the six major islands to actively become facilitators.

Some suggestions can be derived from the gist of the research findings. First of all, it is advisable for the local and central government to optimize the factors that can enhance the economic growth. Secondly, by considering the economic growth happen mostly in every province in Indonesia which is supported by the use of potential sectors, the government should issue a policy to safeguard and ensure the sustainability of the sector for potential income-generating and promoting regional

Table 9
Estimation of Economic Growth in Bali and Timor

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	2.269538	0.814250	2.787273	0.0145
FDI	3.38E-06	0.002431	0.001391	0.9989
PSU	6.77E-07	4.58E-08	14.76680	0.0000
STAB	-0.357823	0.125540	-2.850277	0.0128
EDU	-3.64E-06	2.03E-05	-0.179536	0.8601
Fixed Effects (Cross)				
R-squared	0.956375	Mean dependent var		12.56533
Adjusted R-squared	0.937679	S.D. dependent var		12.33776
S.E. of regression	0.955949	Sum squared resid		12.79374
F-statistic	51.15321	Durbin-Watson stat		3.081786
Prob(F-statistic)	0.000000			

Source: Processed data.

Table 10
Estimation of Economic Growth in Maluku and Papua

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-54.04527	29.67246	-1.821395	0.1060
FDI	-0.095274	0.117016	-0.814196	0.4391
PSU	7.54E-06	3.91E-06	1.928681	0.0899
STAB	-1.948704	1.029064	-1.893666	0.0949
EDU	8.64E-05	9.55E-05	0.904271	0.3923
Fixed Effects (Cross)				
R-squared	0.246407	Mean dependent var		5.490431
Adjusted R-squared	-0.224589	S.D. dependent var		10.88788
S.E. of regression	10.96090	Sum squared resid		961.1311
F-statistic	0.523162	Durbin-Watson stat		3.323393
Prob (F-statistic)	0.753549			

Source: Processed data.

economic growth in Indonesia. Finally, beside the above suggestion, it is also important for the government to create security and political stability, the essential factors in enhancing the economic growth. Thus, the local and central government should work hand in hand to promote such stability, particularly in big islands and the entire nation. The government's policy should encourage economic growth starting from an increase.

REFERENCES

Atrayee Ghosh Roy, and Hendrik F Van den Berg, 2006, 'Foreign direct investment and economic growth: a time-series approach', *Global Economy Journal,* Article 7 Volume 6, Issue 1.

Bank Indonesia, 2003, *Laporan Tahunan*, Jakarta.

BKPMN, 2008, Volume 1, 2nd Edition, Jakarta.

Borensztein, E, De-Gregorio, J, Lee, JW 1995, 'How does foreign direct investment. affect economic growth?', *NBER Working Paper*, (5057).

Breitung, J 2000, 'The local power of some unit root tests for panel data', *Advances in Econometrics*, Volume 15: Nonstationary Panels.

Carkovic, Maria and Ross Levine, 'Does foreign direct investment accelerate economic growth?', *Working Paper*, University of Minnesota, May 2002.

Charles W Cobb, Paul H Douglas, 2001, 'A theory of production' *The American Economic Review*, Vol. 18, No. 1, Supplement, Papers and Proceedings of the Fortieth Annual Meeting of the Ameri-

can Economic Association (Mar, 1928), pp. 139-165.

Choi, In & Ahn, Byung Chul, 2001. 'Testing for cointegration in a system of equations', *Econometric Theory*, Cambridge University Press, vol. 11(05), pages 952-983, October.

Enders Walter, 1995, *Applied Econometric Times Series*, Vol. 311, University of Alabama.

Endy Dwy T and Donni F Grace, 2006. 'Panel root test n co integration', *NBER Working Paper*.

Faisal, Basri 2002, 'Daya saing kita rapuh', *Harian Kompas*, Berita Utama.

Gani, Azmat, 1997, 'Economic growth in Papua New Guinea: some empirical evidence', *Pacific Economic Bulletin*.

Gujarati, D 2003, *Basic Econometric*. McGraw Hill Inc, NY, p. 52-72.

Hadri Kaddour, 1999, 'Testing the null hypothesis of stationerity against the alternative of a unit root in panel data with serially correlated errors', *Research Papers 1999_05*, University of Liverpool Management School.

Insukindro, et al. 2003, *Ekonometrika Dasar*, BI and Fakultas Ekonomi Universitas Gadjah Mada, Yogyakarta.

Iwasaki Yoshihiro, 1986, 'Effects of foreign capital inflows on developing countries of Asia', Asian Development Bank.

Kumar, Nagesh and Jaya Prakash Pradhan, 2002, 'Foreign direct investment, externalities and economic growth in developing countries: some empirical', in Edward M. Graham (editor), *Multinationals and Foreign Investment in Economic Development*, Palgrave 2005: 42-84.

Levin, Lin and Chu, 2002, 'Testing for unit roots in heterogeneous panels', *Journal of Econometrics,* 115, 53–74.

Maddala, GS, and Wu, Shaowen, 1999, 'A comparative study of unit root tests with panel data and a new simple test', Oxford.

Mankiw, NG, David Romer, and David Weil.

1992, 'A contribution to the empirics of economic growth', *Quarterly Journal of Economics,* 107, 2 (May), 407-437.

Pesaran and Shin, 2003, 'Testing for unit roots in heterogeneous panels', *J. of Econometrics*, vol. 115, 53-74.

Pindyck, Robert S 1998, 'Irreversibilities and the timing of environmental policy,' *Working papers WP 4047-98*, Massachusetts Institute of Technology (MIT).

Ramirez, A, G Ranis, and F Stewart, 1998. 'Economic growth and human capital', QEH *Working Paper*, No. 18.

Rana, PB, and JM Dowling, 1988a. 'Foreign capital and Asia economic growth', *Asia Development Review*, Vol 8. No. 01.

Rana, PB, and JM Dowling 1988b. 'The Impact of foreign capital on growth', *The Developing Economics*, Vol. 26, No. 1.

Robert Lipsey, E, & Sjöholm, Fredrik, 2002 'Home and host country effects of FDI', *NBER Working Papers 9293*, National Bureau of Economic Research, Inc.

Sarwedi, 2002, 'Investasi asing di Indonesia dan faktor–faktor yang mempengaruhinya', Jurnal Akuntansi & Keuangan, Vol. 4, No. 1, May 2002, Jurusan Ekonomi Akuntansi, Fakultas Ekonomi - Universitas Kristen Petra.

Schneider, and Frey, 1986. 'Economic and political determinants of foreign direct investment in developing country'. *World Development*, Vol. 13, p. 161-175.

Solow, Robert M, and Swan, *Growth theory: an exposition*, Oxford University Press, 1956.

Tambunan, T, Lukman Hakim, and Budi Santosa, 1996, *Daya saing perekonomian Indonesia: menyongsong era pasar bebas*, Media Ekonomika Publishing, Jakarta.

Thomas J Kniesner, 1997, 'Count data models with variance of unknown form: an application to a hedonic model of worker absenteeism', *The Review of Economics and Statistics*, MIT Press, vol. 79 (1), pages 41-49, February.