

THE IMPACT OF IMPORT ON REGIONAL ECONOMIC GROWTH IN INDONESIA: A PROVINCIAL PANEL STUDY FROM 1995–2008

PENGARUH IMPOR TERHADAP PERTUMBUHAN EKONOMI DAERAH DI INDONESIA: STUDI PANEL DALAM LEVEL PROVINSI DARI TAHUN 1995–2008

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ABSTRAK

Kajian mengenai pengaruh impor terhadap pertumbuhan ekonomi daerah di Indonesia masih jarang, begitu juga dengan penggunaan provinsi sebagai objek penelitian. Kajian ini penting untuk dilakukan dan menarik karena dapat mencari hubungan dan kontribusi impor terhadap pertumbuhan ekonomi daerah di Indonesia. Adanya dua kemungkinan dampak dari impor terhadap pertumbuhan ekonomi daerah, yaitu dampak positif dan negatif, mendorong penulis untuk melakukan kajian ini. Kajian ini menggunakan panel data dengan pendekatan OLS, Random Effect, dan Fixed Effect. Hasil kajian menunjukkan bahwa impor memiliki dampak positif terhadap pertumbuhan ekonomi daerah di Indonesia dan secara statistik signifikan. Akan tetapi, impor berkontribusi negatif terhadap pertumbuhan ekonomi daerah setelah satu tahun impor datang ke Indonesia.

Kata kunci: Impor, Pertumbuhan ekonomi daerah, OLS, Random effect, Fixed effect

ABSTRACT

The study of the impact of import on regional economic growth in Indonesia as well as using provincial level as object research is still rare. The study of such topic is important and interesting since it will reveal how much correlation and contribution of import to economic growth at provincial level in Indonesia. Two possibilities impacts of import on economic growth, which are: positive or negative, encourage the writer to study the impact of import on regional economic growth in Indonesia. This study uses provincial panel data with OLS, Random Effect and Fixed Effect methods. The result shows that the impact of import on regional economic growth in Indonesia is positive and statically significant. However, the import contributes negatively and statistically significant to regional economic growth one year after import has come to Indonesia.

Keywords: Import, Regional economic growth, OLS, Random effect, Fixed effect

INTRODUCTION

Import is one of tools that considerably increases economic growth. Import can increase economic growth through technological transfer. More spesifically, technological transfer can spread to host country in different ways. One way that host country can absorb the technological transfer is

by embodiment in import or import's product.¹ The host country, which is mostly developing countries, can benefit from R&D conducted in developed countries. Almost all developed countries allocate high level of budget in R&D,² hence the import of their products can spread the advanced technology indirectly. Furthermore,

generally in developing countries, import goods can be classified into two kinds; intermediary goods and capital goods. Intermediary goods are materials or goods used as input factors that will be processed into final products. On the other hand, capital goods are goods mostly used as machine and basic tools in the production process. Therefore, it can increase the growth of output² and reduce the cost of production.³

The study done by Sjolhom¹ by using data from 1980 until 1991 yields that, based on several models or estimations, import has no impact on productivity growth. In Ethiopia, the increase in import expenditure in period 1973/74–1990/1991 (Derg Regime) is not in line with the trend of GDP. The trend of GDP growth in that period was decreasing by 1.9% from previous period (1960/61–1972/73). Hence, it shows that import has negative correlation with economic growth in that period. However, the study done by Awokuse shows that trade stimulates economic growth⁴ and import is one part of trade. In addition, the study done by Priede supports the study done by Awokuse who finds that import has positive effect on regional GDP per capita.⁵ The study in China done by Herrerias and Orts yield that the link between long run growth and trade openness is mainly through import.⁶ The positive effects of import not only increase output but also increase labor productivity in the long run.⁷

Indonesia is a developing country that still import some goods to fulfill domestic demand. In period January–October 2012, the demand of import's product is increasing more than the previous year at the same period. The total import value in this period is US\$159.18 billion or increases by 9.35% from previous year at the same period. The import of *nonmigas* product is still higher than *migas* product in period January–October 2012. The value of import in *nonmigas* product at this period is US\$ 124.39 billion, which is higher US\$89.6 billion than *migas* product. Machine and mechanic tools are dominant for *nonmigas* import in period January–October 2012. The total value of machine and mechanic tools is US\$23.88 billion which increases by 19.50% than previous year at the same period.

Research Problem

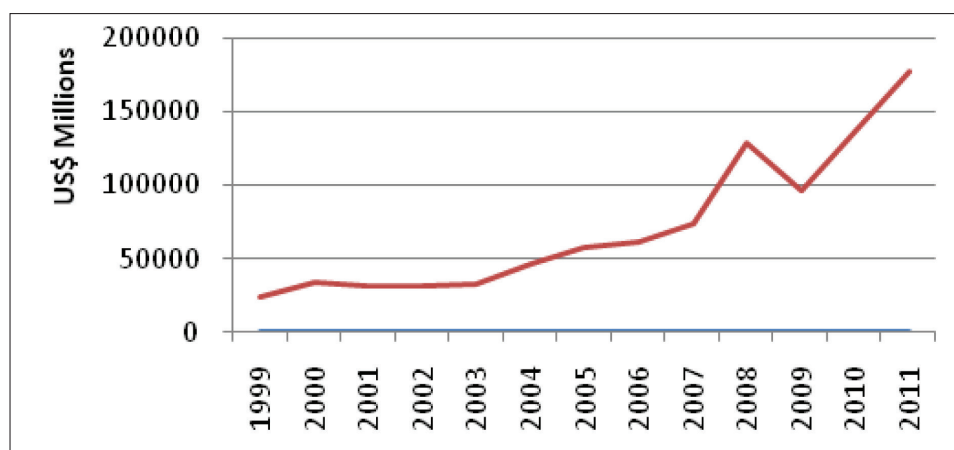
According to classical perspective of international trade, import reduces the value of economic growth. On the other hand, import potentially increases output through international technology spillover.⁸ Two possibilities impacts of import on economic growth, positive or negative, encourage me to answer the question, “Does import have positive impact on regional economic growth in Indonesia?”. Regional level is chosen rather than national level in order to control inequal economic growth between Java and outside Java.

This paper proceeds in five parts. The first part is introduction, including research problem and short description of import in Indonesia. The second part is theoretical framework. Method and data are explained at the third part. The fourth part of the paper provides empirical result of the study. The final part is conclusion, including limitation and acknowledgement.

Import in Indonesia from 1999 to 2011

The trend of import in Indonesia from 1999 to 2011 is increasing. After Asian economic crisis in 1998 and 1999, the ability of foreign and local firms to import raw material, intermediate goods, capital goods and consumer goods continue to show positive trends. It can be seen from the graph in Figure 1 that the value of import increases almost nine times from 1999 to 2011. The periods that show decreasing in the value of import are only in 2001 and 2009. The potential explanation of the condition in 2001 and 2009 is that in 2001, the economic condition in Indonesia was still unstable after recovering from Asian crises in 1998/1999, hence it affected the ability of local and especially foreign producers in importing some commodities. In 2009, there was economic crises in Europe and United States that led to decreasing in capability of foreign firms to buy the products from outside Indonesia.

Manufacturing sector considerably has potential technological resources to improve technological capability in developing countries. The imports of machine and mechanic tools are two of several kinds of import manufacturing products mostly used by firms in Indonesia and potentially increase regional economic



Source: Central Bureau Statistic of Indonesia⁹

Figure 1. The Trend of the Total Import Value in Indonesia

Table 1. The Trend of the Total Import Value in Indonesia (in \$US)

Province	1995	1997	1999	2003	2007	2008
Aceh	75.030.562	123.897.341	73.020.250	51.532.588	30.648.443	384.237.289
Sumut	1.014.223.493	1.024.559.256	699.577.050	679.810.981	2.118.255.670	3.696.065.055
Sumbar	163.844.181	103.130.328	88.402.689	31.132.815	95.861.991	476.456.987
Riau	1.103.553.862	965.247.826	1.285.151.062	825.409.937	889.591.026	1.627.471.747
Jambi	96.976.126	84.407.208	41.767.960	82.589.331	178.891.819	146.250.941
Sumsel	168.814.808	310.273.535	695.477.910	112.294.771	167.698.712	225.428.125
Bengkulu	434.949.627	7.733.373	20.299.572	151.232	4.107.558	4.588.270
Lampung	648.188.193	1.820.404.844	746.966.253	951.266.209	1.545.530.141	1.132.582.755
Jakarta	25.659.106.959	22.602.570.430	10.306.824.075	16.169.567.982	34.983.123.138	63.312.741.522
Jabar	2.130.677.554	2.183.868.429	1.748.625.551	146.526.340	1.923.668.436	2.784.248.542
Jateng	1.532.458.808	2.014.379.705	2.093.224.573	3.400.242.178	7.006.794.502	9.292.062.464
Yogya	3.659.021	1.205.281	No data	865.064	93.572	542.768
Jatim	5.122.478.299	7.334.143.528	13.592.003.142	5.115.219.183	11.461.694.671	17.846.110.380
Bali	240.573.905	37.840.355	50.533.532	51.192.908	533.728.742	732.543.820
NTB	325.058	7.160.602	178.449.089	147.022.300	231.555.534	292.543.820
NTT	3.420.003	4.121.465	129.119.081	59.070.120	20.058.966	2.790.462
Kalbar	59.114.254	69.801.375	110.846.474	55.114.580	92.550.742	103.025.225
Kalteng	1.421.147	6.948.004	5.548.146	2.859.020	42.738.632	38.592.957
Kalsel	98.146.018	309.800.290	83.737.379	86.496.200	287.518.581	324.280.542
Kaltim	995.868.249	1.397.193.837	1.135.278.185	2.219.517.000	4.268.025.585	5.232.848.706
Sulut	50.643.879	24.682.171	26.080.854	18.242.500	19.865.573	25.062.548
Sulteng	3.135.558	2.152.786	967.090	4.044.953	337.299	3.965.645
Sulsel	263.849.503	558.962.048	201.661.717	91.729.322	521.756.641	871.562.292
Sultra	89.275	2.616.090	4.290.658	1.870.939	4.010	703.523
Maluku	27.840.446	15.746.117	22.538.104	4.436.387	7.363.881	115.732.335
Papua	728.207.816	665.049.511	599.108.223	462.079.727	832.226.559	1.206.025.379

Source: Central Bureau Statistic of Indonesia¹²

growth rate by increasing economic scale. The sophisticated technology that is embodied in the commodity of import product for manufacturing sector is believed as resources for technological diffusion and production enhancement.

THEORETICAL FRAMEWORK

The model to describe the impact of FDI on regional economic growth rate starts from the general production function below.

$$Y = f(K, L)$$

Import can be included as a part of the function since import can increase or decrease output. Import can increase output through technology absorption, but import can decrease output through lower local revenue. Therefore, the production function above can be extended as follows.

$$Y = f(\text{import}, K, L)$$

In Solow growth model, capital is the key factor that determines the level of output, so the level of output can increase or decrease depending on the stock of capital. The stock of capital depends on the level of investment, which is the total of domestic investment and foreign investment. Therefore, the general production function can be changed as follows.

$$Y = f(\text{import}, \text{investment}, \text{labor})$$

Labor is one factor that determines the ability of the country to increase production level. Indonesia is a country that has a lot of population. Hence, labor is one of the key factors to enhance economic growth in Indonesia. In the macro level, labor can be represented by population since the economic growth can be determined by consumption level of population. The number of population has positive correlation with the level of consumption. Higher population can increase the probability of the higher consumption level, which can increase the level of economic growth. Therefore, the number of population can be included as input factor of production factor. The production factor now can be written as follows.

$$Y = f(\text{import}, \text{investment}, \text{population})$$

Furthermore, there are other variables that can affect economic growth. In general economic growth model, several variables are added as input

factors. Export is one variable usually included in the model. According to traditional international trade theory, export positively affects economic growth. Therefore, we can add export variable in the model of production function.

$$Y = f(\text{import}, \text{investment}, \text{population}, \text{export})$$

Based on the measurement of economic growth, government spending is one factor that affects the value of economic growth. The higher the government spending theoretically leads to increase in economic growth. Therefore, the level of government spending can be added in the model.

$$Y = f(\text{import}, \text{investment}, \text{population}, \text{export}, \text{local government spending})$$

The data of each independent variable are based on the data from each provinces in Indonesia. The dependent variable of this model is regional economic growth rate. All independent variables are measured to get the coefficient of each variable in term of regional economic growth rate.

To measure the regional economic growth rate, variable time should be included. Therefore, the equation above can be added by time variable.

$$Y = f(\text{import}, \text{investment}, \text{population}, \text{export}, \text{time})$$

Hypothesis

The null hypothesis in this study is that import does not have positive impact on regional economic growth in Indonesia. The alternative hypothesis is that import has positive impact on regional economic growth in Indonesia

METHOD AND DATA

The study is quantitative analysis using regional data from 1995 to 2008. This study tries to explain the contribution of import to regional economic growth rate in Indonesia. According to the theoretical framework, we can create econometric model using regional panel study from 1995 to 2008.

$$\ln \text{GRDP}_{it} = \beta_0 + \beta_1 \ln \text{Import}_{it} + \beta_2 \ln \text{Investment}_{it} + \beta_3 \ln \text{GovSpend}_{it} + \beta_4 \ln \text{Population}_{it} + \beta_5 \ln \text{Export}_{it} + e_{it} \quad (1)$$

To control the disparity of income among regions in Indonesia, the dummy variables are used. In this study, four dummies represent four main islands including Java, Sumatera, Kalimantan and Sulawesi. One dummy represents the east region in Indonesia; Bali, Nusa Tenggara, Maluku and Papua. These control variables will control the difference of regional economic growth rate among regions (EastInd).

$$\begin{aligned} \ln GRDP_{it} = & \beta_0 + \beta_1 \ln Import_{it} + \beta_2 \ln Investment_{it} \\ & + \beta_3 \ln GovSpend_{it} + \beta_4 \ln Population_{it} + \\ & \beta_5 \ln Export_{it} + \beta_6 \text{DummyJava} + \beta_7 \text{Dummy} \\ & \text{Sumatera} + \beta_8 \text{DummyKalimantan} + \beta_9 \\ & \text{DummySulawesi} + \beta_{10} \text{DummyEastInd} \\ & + e_{it} \end{aligned} \quad (2)$$

The crisis that happened in Asia, especially in Indonesia in 1998 and 1999, affected regional economic growth rate, hence the dummy variable to differ the impact of crisis on regional economic growth rate should be controlled. Dummy variable of crisis has value one and without crisis has zero value. The following model is the model after adding crisis dummy.

$$\begin{aligned} \ln GRDP_{it} = & \beta_0 + \beta_1 \ln Import_{it} + \beta_2 \ln Investment_{it} \\ & + \beta_3 \ln GovSpend_{it} + \beta_4 \ln Population_{it} \\ & + \beta_5 \ln Export_{it} + \beta_6 \text{DummyJava} + \beta_7 \\ & \text{DummySumatera} + \beta_8 \text{DummyKalimanta} + \\ & \beta_9 \text{DummySulawesi} + \beta_{10} \text{DummyEastInd} + \\ & \beta_{11} \text{DummyCrisis} + e_{it} \end{aligned} \quad (3)$$

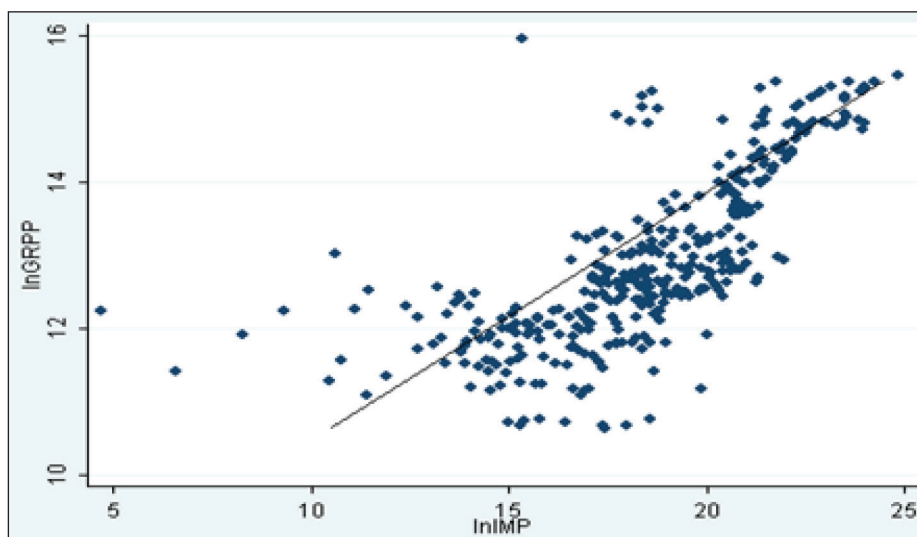
The model will be regressed using OLS, Fixed Effect, and Random Effect. The result of OLS, Fixed Effect and Random Effect will be compared and analysed. The parameter of import (β_1) will explain the impact of regional import on regional economic growth rate in percentage. Another parameter can also describe how much (in percentage) the contribution of each variable to regional economic growth.

The final model is the model that controls the impact of lag one of variable import to find the impact of import on regional economic growth rate after one year import has come to Indonesia. The final model is as follow.

$$\begin{aligned} \ln GRDP_{it} = & \beta_0 + \beta_1 \ln Import_{it} + \beta_2 \ln Import_{it-1} + \\ & \beta_3 \ln Investment_{it} + \beta_4 \ln GovSpend_{it} + \beta_5 \\ & \ln Population_{it} + \beta_6 \ln Export_{it} + \beta_7 \text{Dum-} \\ & \text{myJava} + \beta_8 \text{DummySumatera} + \beta_9 \text{Dum-} \\ & \text{myKalimantan} + \beta_{10} \text{DummySulawesi} + \\ & \beta_{11} \text{DummyEastInd} + \beta_{12} \text{DummyCrisis} + \\ & e_{it} \end{aligned} \quad (4)$$

Data Resources

The study uses secondary data from 1995 to 2008 obtained from several public institutions in Indonesia. The data of GRDP, import, export, and population come from Indonesia Central Bureau of Statistics (BPS). Another secondary data come from National Development Planning Agency (BAPPENAS) and Indonesia Investment



Source: The Result of Stata Program

Figure 2. Scatter Plot between Import and GRDP

Coordinating Board (BKPM). The data cover 26 provinces in Indonesia, excluding Banten, Bangka Belitung, Kepulauan Riau, Gorontalo, Sulawesi Barat, Maluku Utara and Papua Barat.

Scatter Plot

Before the results are presented and analyzed, it is better to know the correlation between import and regional economic growth. Figure 2 shows the scatter plot between import and regional economic growth. According to the scatter plot, the trend of correlation between import and regional economic growth is positive and almost linier. Hence, the liner model is appropriate to explain the impact of import on regional economic growth.

EMPIRICAL RESULT

First of all, the simple model to find the impact of import on regional economic growth is tested. The first model is as follows.

$$\ln \text{GRDP}_{it} = \beta_0 + \beta_1 \ln \text{Import}_{it} + \beta_2 \ln \text{Investment}_{it} + \beta_3 \ln \text{GovSpend}_{it} + \beta_4 \ln \text{Population}_{it} + \beta_5 \ln \text{Export}_{it} + e_{it} \quad (1)$$

The first model consists of four control variables, including investment, government spending, population, and export. This is the general growth model to control the effect of other variables that considerably affect regional economic growth, hence reducing error term. The result can be seen from Table 1 at the first column of OLS. Using OLS, the result shows that import has positive impact on regional economic growth, but statistically not significant. It means that even though the result is positive, there is also a possibility that import gives negative impact on regional economic growth.

The result of first model shows that 1% increases in import will increase regional economic growth about 1.57%. However, the result is not statistically significant; therefore, the probability that import affect regional negatively is still exist. According to appendix 1, the value of R^2 is relatively high about 0.8818, but it does not mean that this model is the best choice to represent the impact of import on regional economic growth rate. We should include other variables or use

another approach, such as random effect or fixed effect to find the best model.

The second model tries to control the dummy variable of five main parts of territory in Indonesia, including Java, Sumatera, Kalimantan (Burneo), Sulawesi, and East Indonesia. The second model is as follows.

$$\ln \text{GRDP}_{it} = \beta_0 + \beta_1 \ln \text{Import}_{it} + \beta_2 \ln \text{Investment}_{it} + \beta_3 \ln \text{GovSpend}_{it} + \beta_4 \ln \text{Population}_{it} + \beta_5 \ln \text{Export}_{it} + \beta_6 \text{DummyJava} + \beta_7 \text{DummySumatera} + \beta_8 \text{DummyKalimantan} + \beta_9 \text{DummySulawesi} + \beta_{10} \text{DummyEastInd} + e_{it} \quad (2)$$

According to the second column of OLS, we can see after adding dummy variables of five main Islands in Indonesia, the impact of import on regional economic growth is not only positive, but also statistically significant. Therefore, dummy variables of five main islands are important to be controlled, since it makes the impact of import on regional economic growth change from statistically not significant to statistically significant.

The result of the second model shows that in average, 1% increase in import affects positively to regional economic growth about 2.6%. Compared to previous model, this result shows that including dummy variables of five main islands not only changes significance of the result, but also increases the value of coefficient of import from 1.5% to 2.6%.

The value of R^2 is 0.9123, which means higher than first model, and shows that this model is more appropriate to describe the impact of import on regional economic growth rate than the first model. However, it does not mean that there are no possibilities to find the better models, since this model does not control the effect of the crises years from 1998 to 1999. The crises can affect the correlation between import and regional economic growth rate.

The third column of OLS provides the result using OLS when the dummy variable of crises is controlled in the model. After controlling dummy variable of crises years, the model is as follows.

$$\ln \text{GRDP}_{it} = \beta_0 + \beta_1 \ln \text{Import}_{it} + \beta_2 \ln \text{Investment}_{it} + \beta_3 \ln \text{GovSpend}_{it} + \beta_4 \ln \text{Population}_{it} + \beta_5 \ln \text{Export}_{it} + \beta_6 \text{DummyJava} + \beta_7 \text{DummySumatera} + \beta_8 \text{DummyKalimantan} +$$

$$\beta_9 \text{ DummySulawesi} + \beta_{10} \text{ DummyEastInd} + \beta_{11} \text{ DummyCrisis} + e_{it} \quad (3)$$

After controlling the dummy variables of crises, the coefficient of import increases to 3.07% from 2.6% at the second model. Even though the level of significance is almost the same as the second model, the value of R^2 is higher than that at the second model. The value of R^2 at the third model is about 0.9146, which is slightly higher than the second model. It shows that controlling the dummy variable of crises can provide better model to represent the impact of import on regional economic growth rate.

The impact of import on regional economic growth can be different after one year, import comes to Indonesia. That is the reason that lag one of import should be controlled. The fourth column of OLS is the result of controlling lag one of import variable. The model representing the result of fourth column is as follows.

$$\begin{aligned} \ln \text{GRDP}_{it} = & \beta_0 + \beta_1 \ln \text{Import}_{it} + \beta_2 \ln \text{Import}_{it-1} \\ & + \beta_3 \ln \text{Investment}_{it} + \beta_4 \ln \text{GovSpend}_{it} \\ & + \beta_5 \ln \text{Population}_{it} + \beta_6 \ln \text{Export}_{it} + \beta_7 \\ & \text{DummyJava} + \beta_8 \text{ DummySumatera} + \beta_9 \\ & \text{DummyKalimantan} + \beta_{10} \text{ DummySulawesi} \\ & + \beta_{11} \text{ DummyEastInd} + \beta_{12} \text{ DummyCrisis} + \\ & e_{it} \end{aligned} \quad (4)$$

Table 1 shows that import contributes negatively and statistically significant to regional economic growth after one year import has come to Indonesia. One percent increase in import decreases regional economic growth rate about 2.6% and statistically significant at 10%. However, import contributes positively to regional economic growth at the same year when import comes to Indonesia. One percent increase of import boosts regional economic growth rate about 5.3% and statistically significant at 1%.

The value of R^2 of fourth model is 0.9165, which is higher than the third model. The coefficient of import in fourth model is also higher than third model. It means that controlling the first lag of import contributes positively to the model.

The study shows that using random effect, impact of import on regional economic growth is statistically strongly significant. One percent increase in import enhances regional economic growth rate about 4.6%. This result is in line with

the result of the study done by Kanta & Akbar Tavakoli.¹⁰ However, one year after import has come to Indonesia, import has negative effect on regional economic growth. One percent increase of import, after one year, coming to Indonesia decreases regional economic growth rate about 1.3%.

Fixed Effect column provides the result using Fixed Effect method to know the effect if unchanged fixed variable is not allowed to correlate with error term. The study shows that import has a positive impact on regional economic growth rate in Indonesia. One percent increase of import boosts in average regional economic growth rate about 2.6% regional economic growth rate and significant at 5% level. Using Fixed Effect method, one year after coming to Indonesia, import reduces regional economic growth. One percent increase in import reduces regional economic growth rate about 2.1%. The explanation of the result is that import has positive impact on regional economic growth, since import can fulfill the demand of local market. However, one year after import has come to Indonesia, the local producers have lose their market so that their production and expenditure are reduced. This situation leads to decrease regional economic growth.

To choose which method, Fixed Effect or Random Effect that should be taken, the Hausman test should be done and the result shows that it is better to use Fixed Effect rather than Random Effect with statistically strongly significant.

Control Variables and Regional Economic Growth Rate

Several variables are controlled to know the real impact of import on regional economic growth rate in Indonesia, and to reduce omitted variable bias. These variables consist of export, local government spending, population, investment, dummy crises, and dummy of five main islands in Indonesia.

According to the table of empirical result in Table 2, population is the most influential variable to regional economic growth. It can be seen from column 1 until 6, the coefficient of population is higher than the coefficient of other variables. In

Table 2. Empirical Result

DEPENDENT VARIABLE (lnGRDP)	Ordinary Least Square				Random Effect	Fixed Effect
	1	2	3	4	5	6
Import	.0157 (.0136)	.0260** (.0124)	.0307** (.0124)	.0538*** (.0159)	.0469**** (.0105)	.0267** (.0108)
Lag one import				-.0268* (.0149)	-.0131 (.0088)	-.0213** (.0087)
Investment	.0653**** (.0114)	.0372**** (.0106)	.0387**** (.0105)	.0395**** (.0109)	.0096 (.0068)	.0028 (.0066)
Local Govern- ment Spending	.1989**** (.0226)	.1332**** (.0214)	.1319**** (.0212)	.1298**** (.0215)	.0139 (.0138)	-.0013 (.0138)
Population	.5871**** (.0323)	.4125**** (.0367)	.4104**** (.0363)	.4200**** (.0381)	.5560**** (.0656)	.5086**** (.1118)
Export	.1510**** (.0160)	.1811**** (.0153)	.1754**** (.0153)	.1799**** (.0166)	.1192**** (.0119)	.1128**** (.0123)
Dummy Java		.7584**** (.0956)	.7454**** (.0946)	(omitted)	.9505**** (.1772)	(omitted)
Dummy Sumatera		.0851 (.0653)	.0801 (.0645)	-.6598**** (.0758)	.2854** (.1307)	(omitted)
Dummy Sulawesi		(omitted)	(omitted)	-.7418**** (.0993)	.0127 (.1501)	(omitted)
Dummy Kaliman- tan		.2108*** (.0708)	.2040*** (.0700)	-.5372**** (.0965)	.4519*** (.1500)	(omitted)
Dummy East Indonesia		-.0520 (.0711)	-.0606 (.0703)	-.7868**** (.0943)	(omitted)	(omitted)
Dummy Crises			-.1318 (.0452)	-.1449*** (.0457)	-.1566 (.0260)	(omitted)
Intercept	1.8408**** (.3310)	3.2879**** (.3383)	3.3802**** (.3358)	4.049**** (.4034)	4.694**** (.4913)	6.3135 (.8977)
Prob > F	0.0000	0.0000	0.0000	0.0000		0.0000
R ²	0.8818	0.9123	0.9146	0.9165		
Prob > chi2					0.0000	
Hausman test						0.0000

Source: the result of regression

Note:

**** significant level at 0%
 *** significant level at 1%
 ** significant level at 5%
 * significant level at 10%

addition, the significance of import coefficients is always strongly significant. Table 2 shows that population is aligned with regional economic growth. In other words, population has positive impact on regional economic growth. This result supports previous result of the study conducted by Johnson, who reveals that population is in line with economic growth in China.¹¹

Another variable that contributes greatly to regional economic growth is export. According to Table 2, the coefficient of export is always strongly significant using OLS, Random Effect and Fixed Effect.

The other control variables that affect the regional economic growth rate are investment

and local government spending. The interesting thing is that the coefficient of both variables are significant when OLS is used, but it is not significant when Random Effect and Fixed Effect are used. Using Fixed Effect, the coefficient of local government spending is negative, which means in average, the higher local government spending the lower regional economic growth. This evidence supports previous study done by Abu-Bader and Qarn which says that government expenditure represented by military spending burdens economic growth.¹²

The dummies of five main islands in Indonesia are included in the model to know the different regional economic growth rate among five main islands in Indonesia for period 1995–2008. The empirical study shows that in average, Java is the highest regional economic growth from 1995 to 2008, followed by Kalimantan, Sumatera, Sulawesi and East Indonesia, respectively.

Last but not least, dummy variable is “crises”. Using OLS and Random Effect, the result is significantly different. Using OLS with final model (column 4), the coefficient of crises dummy is significant. It means that import in crises years is different significantly from the years without crises. However, using Random Effect, the result is not significant.

However, the general growth model used in this study cannot omit the variable bias 100% since I acknowledge that there are some factors that affect regional economic growth. I can only minimize the omitted variable bias by using available data of control variables used in this model. I also try to minimize the omitted variable bias by using potentially unobserved time invariant variable, which is the distance between airport in each province and the nearest city, dummy variables among main islands in Indonesia, and dummy variables to differ the impact in crises years (1997–1998) and the years without crises.

CONCLUSION

Using different methods, OLS, Fixed Effect and Random Effect, import contributes negatively to regional economic growth one year after im-

port comes to Indonesia, and it is statistically significant when using OLS and Fixed Effect. According to Hausman test, the result of Fixed Effect is a more appropriate method than OLS and Random Effect. Hence, the result accepts null hypothesis that import contributes negatively to regional economic growth after one year import comes to Indonesia. It seems that human capital in each provinces determines the impact of import on local economic growth in the long run. Therefore, based on the result, the Government should consider about import policy, especially optimization of the local product development that can be originally developed in Indonesia.

In addition, based on the result using fixed effects method, all control variables have the same result as previously expected results. Export, population, local government spending and investment have positive impact on regional economic growth rate, but only export and population that have statistically significant impact. The study about the impact of these variables on economic growth is not the focus of this study, but the results show that these variables influence indirectly to the effect of import on regional economic growth, especially in Indonesia, and it is a good idea to control such variables.

Based on the result using regional dummies from 1995 to 2008, Java is the highest regional economic growth in Indonesia and East Indonesia is the lowest regional economic growth at the same period. This result supports the previous prediction and the real condition that Java island has the largest regional economic growth in Indonesia from 1995 to 2008.

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REFERENCES

- ¹Sjöholm, F. 1997. Exports, Imports and Productivity: Results from Indonesian Establishment Data. *The European Institute of Japanese Studies (EJIS)*. Working Paper No 33.
- ²Coe, D.T., Elhanan H., and Alexander W.H. 1997. North. South R&D Spillovers. *Economic Journal* 107.
- ³Pawlos, S. 2002. *The Relationship between Import and GDP Growth in Ethiopia: An Empirical Analysis*. Thesis. Addis Ababa University.
- ⁴Awokuse, O.T. 2006. Causality between Exports, Imports, and Economic Growth: Evidence from Transition Economies. *Economics Letters* 94: 389–395.
- ⁵Priede, M. 2012. Import Impact of Economic Growth on Regional Economies. *IPEDR* Vol.28.
- ⁶Herrerias and Orts. 2013. Capital Goods Imports and Long-Run Growth: Is the Chinese Experience Relevant to Developing Countries? *Journal of Policy Modeling*. JPO-6057.
- ⁷Herrerias and Orts. 2013. Imports and Growth in China. *Economic Modeling* 28: 2811–2819.
- ⁸Crespo, Martín, and Velázquez. 2002. International Technology Diffusion through Imports and Its Impact on Economic Growth. (*J Crespo, C Martin, FJ Velazquez - 2002 - alde.es*, diakses 08 Mei 2013).
- ⁹Berita Resmi Statistik. 2012. Badan Pusat Statistik. No. 77/12/Th. XV.
- ¹⁰Bader and Qarn. 2003. Government Expenditures, Military Spending and Economic Growth: Causality Evidence from Egypt, Israel, and Syria. *Journal of Policy Modeling* 25: 567–583.
- ¹¹Johnson. 1999. Population and Economic Development. *China Economic Review* 10: 1–16.
- ¹²Kanta and Akbar T. 2004. The Effect of Foreign Capital and Imports on Economic Growth: Further Evidence from Four Asian Countries (1970–1998). *Journal of Asian Economics* 15: 399–413.