Global Scientific JOURNALS

GSJ: Volume 8, Issue 11, November 2020, Online: ISSN 2320-9186
www.globalscientificjournal.com

Intertemporal Analysis of Indonesia's Regional Inequality

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ABSTRACT : ***Intertemporal Analysis of Indonesia's Regional Inequality***

This study aims to see the direct and indirect effects of regional income, infrastructure and investment on regional disparities in 26 provinces in Indonesia through economic growth before and after regional autonomy. The type of data analyzed in this study is secondary data in the form of panel data (pooled data) that combines cross-section data and time series data. Analysis of data using regression analysis method (regression analysis). The results showed that regional income has a direct positive effect on regional inequality in 26 provinces in Indonesia before and after regional autonomy and indirectly does not affect through economic growth before and after regional autonomy. Infrastructure has a direct positive effect on regional disparities in 26 provinces in Indonesia before and after regional autonomy and indirectly does not affect it through economic growth before and after regional autonomy. Investment has a direct positive effect on regional inequality in the 26 provinces in Indonesia before and after regional autonomy and indirectly does not affect it through economic growth before and after regional autonomy.

Keywords: Regional income, infrastructure, investment, economic growth, regional inequality

INTRODUCTION

Developed countries are a dream for developing countries in the world. Every developing country certainly has its own characteristics and problems. Infrastructure

development in developing countries is usually only centered in big cities. On the other hand, in other areas what appears to be happening is only getting backward. One of the main challenges in Indonesia's current development is overcoming the problem of inequality that does not only occur in the individual or household dimension but also in the region. The problem of inequality has become a major problem in recent years because in several countries that have experienced relatively high economic growth but inequality between regions is widening.

The phenomenon behind regional growth, such as inequality between regions, is a fundamental problem of development. Regional inequality according to Forbes (1986) concerns economic inequality and social inequality. Economic inequality refers more to the uneven distribution of regional per capita income, while social inequality refers more to the consequences of economic inequality. The difference in development and progress between regions, which means that the ability to grow is different, is analogous to the gap so that what arises is inequality between regions.

Regional autonomy is basically an effort to achieve one of the goals of the state, namely increasing the welfare of the community through equitable implementation of development. so that regional autonomy is the right, authority and obligation of a region to regulate and manage its own household economy in accordance with statutory regulation number 22 of 1999. From this enforcement, the purpose of granting regional autonomy is to enable the region concerned to regulate and manage its own household to increasing effectiveness and yields for the administration of government (Kuncoro, 2006).

Behind hope that Oton omi Regions can promote economic growth, Autonomy also potentially increase regional income disparities if not managed properly (Prud'homme, 1995; Lessmann, 2006; Shah, 2006). This concern arises because in a decentralized system, local governments manage their respective budgets by considering the welfare of their citizens without being obliged to pay attention to residents outside their territory . Inequality of development or regions in Indonesia can be seen based on indicators or development inequality indexes, one of which is the Williamson index.

LITERATURE REVIEW

Kuncoro (2006), inequality refers to a standard of living that is relative to all communities, due to disparities between regions, namely the existence of differences in early

endowment factors. This difference makes the level of development in various regions and regions different, causing a gap or gap in welfare in these areas (Sukirno, 2010).

Transfer of capital will increase regional inequality, increasing demand to developed regions will stimulate investment which in turn increases income which leads to a second round of investment and so on. A better scope of investment in development centers can create scarcity of capital in underdeveloped areas (Jhingan, 2010) . A number of theories and models have been developed to explain inequality in the economy. The theory that explains the phenomenon of inequality is Kuznet's theory (1955) with the inverted U hypothesis. This theory explains that income inequality between regions increases at the beginning of the economic development phase and then decreases with the economic development process . Growth in the early stages of development tended to be focused on the modern sector of the economy, which at that time was small in absorption of labor. Inequality is widening as the gap between modern and traditional sectors increases. This increase occurred because the development in the modern sector was faster than the traditional sector. However, in the long run, when economic conditions reach maturity levels and assuming the free market mechanism and the mobility of all production factors between countries without the slightest hindrance or distortion, the difference in the rate of output growth between countries will tend to shrink along with the level of income per capita. and the average growth rate that is getting higher in each country, ultimately eliminating the gap.

Myrdal (1957), the occurrence of regional inequality was due to the large effect of the backwash effect compared to the spread effect in underdeveloped countries. Transfer of capital will increase regional inequality, increasing demand to developed regions will stimulate investment which in turn increases income which leads to a second round of investment and so on. A better scope of investment in development centers can create scarcity of capital in underdeveloped areas (Jhingan, 2010).

Todaro and Smith (2006), there are three main factors or components in economic growth, namely: (1) Capital accumulation, which includes all forms or types of new investment invested in land, physical equipment, and capital or human resources, (2)) Population growth which in the following years will increase the number of workforce, and (3) technological advancement.

Mankiw (2007) states that the Solow growth model is a pillar that greatly contributes to the neoclassical growth theory. This model allows dynamic analysis of economic growth, can explain why national income is growing and why some economies are growing faster than

others and explain changes in the economy over time. Economically, the Solow growth model is designed to show how growth in the capital stock, growth in the labor force, and technological advances can interact in the economy, as well as how they affect a country's overall output of goods and services.

METHODS

Types and sources of data

The type of data used in this study is secondary data, namely Regional Income, Infrastructure, Investment, Economic Growth and Regional Inequality in two upstream six provinces in Indonesia from 1984 to 2017 (before and after regional autonomy) and the data source comes from the Central Statistics Agency. In addition, this data was obtained from several previous research results including in journals, theses, and other scientific papers that support this research.

Method of Analysis

The analytical method used to test the truth of the proposed hypothesis is by using regression analysis, which is by performing two regressions (before regional autonomy, namely 1984 to 2000 and (regional autonomy, namely 2001 to 2017) .

The model used can be formulated as follows

$Y_1 = f(X_1, X_2, X_3,)$..... (1)

$Y_2 = f(X_1, X_2, X_3; Y_1)$..... ..... (2)

Based on the functional relationship above, it can be described in several non-linear substructure equations as follows:

$e^{Y_1} = \alpha_0 \quad {X_1}^{\alpha_1} \quad {X_3}^{\alpha_3} \, e^{\alpha_2 X_2 + \mu_1}$ ....(3)

$e^{Y_2} = \beta_0 \quad {X_1}^{\beta_1} \quad {X_3}^{\beta_3} \quad e^{\beta_2 x_2 + \beta_4 Y_1 + \mu_2}$ .... (4)

The above equation is a linear equation, so to get the elasticity value is changed using the natural logarithm (ln) so that the equation becomes:

$Y_1 = ln\alpha_0 + \alpha_1 lnX_1 + \alpha_2 X_2 + \alpha_3 lnX_3 + \mu_1$ ..... (5)

$$Y_2 = ln\beta_0 + \beta_1 lnX_1 + \beta_2 X_2 + \beta_3 lnX_3 + \beta_4 Y_1 + \mu_2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(6)$$

Equation 5 is entered into equation 6

$$Y_2 = ln\beta_0 + \beta_1 lnX_1 + \beta_2 X_2 + \beta_3 lnX_3 + \beta_4 \left(ln\alpha_0 + \alpha_1 lnX_1 + \alpha_2 X_2 + \alpha_3 lnX_3 + \alpha_1\right) + \mu_2$$

$$= ln\beta_0 + \beta_1 lnX_1 + \beta_2 X_2 + \beta_3 lnX_3 + \beta_4\, ln\alpha_0 + \beta_4\alpha_1 lnX_1 + \beta_4\alpha_2 X_2 + \beta_4\alpha_3 lnX_3 + \beta_4\alpha_1 + \mu_2$$

$$= (ln\beta_0 + \beta_4 ln\alpha_0) + (\beta_1 lnX_1 + \beta_4\alpha_1) lnX_1 + (\beta_2 X_2 + \beta_4\alpha_2) X_2 + (\beta_3 + \beta_4\alpha_3) lnX_3 + (\beta_4\mu_1 + \mu_2)$$

Simplified to:

$$Y_2 = \gamma_0 + \gamma_1 lnX_1 + \gamma_2 X_2 + \gamma_3 lnX_3 + \varepsilon_1 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(7)$$

Where :

X_1 = Regional Income (billion rupiah)

X_2 = Infrastructure (percent)

X_3 = Investment (billion rupiah)

Y_1 = Economic Growth (percent)

Y 2 = Regional Inequality (percent)

$\gamma_0 = ln\beta_0 + ln\alpha_0$

$\gamma_1 = \beta_1 + \beta_4\alpha_1$

$\gamma_2 = \beta_2 + \beta_4\alpha_2$

$\gamma_3 = \beta_3 + \beta_4\alpha_3$

$\varepsilon_1 = \beta_4\mu_1 + \mu_2$

RESEARCH RESULT

Table 1 Direct Effects

	Variabel	Estimasi	P-Value	information
Before Regional Autonomy	X1-Y2	0.043	0.00	Significant
	X2-Y2	0.034	0.00	Significant
	X3-Y2	0.01	0..00	Significant
	Y1-Y2	0.002	0.368	Not significant
After Regional Autonomy	X1-Y2	0.043	0.00	Significant
	X3-Y2	0.010	0.00	Significant
	X2-Y2	0.034	0.00	Significant
	Y1-Y2	0.002	0.368	Not significant

Source: SPSS AMOS, Processed. α (5%)

Based on Table 1 shows the results of statistical analysis of the effect of regional income, infrastructure and investment on economic growth. The influence of local revenue, the ratio of road length and area, and investments of inequality in the region 26 p rovincial in Indonesia. P there is table 1 that the results of the analysis both before and after regional autonomy, variable regional income (X_1), infrastructure (X_2), and investment (X_3) have a significant effect on regional inequality (Y_2) while economic growth (Y_1) has no significant effect on regional inequality (Y_2).

Table 2 Indirect Effects

	Variabel	Estimasi	P-Value	information
Before Regional Autonomy	X1--> Y2 Through Y1	0.000	0.08	Not significant
	X2--> Y2 Through Y1	0.000	0.06	Not significant
	X3--> Y2 Through Y1	0.000	0.17	Not significant
After Regional Autonomy	X1--> Y2 Through Y1	0.000	0.08	Not significant
	X2--> Y2 Through Y1	0.000	0.06	Not significant
	X3--> Y2 Through Y1	0.000	0.17	Not significant an

From the table above, it can be seen that the 3 indirect relationships between the independent variables and the dependent variable before and after regional autonomy have no significant effect.

DISCUSSION

Direct Influence

The Effect of Local Income on Regional Inequality

The results of the estimation of regional income on regional inequality before and after the implementation of regional autonomy produce the regression coefficient values as follows:

Prior to regional autonomy, the regression coefficient was 0.043 and a P-value of 0.000, which means that regional income has a significant direct effect on regional inequality. Meanwhile, what happens is that regional income continues to increase from year to year, on the other hand, inequality as measured by the Williamson index has also decreased. Since 1984 until the regional inequality in Indonesia was 0.33 percent, occurred in 1984, in 2000 the regional inequality in Indonesia was recorded at 0.86 percent. One of the reasons for this is due to differences in the source of income of each region where the largest source of regional income is taxes, namely the main tax sources, namely motor vehicle tax (PKB) and motor vehicle name transfer fee (BBNKB).

After regional autonomy, the regression coefficient is 0.043 and a P-value of 0.000, which means that regional income has a significant direct effect on regional inequality. After regional autonomy. Meanwhile, in 2001 to 2017, regional inequality in Indonesia was recorded at 0.84 percent and in 2017 at 0.67 percent, the amount of regional income in each region continues to increase from year to year. In 1984, total regional revenue was 2.43 Trillion and then increased in 2017, which was 293.14 Trillion.

As explained, regional revenue is one indicator of fiscal decentralization. This means that the greater the regional income, the greater the degree of decentralization which makes the regions competing to develop their regions. Maximizing regional potential in order to finance development in the regions.

The findings above are the same as those found by Qian and Weingast (1997) who argue that the existence of fiscal decentralization will create competition between regions which in turn can reduce regional disparities without a centrally mandated redistribution policy. Bonet (2006) who examines the effect of fiscal decentralization on regional inequality in Colombia in 1990-2000 shows that the higher the level of decentralization as measured from the income side, the greater regional inequality.

The Influence of Infrastructure on Regional Inequality

The results of infrastructure estimates on regional inequality before and after the implementation of regional autonomy produce the following regression coefficient values :

Prior to regional autonomy, the regression coefficient value was 0.034 and a P-value of 0.000, which means that infrastructure has a significant direct effect on regional inequality.

After regional autonomy, the regression coefficient value is 0.034 and the P-value is 0.000, which means that infrastructure has a significant direct effect on regional inequality.

This is due to the growth in road length from year to year, especially during the 1984-2017 period, which continued to increase, although the amount was not in line with the increase in motorized vehicles which continued to increase from year to year. Roads are a very important aspect in increasing economic growth, particularly economic growth in areas that are far from the center of economic activity. The availability of good roads will be able to increase the productivity and accessibility of goods between regions, so that inequality can be minimized between centers of economic activity and areas that produce agricultural products or areas that produce raw materials.

Road length is a very important factor in reducing inequality in a region, because the distribution of goods and services as well as people greatly affects the availability of road infrastructure. Interaction between regions will be easy if road conditions are good, so that the mobilization of production factors and production results will be better, causing the birth of new centers of economic growth and an increase in production output.

In addition, there is no effect of the ratio of road length to area to regional inequality because the use of road infrastructure is not the only means of economic activity in Indonesia. It can be said that port infrastructure is also an important means of driving economic growth in Indonesia.

Infrastructure development can support economic activity. If infrastructure development in areas that are far from the center of economic growth is carried out properly, these regions will become new centers of economic growth. By itself the region can advance and develop following the areas that advance and develop from the region first. So that inequality

between regions can be reduced. Mopangga (2011) states that the main source of inequality in Gorontalo Province is very significant due to the ratio of infrastructure spending.

The Influence of Infrastructure on Regional Inequality

The results of investment estimates on regional inequality before and after the implementation of regional autonomy produce the regression coefficient values as follows:

Prior to regional autonomy, the regression coefficient value was 0.01 and a P-value of 0.000, which means that investment has a significant direct effect on regional inequality.

After regional autonomy, the regression coefficient value is 0.010 and a P-value of 0.000, which means that investment has a significant direct effect on regional inequality.

Based on these results, disparities in development between regions in Indonesia can be resolved either by way of increased investment are evenly distributed throughout Indonesia. The theory put forward by Myrdal states that the return impact caused by the transfer of capital and the profit motive that encourages the development of development is centered on areas with high profit expectations, while other areas will be neglected.

In the research, one of the causes of regional imbalance is due to investment because investment activities are only centered on developing areas, so that areas that are left behind will be increasingly left behind and this low investment is inseparable from the high investment risk due to security disturbances and uncertainty in law enforcement . Therefore , it is followed by various policies issued by the government in the form of operational risk policies as a factor in calculating capital adequacy, which have a very positive effect on the development of investment in Indonesia.

The results of this study are in line with research conducted previously by Budiantoro Hartono in 2008 using a sample of Central Java Province. Based on the results of this study, it can be concluded that the increase in investment value has a positive and significant effect on regional inequality. Any increase in investment value means increasing investment activities which will increase economic activity. The increase in economic activity that occurs will result in an increase in the prosperity of the population so that inequality will decrease.

The Effect of Economic Growth on Regional Inequality

The estimation results of economic growth on regional inequality before and after the implementation of regional autonomy produce the regression coefficient values as follows:

Prior to regional autonomy, a regression coefficient value of 0.002 and a P-value of 0.368 means that economic growth does not have a significant direct effect on regional inequality.

After regional autonomy, the regression coefficient is 0.010 and a P-value of 0.000, which means that economic growth does not have a significant direct effect on regional inequality.

Economic growth in each province from 1984 to 2017 shows an increasing trend even though growth fluctuates. In 1984 economic growth was at -4.22 percent in the province of Riau, then the economic crisis occurred in 1998 which caused a decline in economic growth to -17.59 percent in 1999 and in 2001 to -10.73 which occurred in the province of Aceh in the following years it has improved in the following year and so on, it always fluctuates.

Meanwhile, regional inequality in general has increased, although in recent years it has decreased and fluctuated. In 1984 the region inequality at its highest level of 0 , 68 and then into the highest level of 0.68 in 2017. This illustrates that economic growth does not affect inequality in the region of twenty tasty provinces during the study period.

This finding is inconsistent with the convergence theory in the neoclassical growth model. This theory satisfies the form of the neoclassical production function and assumes *constant returns to scale* , decreasing for each input and some positive elasticity and substitution between the two inputs. In this model, the key factors are the aggregate production function, capital accumulation and the exogenous determinants of economic growth. For example the saving rate, population growth rate, level of technological progress. Assuming that all regions have the same technology, the same preferences and that there are no institutional barriers to the flow of capital and labor across national borders. The Solow-Swan neoclassical growth model predicts that countries will have the same level of real per capita income in the long run.

This finding is also different from the results of a study conducted by Ravallion and Datt (2000) in India, which shows somewhat different results. By using the logarithm (log) real domestic product per capita as a proxy of income per capita and the Gini index of consumption per person (in percent) as a proxy of the level of inequality, they showed that during the period

of 1950s late into the 1990s, the mean income the per capita average is increasing and the level of inequality shows a decreasing trend.

Indirect Influence

The Effect of Local Income on Regional Inequality

The results of the estimation of regional income on regional inequality through economic growth before and after the implementation of regional autonomy produce the following regression coefficient values :

Prior to regional autonomy, the regression coefficient value was 0.000 and a P-value of 0.08, which means that regional income did not have a significant indirect effect on regional inequality through economic growth.

After regional autonomy, the regression coefficient value is 0.000 and a P-value is 0.08, which means that regional income does not have a significant indirect effect on regional inequality through economic growth.

From 1984 to 2017, the total regional income of each region in Indonesia continued to increase from year to year. The increase in regional income cannot be separated from the large source of regional income, namely regional levies and regional tax revenues each year. Where the main tax sources are motor vehicle tax (PKB) and motor vehicle name transfer fee (BBNKB). With the large amount of regional revenue, the provincial government has a lot of budget to spend on regional development.

The Influence of Infrastructure on Regional Inequality

The results of infrastructure estimation on regional inequality through economic growth before and after the implementation of regional autonomy produce the following regression coefficient values :

Prior to regional autonomy, the regression coefficient value was 0.000 and a P-value of 0.06, which means that infrastructure does not have a significant indirect effect on regional inequality through economic growth.

After regional autonomy, the regression coefficient value is 0.000 and a P-value is 0.006, which means that infrastructure does not have a significant indirect effect on regional inequality through economic growth.

The low growth of road length during the period 1984 to 2017 (before and after regional autonomy) is the cause of the length ratio road to total area has no effect on economic

growth. This is indicated by the relatively small ratio of road length to area in 26 provinces, namely 0.389 km / km ^{2} in 1984 and then increasing to 0.691 km / km ^{2} in 1999 and 0.896 km / km ^{2} in 2017. In addition, roads are not the only means for economic activity in Indonesia. It can be said that port infrastructure is also an important means of driving economic growth in Indonesia.

The Effect of Investment on Regional Inequality

The results of investment estimates on regional inequality through economic growth before and after the implementation of regional autonomy produce the following regression coefficient values :

Prior to regional autonomy, the regression coefficient value was 0.000 and a P-value of 0.17, which means that investment does not have a significant indirect effect on regional inequality through economic growth.

After regional autonomy, the regression coefficient value is 0.000 and a P-value is 0.17, which means that investment does not have a significant indirect effect on regional inequality through economic growth.

The low investment is inseparable from the high investment risk due to the persistence of security disturbances and uncertainty in law enforcement. besides that there is still a lack of foreign investment entering the regions in Indonesia and there is still a lack of supporting infrastructure such as roads, electricity and clean water.

CONCLUSION

Regional income has a direct positive effect on regional inequality either before or after regional autonomy. This finding is not in accordance with the theory and hypothesis in this study. Meanwhile , indirectly it does not affect through economic growth either before or after regional autonomy . This finding is not in accordance with the hypothesis in this study.

Infrastructure has a direct positive effect on regional inequality either before or after regional autonomy. This finding is not in accordance with the hypothesis in this study. Meanwhile, indirectly it does not affect through economic growth either before or after regional autonomy. These results indicate that the longer roads that occur in an area will increase regional inequality.

Investasi positive and significant impact directly against the inequality of the region either before or after the regional autonomy, whereas no effect indirectly through the growth of the economy either before or after the regional autonomy. These results indicate that investment activity has increased so that economic activity will improve.

After doing research and getting a conclusion from the research results. So I found a number of things that would be a suggestion in this study. It is hoped that the next researcher to see regional imbalance is not only looking at regional income, but also with other regional income source variables. It is hoped that future researchers will see regional imbalances not only through road infrastructure, but also with other types of infrastructure. It is hoped that the next researchers will see regional inequality not only through domestic investment, but also by looking at regional inequality using the foreign investment variable or total investment.

REFERENCES

Bonet, J. 2006. Fiscal Decentralization And Regional Income Disparities: Evidence from the Colombian experience, Annals of Regional Science 40: 661-676.

Jhingan, ML, 2010. Economic Development Planning. Rajawali Pers. Jakarta.

Kuncoro, Mudrajad. 2006. Is There a Change in the Spatial Concentration of the Manufacturing Industry in Indonesia, 1976-2001. Article presented at the International Conference on "Location of Economic Activity, Regional Development and the Global Economy", University of Le Havre, Le Havre, France.

Kuznets, simon . 1955. economic growth and income inequality. The american economic review , volume xlv march, 1955 number one.

Lessmann, C. 2006. Fiscal Decentralization and Regional Disparity: A Panel Data Approach for OECD Countries. Ifo Working Paper No. 25

Mankiw, N. Gregory. 2007. Macro Economics, 6th Edition. Jakarta: Erlangga.

Prud'homme, Remy. (1995). The dangers of decentralization. The World Bank Research Observer, 10 (2), 201-220.

Qian, Y., Weingast, BR 1997. Federalism as a Commitment to Preserving Market Incentives. Journal of Economics Perspectives 11 (4), 83-92 .

Shah, Anwar. 2006. A Practitioner's Guide to Intergovernmental Fiscal Transfers. World Bank Policy Research Working Paper 4039.

Sukirno, Sadono. 2010. Macroeconomics. Introductory Theory. Third Edition. PT. Raja Grasindo Perseda. Jakarta.

Todaro, MP and SC Smith. 2006. Economic Development. Volume 2. dition Kesembilan.Jakarta: Erland.