

Government Expenditure as Determinants of Economic Growth and Income Inequality of Inter-Province of the Islands in Indonesia

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Abstract

Indonesia is an archipelago, consisting of 13.466 islands, and grouped into 34 provinces. Each province has a government expenditure and economic growth, thus causing variations of government expenditure and economic growth among provinces. This matter may rise the income inequality between provinces in the island, as measured by the coefficient of variation. This study aims to clarify the effect of variations in government expenditure to economic growth and the income inequality among provinces in Indonesia islands. The secondary data used came from Statistics Indonesia, for period 2007 - 2012 (6 years), with 36 observations. Pooled panel data is used to estimate the equation with a *common effect*, using *Path Analysis Recursive Model*. Variation in government expenditure acts as exogenous variables. Variation in economic growth is the endogenous variable as well as the mediating variable. Variations in government expenditure and economic growth are expressed by the coefficient of variation. Income inequality among the provinces that acts as the last endogenous variable, is shown by Williamson Index. The results showed that variation in government expenditure has very small and negative effect, but insignificant to variation in economic growth. The results also show that the variation of economic growth has small and negative effect, but insignificant to the income inequality. Furthermore, variation in government expenditure has a significant positive effect on the income inequality. This shows that the variation in government expenditure is a determinant of increasing income inequality among provinces in the island. The results of this study did not find any existence of indirect effect of variation in government expenditure through the variation of economic growth on the income inequality among provinces in the Indonesia islands. It is suggested to the government that variation of government expenditure among the provinces in the island to be reduced or minimized, so that the income inequality between provinces in the Indonesia islands are more convergent.

Keywords: Economic growth, Government expenditure, Income inequality

I. INTRODUCTION

Economic development is the effort to improve the welfare and prosperity of people. A country can be said successful in economic development if it achieves high economic growth (Jane-Catrice and Meda, 2013). The paradigm of economic development focused in economic growth has been widely applied in developing countries. Since the beginning of economic development until today, Indonesia remains launching economic growth as a development priority, such as in the Reformation Era with *Triple Track (pro-growth, pro-job, pro-poor)*.

According to the Institute for Development of Economics and Finance (INDEF), Indonesia's economic performance is quite good, and was ranked second in Asia in 2012 (INDEF, 2012). However, economic growth reached only at a national level. This shows that the economic development strategy has been successful in increasing the growth rate of the national economy in 2007 amounted to 5.71% and in 2012 reached 6.42%. At the same time, economic growth in the other regions is below the national level. During 2007-2012, the province with economic growth below the national level, for example the province on the island of Sumatra, Kalimantan, Bali and Nusa Tenggara. Since 2007 - 2012, based on Williamson index to measure income inequality among the provinces in the island showed that there is income inequality. In 2007, Williamson index was 0,52 and in 2012 increased to 0.66 (Source: BPS, 2011 and BPS, 2013). The achievement of economic growth still leaves a problem because it cannot provide significant benefits to other regions. In fact what happens is the inequality between the economic growth of the province in the islands, which in turn raises the income inequality. Thus, it can be said that the implemented economic development strategy has been able to achieve high economic growth, but has not been able to achieve equitable economic growth relative to each province. In the National Long-Term Development Plan (RPJPN) 2005-2025, it has been declared that the national development objective is to achieve high average income and equitable economic development among regions, as well as reduce disparities among regions within the framework of the Unitary State of the Republic of Indonesia (NKRI). RPJPN target envisioned in the year 2005 - 2025 is only able to achieve the target of increasing national economic growth, but has not been able to reduce the income inequality among regions. Although the income inequality among regions is a phenomenon that cannot be avoided, but efforts to reduce the income inequality among regions still need to be pursued by the government (Karunaratne, 2007). Income inequality can negatively impact the internal and external conflicts, vertical and horizontal conflicts, rising crime, and potential to cause disintegration of the nation (Kim,

2006; Lessman, 2013; Dabalen, *et al.*, 2012; Ostby, 2004; and Cramer, 2003). Therefore, every country wants to achieve equitable distribution of incomes among individuals, communities and regions, as one of many indicators of the successful economic development.

In Indonesia, government roles in the economy can be seen through the State Budget. In macro-economic perspective, government expenditure is one component of aggregate demand or expenditure (Blanchard and Johnson, 2013). It means that government expenditure will affect economic growth. Every province in Indonesia has government expenditure respectively. Consequently, there will be a difference or variation in provincial government expenditure, mainly due to the potential areas that differ from one province to another province. Variation of government expenditure among the provinces in the Indonesia islands tends to decrease. Variation of government expenditure among the provinces in the Indonesia islands in 2007 was 0.69 and in 2012 amounted to 0.60 (BPS, 2011 and BPS, 2013). Government expenditure affects the economic growth (Alexiou, 2009) and the income inequality among provinces (Gries and Redlin, 2008). In the context of regional economic, the national economy is divided into an economy that is composed of several regions or provinces, in which the government expenditure is different in quantity. So that size of regional income (GDP) will be different, causing the income inequality among provinces.

The Unitary State of the Republic of Indonesia is an archipelago state. Indonesia is a state whose territory consists of 13,466 islands that can be grouped into six major islands, namely: Sumatra, Java, Bali and Nusa Tenggara, Sulawesi, Kalimantan, Maluku and Papua. In each of the island, there are the provinces, totaling 34 provinces. From the standpoint of regional economic, each province has different and thus potentially lead to differences in income among regions, as measured by Gross Domestic Product (GDP). Differences in government expenditure will cause differences in economic growth and inequality income among provinces (Frieden, 2001).

Based on the previous description, it is necessary to study the direct and indirect effect of differences in government expenditure among provinces to the difference in economic growth and the income inequality among provinces in the island in Indonesia. High economic growth is necessary to achieve, but income distribution must also occur. This suggests that the increasing of economic growth should be in line with the decrease in the income inequality between individuals, groups, communities and regions. Economic growth is one of success indicator in the regional economic development. In the other hand, with development and high economic growth, it is expected that income inequality among regions may decrease (convergent).

The differences in economic growth and the income inequality among regions should be related to all aspects that contribute to the differences in economic growth and the income inequality among regions. In principle, each region has different characteristics. It can be seen in terms of geography, natural resources, quantity and quality of human resources, capital resources, availability of infrastructure, *et cetera*. (Adisasmita, 2013). Therefore, explanation of the income inequality among regions should be seen from the elements that causes the differences of the economic growth among regions, namely economic and non-economic factors (Frieden, 2001).

This study was conducted to elucidate the direct and indirect effect of differences in government expenditure to differences in economic growth and the income inequality among provinces in the Indonesia islands. Differences in government expenditure and economic growth are expressed as the coefficient of variation. This is done so that this study does not result in invalid and confusing conclusions. All determinants of income inequality also illustrate the differences or variations among provinces in the island in Indonesia. There are many determinants of the income inequality among regions. This study only examined the effect of variations in government expenditure to variations in economic growth and the regional income inequality among the provinces in the island in Indonesia.

II. LITERATURE REVIEW

2.1. The Effect of Government Expenditure on Economic Growth

In the context of macro-economic theory, expenditure approach is one of three approaches to determine the amount of Gross Domestic Product (GDP) at the national level and the Gross Regional Domestic Product (GRDP) at the provincial level in Indonesia. In determining the amount of the GDP, the government expenditure is one of the four components of aggregate expenditure. Government expenditure indicates the government role in the economy in areas that can boost the economy, especially those that lead to the creation of social overhead (public goods), such as transportation, education, health and so forth (McConnell and Brue, 2002). This will improve the national and local productivity (including the provinces), and further it will increase GDP or GRDP. The increase in the GDP can also be interpreted as an increase in economic growth. There are many factors that influence economic growth, those are human resources, natural resources, capital (including social overhead capital), change in technology and innovation (Samuelson and Nordhaus, 2010).

Lotto (2011) conducted a study to determine the effect of government expenditure to economic growth in Nigeria during the period of 1980 - 2008, which focused on sectoral government expenditure. Government expenditure is in the field of security, health, education, transport and communications, and agriculture. The analytical tool used is a linear regression analysis (Ordinary Least Square). The study results showed that in the

short term, government expenditure on health has positive and significant effect on economic growth. Expenditure on education has a negative but insignificant effect on economic growth. Expenditure on agriculture has a significant negative effect on the economic growth. Expenditure on national security, transport and communications has a positive but insignificant effect on economic growth.

Saad and Kalakech (2009) conducted a study to determine the effect of government sectoral expenditure towards the economic growth of Lebanon. There are four sectors that affect economic growth, those are government expenditure in defense sector, education, health, and agriculture. The data is *time series* during 1962-2007. The analytical tool used is a co-integration multivariate analysis. The finding shows that the government expenditure for the defense sector, education, health and agriculture have provided benefits to economic growth. In long-term, the effect of government expenditure on education to economic growth is positive and significant. Government expenditure for the defense sector negatively affects economic growth. Government expenditure for health and agriculture had no significant effect. Government expenditure for education sector is a key factor to improve economic growth in the long term. Using dummy variable in times of war and peace, there is positive and significant impact that shows that peaceful conditions are crucial factors to achieve high economic growth rates.

Dandan (2011) conducted a study to determine the effect of government expenditure on economic growth in Jordan. The data used is secondary data during 1990 - 2006. Analysis tool used is regression. Dependent variable is GDP. The independent variable is the routine expenditures, capital expenditures, and transfer of payment and interest charges. The study shows that the government expenditure has positive effect to GDP. Regression coefficient of each independent variable is positive. It means that the increasing in Jordan government expenditure will boost economic growth. This conclusion is consistent with the theory of Keynes. Furthermore, Dandan proposes the importance of human resource development through *transfer of payment*.

The studies of Loto (2011), Saad and Kalakech (2009), and Dandan (2011) are determining the effect of government expenditure on economic growth according to the education sector, defense, health and agriculture, resulting in different conclusions. The former studies differ from this research, in terms of variables and analysis tools that are used. However, the three previous studies can be used as a reference to formulate the direction of the effect of government expenditure on economic growth. Government expenditure will affect the economic growth. Because of government expenditure vary from a region to another one, there will be differences in economic growth.

2.2. The Effect of Economic Growth on Income Inequality

Economic growth can be measured by output per capita or GDP and GRDP in provinces, districts and cities. Economic growth occurs if the GDP or the GRDP per capita is higher compared with the previous year (Samuelson and Nordhaus, 2010). Economic growth of a country or region is affected by the natural resources, human resources, capital resources, innovation technology. In the context of macro economy, economic growth can be sourced from the four components in aggregates expenditure, namely the consumption of the household sector, private sector investment, government expenditure and foreign sector (exports and imports).

The determinants of regional economic growth will lead to the differences of economic growth among regions (Hilhorst, 1990). As stated by Sjafrizal (2008) that economic growth varies considerably from one region to another, because economic growth is strongly influenced by the economic potential possessed by each region. Therefore, economic growth among regions will differ between one region to another. Adisasmita (2013) suggested that each region has different characteristics, for example: (1) geographic, (2) the quality and capacity of natural resources, (3) the quality and quantity of human resources, (4) the accumulation of capital and (5) the technological advances. The conditions at each different region are because of its production factor, so there is a fast growing area and also many slow growing area. This causes differences in economic growth that will cause income inequality or disparity among regions.

Gurgul and Lach (2011) conducted a study to determine the causal relationship (mutual/ non recursive or reciprocal) distribution of income and economic growth in Poland. The data used are annual data from 2000-2009. Research result found that the economic growth affect the income inequality among provinces in 2000-2009. The influence of economic growth on the income inequality is causally found only in poor region. The income inequality among provinces in Poland is still going on. The relationship between economic growth and the income inequality is a two-way or reciprocal (in the sense of Granger causality) and positive. If the economic growth increases, the income inequality will increase as well. Conversely, if the income inequality increases, economic growth would increase. The main source of economic growth in Poland is located in an urban area as a place of economic activity. Rural areas are underdeveloped with high unemployment rates. Therefore, GDP and income in rural areas was significantly lower than in urban areas. It also occurs in countries in transition in Central Europe.

Sultan and Sodik (2010) conducted a study to determine the effect of the growth of foreign direct investment (FDI), export growth and the growth of GRDP (economic growth) on regional income inequality in Indonesia, namely the Special Region of Yogyakarta (DIY) and Central Java in 2000-2004. DIY consists of 5 districts and 35 districts of Central Java. The data used is the *cross section - time series*, those are GDP growth,

population, growth in exports, and foreign investment growth in each region. The model used is a regression model with panel data. According to Hausman test, the selected model is *random effect*. The results showed that the growth of foreign investments have a significant negative effect on the regional income inequality in DIY and Central Java. GRDP growth has a negative significant effect on regional income inequality in DIY and Central Java. It can be concluded that the increase in foreign investment, export and economic growth will reduce the income inequality among regions.

Janikas and Rey (2008) analyzed the relationship between economic growth and the inequality among countries in the United States in 1969-2000. The analytical tool used is a model of *Ordinary Least Square* (OLS). The analysis results showed that the income inequality is the partial functions of economic growth, but it is not reciprocal (*not vice-versa*) in a single equation analysis. Countries with higher income per capita in the initial period have greater income inequality. Economic growth also boosts the income inequality within the countries (*intra-state*).

Results of research conducted by Janikas and Rey (2008), Gurgul and Lach (2011) concluded that economic growth affects the increasing of income inequality among regions within a country. The cause of disparities in Poland is the concentration of economic activities that differ between rural and urban areas. It is in contrast to the research results of Sultan and Sodik (2010) who found that the economic growth negatively affect the income inequality. The difference of previous studies may be caused by different units of analysis or different of region conditions (characteristics) and different time periods. Economic growth can influence positively or negatively on the income inequality among regions.

2.3. The Effect of Government Expenditure on Income Inequality

In this study, the term of the income inequality means the different of income among provincial administrative regions. Statistically, this inequality is the deviation of the averaged data, which is done by measuring the dispersion. The dispersion measurement is the coefficient of variation. In statistical inferences, the coefficient of variation is the ratio between the standard deviation and the arithmetic mean. All determinants of the income inequality among provinces in the island are the coefficient of variation. The coefficient of variation shows the differences in government expenditure and economic growth among provinces in the island. To measure the magnitude of the inequality of income distribution among regions within a territory, then *weighted coefficient of variation* of Williamson is used. *Weighted coefficient of variation* starts from 0 (shows an absolute equitable distribution of income) and maximum 1 (shows the absolute income inequality).

Potential income inequality among regions will always exist because of the different factors, including the *endowment* factor that differs among regions. The greater the difference in income per capita among regions means that the income inequality among regions is widened (divergent). Many factors determine the income inequality among regions, namely the concentration of economic activities among regions, the mobility of goods (trade), production factors among regions, the allocation of public and private investment across the region. The concentration of economic activities among different regions will lead to greater inequality among regions (Sjafrizal, 2008). The concentration of economic activity across different regions shows difference in growth among regions as well. Allocation of government investment is government expenditure. Therefore, the differences in government expenditure and economic growth will cause the income inequality among regions.

Mukaramah, *et al.* (2011) conducted research on the effect of public expenditure on the income inequality between rural and urban areas in Malaysia. The results showed that the government's public expenditure on education could increase the income inequality among ethnic and income disparities between urban and rural areas. Government expenditure on agriculture and rural development has a positive effect on the income inequality among ethnic groups and has an influence on the income disparity between urban and rural areas.

Calderon and Servien (2004) conducted a study to determine the effect of government expenditure on infrastructure to economic growth and income distribution. Data panel are used from 121 countries over the years of 1960-2000. This study uses regression equation. The study results showed that in terms of quantity, infrastructure had a significant positive impact on economic growth in the long term. In quality, infrastructure had a weak effect on economic growth. The conclusion of this study is infrastructure had to boost economic growth and lower income inequality. This implies that the development of infrastructure through government expenditure is needed to boost economic growth and reduce the income inequality.

Martines-Vazquez, *et al.* (2012) conducted a study to determine the effect of taxes and public expenditure on the income inequality. This study uses panel data of 150 developed countries, developing countries and countries in transition, during 1970-2009, with analytical tools OLS and GMM (*Generalized Method of Moment*). The dependent variable is the gini coefficient. Independent variables are taxes and public expenditure. Public expenditures are social protection, education, health and housing. The analysis finds that taxes and public expenditure significantly affect the gini coefficient (income inequality). Progressive tax (on income) positively affects income distribution and contributes to the decrease of income inequality. The corporate income tax has positive effect on income distribution, but the effect is decreased along with the increasing of globalization and

trade openness (international trade). Share of public expenditure in GDP for social welfare, education and housing has positive effect on income distribution. In terms of public expenditure, the increasing of expenditure on social protection causes the decreasing of the gini coefficient 0.22. The increase in expenditures for public health caused a decline in the income inequality. The decline in public expenditure on education and housing led to an increase in the income inequality.

All of these studies indicate that the effect of government expenditure on the income inequality can vary among countries. Effect of government expenditure on the income inequality can be positive or negative, depending on the type of government expenditure. The previous studies are different from this research, in term of analytical tools and variables used, as well as indicators of income inequality used. In this study, government expenditure is not broken down by sector, but it is the sum of direct and indirect expenditure, so the effect of government expenditure towards sectorial income inequality among regions can be seen.

This study uses a recursive models to estimate *Common Effect* and *Multiple Equation Analysis* to determine the effect of the recursive or one directions (asymmetric) of exogenous variables on the endogenous variables in the research model. This study uses analysis unit in the provincial administrative region of the island to determine the influence of exogenous variables on the endogenous variables in the empirical research model.

III. DATA AND RESEARCH METHOD

3.1. Data

This study uses secondary data, *time-series* and *cross section*, or *panel pooled data*. Time series data are from 2007- 2012, consist of government expenditure, GRDP, economic growth and the number of residents in all provinces in Indonesia. Cross section data are all provinces in Indonesia, as many as 33 provinces, excluding Kalimantan Utara because the province is newly formed and separated from East Kalimantan on 25 October 2012, so that the necessary data are not available yet. Total observation in this research is 36. All data used comes from the Gross Regional Domestic Product of Provinces in Indonesia by Expenditure, published in 2011 and 2013 by the Central Bureau of Statistic of Indonesia.

3.2. Estimation Method

This study uses a recursive model to explain the direct effect, indirect effects and total effect. Quantitative method and analytical tools used is Path Analysis using Amos (Analysis of Moment Structure) version 22. This study uses a simultaneous equations model, with two structural equations. All structural equations are estimated by the common effect of estimation method. The equations are:

$$Y_1 = F(X_1, \varepsilon_1) \quad (1)$$

$$Y_2 = F(X_1, Y_1, \varepsilon_2) \quad (2)$$

Endogenous variables:

Y_1 = Variations of economic growth among provinces in the island

Y_2 = The income inequality among provinces in the island

Exogenous variables:

X_1 = Variations of government expenditure among provinces in the island

ε_1 = Error term for Y_1 in equation (1)

ε_2 = Error term for Y_2 in equation (2)

Path coefficient used to explain the influence of exogenous variables on the endogenous variables in the model is *standardized regression weight* or *standardized coefficient beta*.

To show the direct influence between variables, then the equations (1) and (2) are explained, as follows:

1. The direct effect of variations in government expenditure to variations in economic growth among provinces in the island:

$$Y_1 = \alpha_1 X_1 + \varepsilon_1 \quad (1a)$$

in which:

α_1 = Direct effect of X_1 on Y_1

ε_1 = Error term for Y_1

2. The direct effect of variations in government expenditure and economic growth on income inequality among provinces in the island:

$$Y_2 = \beta_1 X_1 + \beta_2 Y_1 + \varepsilon_2 \quad (2a)$$

in which:

β_1 = Direct effect of X_1 on Y_2

β_2 = Direct effect of Y_1 on Y_2

ε_2 = Error term for Y_2

The direct and indirect effects between variables can be seen in the reduced form equation.

$$Y_1 = \alpha_1 X_1 + \varepsilon_1 \quad (1b)$$

$$-\beta_2 Y_1 + Y_2 = \beta_1 X_1 + \varepsilon_2 \quad (2b)$$

The equations after the reduced form are as follows:

1. The direct effect of variations in government expenditure to variations in economic growth among provinces in the island:

$$Y_1 = \alpha_1 X_1 + \varepsilon_1 \quad (1c)$$

in which:

α_1 = Direct effect of X_1 on Y_1

ε_1 = Error term for Y_1 in equation (1c)

2. The direct and indirect effects of variations in government expenditure and economic growth on income inequality among provinces in the island.

$$Y_2 = (\beta_1 + \alpha_1 \beta_2) X_1 + (\varepsilon_2 + \beta_2 \varepsilon_1) \quad (2c)$$

in which:

β_1 = Direct effect of X_1 to Y_2

$\alpha_1 \beta_2$ = The indirect effect of X_1 to Y_2 through Y_1

$(\beta_1 + \alpha_1 \beta_2)$ = Total Effect X_1 to Y_2

β_2 = Direct effect Y_1 to Y_2

$(\varepsilon_2 + \beta_2 \varepsilon_1)$ = Error term for Y_2 in equation (2c)

Direct and indirect relationships between variables can be seen on the path diagram in figure 3.1.

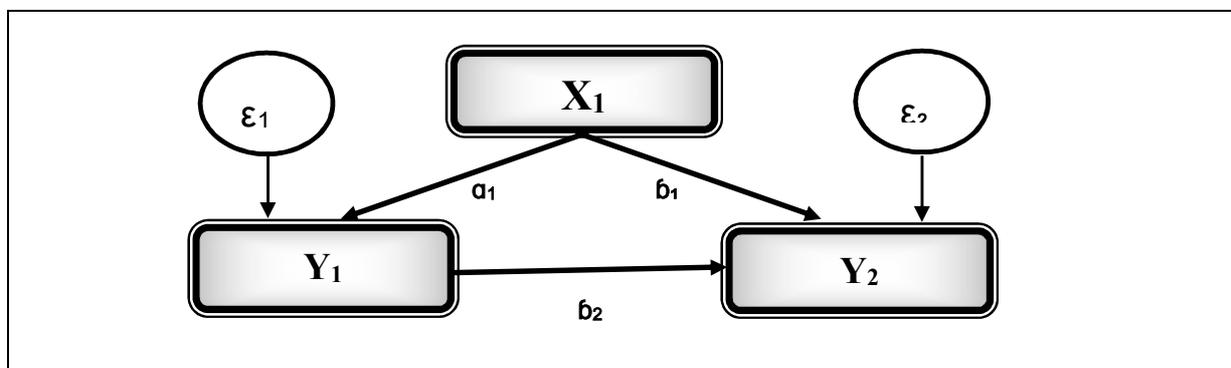


Figure 3.1. Diagram Empirical Research Model Line

Where:

X_1 = Variations of government expenditure among provinces in the island

Y_1 = Variations of economic growth among provinces in the island

Y_2 = Income inequality among provinces in the island

3.3. The Operational Definition and Measurement of Variables

1. Government expenditure is the amount of expenditure by the government that has been realized in Rupiah unit. The difference in government expenditure among the provinces in the island is a variation or dispersion of government expenditure among the provinces in the island, indicated by the coefficient of variation, in the form of a ratio.

$$CVX_{lit} = \frac{\sqrt{\sum_{j=1}^n (X_{1jit} - \bar{X}_{1it})^2}}{ni} / \bar{X}_{1it}$$

in which:

CVX_{lit} = Variation coefficient of provincial government expenditure in the island i in year t

X_{1jit} = Government expenditure of the province j in the island i in year t

\bar{X}_{1it} = Average expenditure of the provincial government in the island i in year t

ni = Number of provinces in the island i

2. Economic growth is the change of Gross Regional Domestic Product from year to year according to constant prices. The difference in economic growth is a variation or dispersion of economic growth among provinces in the island, measured by the coefficient of variation in the form of a ratio. The coefficient of variation is:

$$CVY_{lit} = \frac{\sqrt{\sum_{j=1}^n (Y_{1jit} - \bar{Y}_{1it})^2}}{ni} / \bar{Y}_{1it}$$

in which:

CVY_{1it} = Variation coefficient of provincial economic growth in the island i in year t

Y_{1jit} = Economic growth of the province j in the island i in year t

\bar{Y}_{1it} = Average growth of the provincial economy in the island i in year t

n_i = Number of provinces in the island i

3. The income inequality is the difference in per capita income among provinces in the island indicated by the Williamson Index in the form of a ratio.

$$CVY_{2it} = \frac{\sqrt{\sum_{j=1}^n p_{jii} (Y_{2jit} - \bar{Y}_{2it})^2}}{\bar{Y}_{2it}}$$

in which:

CVY_{2it} = Williamson Index or the income inequality among provinces in the island i on year t

p_{jit} = The population of province j in the island i in year t

Y_{2jit} = The GRDP per capita of province j in the island i in year t

\bar{Y}_{2it} = The average GRDP per capita of province j in the island i in year t

IV. ANALYSIS RESULT

This study aims to explain the direct effect of variation in government expenditure (X₁) on economic growth (Y₁) and the income inequality (Y₂) among the provinces in the island. The study also aims to explain the indirect effect of variations in government expenditure to the income inequality through variations in economic growth among provinces in the island in Indonesia.

The estimation results of the model parameter (Standardize Regression Weight) are presented in Table 4.1.

Table 4.1. Results Summary of Model Parameter

Influence	Coefficient	P	R ²
Y ₁ ← X ₁	-0.097	0.565	0.009
Y ₂ ← X ₁	0.454	0,003*	0.206
Y ₂ ← Y ₁	-0.001	0.997	

Remarks: * significance level α = 5%

Assessment normality shows that the critical ratio = 0.067 < 1.645 at significant level of 19%, this shows that the multivariate normal distribution of data and models built capable of producing a unique parameter estimation.

Based on the Table 4.1, we can make an equation (direct effect):

$$Y_1 = -0.097 X_1 \tag{1d}$$

Where R² = 0.009, meaning 99.1% change in Y₁ is determined by other variables that are not included in the model.

The path coefficients $\epsilon_1 \sqrt{1 - 0.009} = 0.995$.

$$Y_2 = 0.454 X_1 - 0.001 Y_1 \tag{2d}$$

Where R² = 0.206, meaning 20.6% change in Y₂ is determined by the variable X₁ and Y₁, while 79.4% is determined by other variables that are not included in the model. The path coefficients $\epsilon_2 = \sqrt{1 - 0.206} = 0.891$.

Based on Table 4.1, the path analyses diagram is as follows:

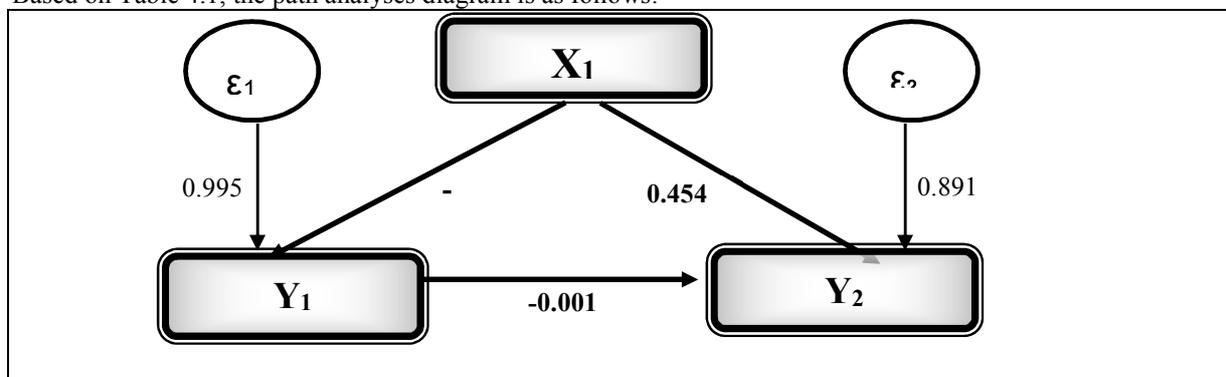


Figure 4.1. Path Diagram

From figure 4.1, it can be found that:

- 1) The indirect effect (ID) X₁ to Y₂ : ID = (-0.097) (-0.001) = 0.00097
 2) The total effect (TE) X₁ to Y₂ : TE = (0.454) + (0.00097) = 0.454097

V. DISCUSSION

5.1. The Effect of Government Expenditure on Economic Growth

The research results shows that variation in government expenditure negatively affect the variation in economic growth among provinces in the island in Indonesia, but insignificant. If the variation in government expenditure increases, the variation of economic growth among the province will decline insignificantly. This condition can be caused by many other variables that also affect the economic growth, but it is not included in this research model. $R^2 = 0.9\%$ (low), means that 99.1% variation of the economic growth among provinces in the island is influenced by other variables outside the model. Indeed, inter-regional variations in economic growth caused by many factors, for example capital accumulation, technological progress, internal and external conflicts of different regions (Blanchard and Johnson, 2013).

The results are consistent with Awaworyi, *et al.* (2015) who found that the government expenditure has negative and insignificant effect on economic growth in developing countries. However, these results do not concur with Dandan (2011), Akai and Sakata (2002), and Herath (2010) which show that government expenditure has positive influence on economic growth. The difference in government policy, including government expenditure among regions, are the factors that influence the difference in economic growth among regions (Barro, 1999). This means that the variation in government expenditure among provinces in the island will affect directly on variations in economic growth among provinces in the island.

It can be said that there is no consistent facts showing that the government expenditure significantly and positively affect the economic growth (Hsich and Lai, 1994; and Ghali, 1997). Likewise the influence of variation in government expenditure to variation in economic growth across the region. It may occur because of the difference or variation of the sources of economic growth, not only in the government expenditure (Mankiw, 2009)

5.2. The Effect of Economic Growth on Income Inequality

The research results showed that variation in economic growth has negative and insignificant effect on the income inequality among provinces in the island in Indonesia. If variation in the economic growth increases, the income inequality among provinces will decline, but the effect is insignificant. This is consistent with Eric (2010) and Kaasa (2003) who showed that economic growth lowers the income inequality. The result of this study conflicts with Jibene and Ghazi (2013) who showed that economic growth has positive influence on the income inequality in 9 countries of MENA (Middle East and North Africa Region). High concentration of economic activity in a region also showed increased economic growth and lead to differences income among regions, causing the income inequality among provinces in the island (Heshmati, 2004).

The effect of economic growth on the income inequality is still ambiguous, depending on its characteristics and measurement method of the income inequality among regions. The income inequality is also influenced by government policies, geography, religion, and human capital that is diverse among regions (Romer, 2012). Therefore, the effect of variation in economic growth on the income inequality among regions will vary from one country to another, or among regions within a country.

5.3. The Effects of Government Expenditure on Income Inequality

The research results showed that variation in government expenditure has positive and significant effect on income inequality among provinces in the island in Indonesia. If variation in government expenditure increases, the income inequality among provinces in the island will also rise. These results concur with Song (2013), who expressed that government expenditure contributed to the increasing of regional income inequality in China in 1978-2007. The incomes inequality among the provinces in China is due to government policies that are biased to a certain region. This is led to the distribution of government expenditure that is unequally distributed among the provinces, causing the income inequality among the provinces in China (Zhang and Zou, 2012). Samanta and Cerf (2009) also stated that government expenditure which is distributed properly can reduce the income inequality.

The results of this study are not consistent with Ostergaard (2013) who found that government expenditure affect the decrease in the income inequality in Sub Sahara countries. According to Claus, *et al.* (2014), if government expenditure seen by sector, then public expenditure on health and education can lower the income inequality in Asian countries. Furthermore, Park and Shin (2015) stated that government expenditure on education can help reduce the income inequality. Ospina (2010) showed that public expenditure on education and health has influence on decreasing the income inequality. Doerrenberg and Peichl (2014) showed that government expenditure can reduce the income inequality.

It can be concluded that government expenditure could decrease the income inequality among regions, if public expenditure is allocated to regions with low income. Regions with low incomes may be caused by the low quality of human resources in terms of education and health. Or it may also be caused lacking of government expenditure on infrastructure and public services, compared to other regions. Many factors are causing the income inequality among regions, such as the government policy differences among regions, especially government expenditure is biased to a certain area. The role of government, which is seen through expenditure (fiscal policy),

is an essential instrument to influence the inequality income, but not the only factor affecting the income inequality among regions (Crudu, 2015).

5.4. Indirect Effect and Total Effect

The research result showed that variation in provincial government expenditure in the island does not significantly influence the variation of economic growth among provinces in the Indonesia islands. The variation in economic growth does not significantly affect the income inequality among provinces in the island in Indonesia. It shows that the indirect effect of variation in government expenditure to the income inequality among provinces is insignificant. The variation of the income inequality among provinces in the island is not caused by variation in government expenditure through a variety of economic growth among provinces in the island.

Total effect of variation in government expenditure is equal to the direct effect of variation in government expenditure on income inequality through variation in economic growth among provinces in the island in Indonesia. It shows that the income inequality among provinces in the island only due to the direct effect of the variation in government expenditure among provinces in the Indonesia islands.

VI. CONCLUSION

This research results can be summarized as follows:

1. Variation of provincial government expenditure in the island has a very small and insignificant effect on variations in economic growth among provinces in the island. It means that the variation of economic growth is more influenced by other variables that are not included in the model.
2. Variation in economic growth among provinces in the island has a very small and insignificant effect on the income inequality among provinces in the island. It means that the income inequality is more influenced by other variables that are not included in the model.
3. Variation of government expenditure among the provinces in the island has a positive and significant effect to the income inequality among provinces in the island. It means that the increasing of government expenditure is one of several determinants of the increasing of income inequality among provinces in the island in Indonesia.
4. Variation in government expenditure among the provinces in the island does not provide indirect effect on the incomes inequality among the provinces in the island through the variation of economic growth.

VII. SUGGESTION

From these research findings, it is proposed the following suggestions:

1. To reduce the variation in economic growth among provinces in the island, there is no need to reduce the variation in government expenditure, but the other factors that drive economic growth, such as equalization of investment and technology.
2. To reduce the income inequality among provinces, we need to consider other factors such as government policies and equitable distribution of human resources among the provinces, and not by reducing variation in economic growth among provinces in the island.
3. Variations in provincial government expenditure in the island are an important factor that can increase the income inequality. Therefore, to lower or reduce the income inequality among provinces, we need equal distribution of government expenditure among the provinces, such as for education and health, infrastructure and public services.
4. Variation in government expenditure does not provide indirect effect on the income inequality among provinces in the island, through the variation of economic growth in Indonesia. Therefore, the equalization of government expenditure is needed according to regional characteristics, such as geography, population and natural resources. Handling the income inequality among regions should be done with a holistic approach.

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