Measurement and Determinants of Inclusive Growth in Papua

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Positive economic growth usually accompanies increasing levels of inequality. The concept of inclusive growth involves provinces receiving special funds to catch up with other provinces and improve welfare. We analyse Papua’s social mobility curve and the influence of education, health, economic growth, unemployment, poverty and local government expenditure on inclusive growth using panel data analysis with Driscoll-Kraay. Papua has not achieved inclusive growth; only Jayapura city achieved it at the city and regencies’ level. Moreover, between 2010 and 2016 health positively affected inclusive growth while education and economic growth negatively influenced inclusive growth.

Key words: Inclusive growth, special autonomy of Papua, Driscoll-Kraay standard errors, Social Mobility Curve, special autonomy funds.

Introduction

Economic growth usually refers to improvement of the economy of a country from year to year (Sukirno, 2006). However, economic growth generates a new problem, that of increasing inequality in society. Economic growth without income equality will not sustain the well-being of any society (OECD, 2014). Therefore, there have been many discussions and studies on inclusive growth. Inclusive growth is identified by the Asian Development Bank (ADB) as sustainable income growth and equal opportunity for all (ADB, 2011). The United Nations Development Program (UNDP) defines inclusive growth by considering both processes and outcomes (Klasen, 2010). On the one hand, inclusive growth ensures everyone can participate. On the other hand, the benefits of growth are distributed fairly. Ali & Son¹ (2007) define

¹The respected researchers Ifzal Ali and Hyun H. Son are not “father & son”
inclusive growth as growth that not only creates new economic opportunities, but also ensures equal access to opportunities created for all segments of society (Zhakipbekova, 2018).

Indonesia, which has the highest inequality in Southeast Asia, faces challenges to overcome the link between economic growth and inequality (Matandare, 2018).

Papua as one of the provinces in Indonesia² lags in the economy, health and education. Due to that, the Indonesian government grants Papua special autonomy, based on Law no. 21 of 2001, to organise and manage the interests of local communities according to their own initiative based on the aspirations and basic rights of Papuans. An autonomy fund equal to 2% (two per cent) of the overall General Allocation Fund is intended primarily for education and health, to improve the welfare of the people and reduce inequality – in other words, to foster inclusive economic growth. Although the special funding increases every year, Papua is still among the lowest Indonesian provinces in human development index (BPS, 2017). In 2016, there were only two cities or regencies contributing more than 9% to Papua GDP.

Thus, identifying inclusive growth in Papua along with its determinants shows the effectiveness of special autonomy, and indicates how to maintain inclusive growth (Sholihah, 2014). Some researchers study inclusive growth on the level of provinces (Azwar, 2016) and Java island (Juliansyah, 2017). We use the Social Mobility Curve method developed by Anand et al (2013) to measure inclusive growth and the determinants of inclusive growth in Azwar's study (2016).

**Literature Review**

Several international organisations define inclusive growth and its indicators. The Asian Development Bank (ADB) identifies two strategies in its 2020 Strategy, namely sustainable revenue growth and open opportunity for all. The World Bank defines inclusive growth as poverty alleviation, long-term sustainability, productive employment rather than income redistribution, and individual (not just corporate) benefits. In the United Nations Development Program (UNDP), inclusive growth is seen as a process and as a result (Klasen, 2010). On the one hand, process, everyone can participate in making decisions. On the other hand, result, benefits are shared justly across society.


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²Indonesia’s provinces of Papua and West Papua border on the independent state of Papua New Guinea to the east. The shared name “Papua” is an accident of legal history in the 1920s.

Anand et al (2013) measure inclusive growth with the Social Mobility Curve (SMC). It depends on two factors, namely revenue growth and income distribution, providing a simpler picture.

As mentioned above, the degree of inclusiveness depends on changes in the average income and changes in income distribution. To capture the change of income distribution, SMC can be calculated using equation 1.

\[
\dot{y} = \int_{0}^{100} \dot{y}_i \, di
\]  

(1)

If everyone's income in a population is the same, then the value of \( \dot{y} \) will be equal to \( \dot{y} \). If \( \dot{y} \) is smaller than \( \dot{y} \) then the distribution of income is uneven. Then, the income equity can be identified from the Income Equity Index (IEI).

\[
\omega = \frac{\dot{y}}{\dot{y}}
\]  

(2)

The value of \( \omega \) is between 0 and 1. If there is perfect equality then \( \omega = 1 \). The closer \( \omega \) comes to the number one, the more evenly distributed the income is, in contrast to the Gini coefficient.

From equation (2) we get the equation (3).

\[
\dot{y} = \omega \times \dot{y}
\]  

(3)

From the equation (3), to increase the value of \( \dot{y} \) then it is necessary to:

(i) increase \( \dot{y} \), by increasing the average income through growth, or
(ii) increase the income equity index through increasing income distribution, or
(iii) combine (i) and (ii).

Differentiation of the formula above is as follows:

\[
d \dot{y} = \omega \times d \dot{y} + d\omega \times \dot{y}
\]  

(4)
From the formula, it can be seen that $\dot{y}$ is a change in the inclusive level of growth. Growth will be inclusive if value $\ddot{y} > 0$. From equation (4) growth and equity are integrated in the calculation of inclusive growth.

Equation (4) can also be written as:

$$\frac{dy^*}{y^*} = \frac{d\dot{y}}{y} + \frac{d\omega}{\omega}$$  \hspace{1cm} (5)

Notes: $\frac{dy^*}{y^*}$: inclusive growth

$\frac{d\dot{y}}{y}$: percentage change in average income

$\frac{d\omega}{\omega}$: percentage change income equity index

**Determinants of Inclusive Growth**

Inclusive growth reduces poverty and income inequality, and develops access to non-income dimensions for all layers of society, especially for the poor. In this study, the factors affecting inclusive growth refer to Azwar's (2016) study, specifically: education, health, economic growth, unemployment, poverty, and local government spending.

**a. Education**

According to Anand et al (2013) education has a positive impact on inclusive growth. In addition, Gregorio & Lee (2002) assert that a country with higher educational attainment has a more equal distribution of income. They point out that a one per cent increase in educational attainment reduces the Gini coefficient by 0.03. Average years of schooling is the proxy for the variable education as it combines school participation, the current level of education being undertaken, the class engaged, and education completed.

**b. Health**

Bloom, Canning, & Sevilla (2004) show that health significantly affects economic growth. A one-year increase in life expectancy increases output or productivity by four percent. According to Hamid et al (2011), the better the quality of health, the longer and more effective the time to work, so as to increase productivity, which will ultimately also increase income.
c. Economic Growth

Tang (2008) finds that many developing countries have high economic growth but the distribution of income gets worse. The most important measure of economic growth is whether it improves things for the poor. Habito (2009) agrees. In addition, agricultural progress reduces poverty.

d. Unemployment

According to Okun's Law in Mankiw (2009), the number of unemployed has a negative relationship with the level of economic growth of a country. It is based on the relationship between the unemployment rate and the real output. The unemployment rate can function as a negative proxy of the labor force because more labor will produce more output in an economy.

e. Poverty

Kuznet, in Tambunan (2001), shows that economic growth and poverty have a very strong correlation. In the early stages of the development process, poverty tends to increase, and in further stages the number of poor people gradually diminishes. According to Todaro (2006), the fundamental problem is not just to increase GDP, but rather to specify by whom the GDP is increased. If only a few people increase it, then they alone benefit, resulting in worsened poverty and income inequality. The most important thing in growth is that all are involved.

f. Local Government Spending

Gray, Lane, & Varoudakis (2007) state that state expenditures, particularly on education and infrastructure, drive economic growth. In poverty alleviation, the government must allocate, distribute, and stabilize. Hasibuan (2005) confirms the role of the Government. This explains the counter-intuitive negative relationship – the higher the revenue in the budget, the lower the poverty rate. Obviously, the budget should be allocated to fund poverty alleviation programs. Hasibuan's research is reinforced by Alawi (2006), who suggests that budgets for community empowerment programs have a negative correlation with the severity of poverty.

Our hypotheses of the study are these:

H1 = education has a positive effect on inclusive growth.
H2 = health significantly and positively affects inclusive growth.
H3 = economic growth has a significant and positive effect on inclusive growth.
H4 = unemployment and inclusive growth are significantly and negatively correlated.
H5 = poverty has a significant and negative effect on inclusive growth.
H6 = local government spending has a significant and positive effect on inclusive growth. In every hypothesis, the words “in Papua Province” remain understood.

**Data and Methodology**

The data used in this study are secondary data derived from the Central Bureau of Statistics (BPS) *National Socioeconomic Survey* (SUSENAS) (BPS, 2018) and from the details of local budget expenditure published by the Directorate General of Fiscal Balance (DJPK, 2018). The panel data used in this study are a combination of cross section data with time series data from 29 regencies and cities in Papua Province from 2010 to 2016.

The data analysis is carried out in two stages.

The first stage measures inclusive growth in the regencies and cities of Papua Province from 2010 to 2016 based on the Social Mobility Curve (SMC). To measure the inclusiveness of Papua province, per capita income is required. We use per capita expenditure as a proxy of income because it is generally difficult to obtain accurate information about income in developing countries such as Indonesia (Resosudarmo et al, 2014).

The second stage analyses the determinants of inclusive growth. The proxies of the determining factors in this study are:

- average years of schooling,
- life expectancy,
- regional GDP per capita at current prices,
- the percentage of people aged 15 years and above openly unemployed,
- the percentage of poor people in the regency or city, and
- expenditure.

To analyse the determinants of inclusive growth in the panel data, the first step is to decide the model of the panel data regression. The next step is to check the autocorrelation, multicollinearity and heterokedasticity. If the selected model experiences a problem in the classical assumption tests, we use a robust standard error method, Driscoll-Kraay. According to Hoechle (2007), Driscoll-Kraay requires cross-sectional dependence. Therefore, we also check for that dependence.

**Results and Discussion**

**Inclusive Growth in Papua**

Income data from each regency and city of Papua Province during the research period were grouped into ten groups from the lowest income group (first decile) to the highest (tenth decile).
Table 1 indicates that Papua has not achieved inclusive growth. The Income Equity Indexes in 2010 and in 2016 are respectively 0.483 and 0.495. This indicates that economic growth has not been much in favor of the poor.

The change of income per capita of Papua Province from 2010 to 2016 appears in Figure 1. The SMC of Papua Province moves up, meaning there is an increase in revenue from 2010 to 2016. However, the rise in SMC falters in deciles 1-5 and increases steeply in the top income groups (deciles 6-10). Distribution of income in Papua is still uneven.

Figure 2 takes into account the changes in inclusive growth rates (\(dy^*\)) which are integrated with changes in average per-capita income (\(dy\)) and income distribution changes (\(d\omega\)). In fact, only one out of 29 regencies and cities in Papua experiences inclusive growth, and that is Jayapura City which is in quadrant I. All other regencies are in quadrant II which indicates an increase in income at the expense of income distribution.

**Determining Factors of Inclusive Growth**

The Chow Test, Hausman Test, and Lagrange Multiplier Test give us the random effect model shown in Table 2. The data passes tests of Autocorrelation (Wooldridge test), and Multicollinearity and Heteroscedasticity (Wald test). Subsequently, the Pesaran CD test establishes that the data are cross-sectionally dependent. Driscoll-Kraay standard errors are therefore appropriate (Hoechle, 2007).

The results of panel data regression model of random effect with Driscoll-Kraay standard errors appear in Table 3. Based on the regression result, in Papua Province,

- education and regional GDP growth have negative and significant influence on inclusive growth, while
- health shows positive and significant relation with inclusive growth.
  
  Additionally, three variables,
  - unemployment,
  - poverty, and
  - local government spending do not affect inclusive growth.

The negative and significant relation between education and inclusive growth in this study agrees with Azwar (2016) and Juliansyah (2017): an increase in education level will reduce inclusive growth. One explanation is the large number of poorly educated and unskilled workers. In 2016, 55.88% of the labor force in the Papua Province attend only elementary school, if they attend school at all. (BPS, 2017). Furthermore, 70% of workforce in Papua aged 15 years above who have graduated from senior high school or above are unemployed so that
it hinders the productivity and eventually discourages inclusive growth. Ariutama and Syahrul (2018) also explain that as long as the average time of schooling in Indonesia is less than 9 years, increasing the education level increases inequality. Since the average schooling in Papua Province in 2017 is only 6.27 years, it follows that an increase in the average length of school will intensify income inequality and hamper inclusive growth.

Health has a positive and significant impact on inclusive growth in Papua Province. Ngangue & Manfred (2015) already note that an increase in life expectancy has a positive effect on economic growth in developing countries. Higher life expectancy reflects improvements to public health services that support workers to be more productive, implemented by the Government of Papua in on Local Government Regulation no. 7 Year 2010. Improvement is also evident in the decreasing number of pain complaints from 2010 until 2016 (BPS, 2017), and in the increase in health insurance, mainly by BPJS Health and Jamkesda. If the community and government are more concerned about health protection in Papua Province, people can be more productive in their activities to encourage inclusive growth.

Another significant determining factor of inclusive growth is Gross Regional Domestic Product (GRDP). The relationship between GRDP and inclusive growth is negative and significant. The results of this study support the findings of Azwar (2016), Ravallion & Bidani (1994), Son & Kakwani (2003), Bourguignon (2004), Todaro (2006), and Mankiw (2009) – that in developing countries,

- economic growth sometimes only comes from a small number of groups, and
- the benefits of growth are not enjoyed by the entire community, and
- this ultimately leads to an increase in poverty and income inequality.

GRDP by industrial sectors in Papua Province shows more than one-third comes from mining in 2016. Furthermore, more than 50 percent of GRDP in Papua comes from only two of 29 regencies or cities, namely Jayapura and Mimika.

The insignificant effect of unemployment on inclusive growth is closely related to the main industrial sector, mining, in Papua Province. This sector has low employment elasticity as the companies in this sector usually require skilled workpeople. On the other hand, open unemployment in Papua Province is dominated by elementary school graduates, non-graduates of primary school, and those who never attended any school (84.17%). As long as the mining sector is still the mainstay of economic growth in Papua, open unemployment remains high.

Retno (2013) agrees that poverty does not affect economic growth in Indonesia, because the Statistics Agency in Indonesia uses the concept of ability to meet basic needs. With this approach, poverty is seen as an economic inability to meet the basic needs of food and non
food, and is measured by expenditure. The poor are by definition the people who have an average monthly per capita expenditure below the poverty line. This does not define the reality of poverty.

That local government spending does not influence inclusive growth significantly can be seen from the components of that expenditure. In Papua Province it is still dominated by goods and services, capital, and wages, taking 28.38%, 26.88%, and 22.95% respectively – 80% in all. In other words, Papua government spending is more focused on the fulfillment and development of the organisation than on serving the public. Social assistance expenditure was only 2.66%. The relevant Ministry defines 26 out of 29 regencies and cities in Papua Province as disadvantaged. With the large number of disadvantaged areas, social assistance funds should be encouraged, as Putra, Purnamadewi & Sahara (2015) argue. Economic, socio-cultural, and infrastructure assistance provide benefits to society in the short and long term.

**Conclusion**

All provinces in Indonesia have sustained positive economic growth, usually accompanied by increasing inequality. Papua is among the provinces in Indonesia receiving special autonomy funds which are intended to improve, specifically, education and health. Papua is still among the lowest Indonesian provinces in the development of its human capital.

Economic growth in Papua Province has not been much in favor of the poor since the economic growth increases at the expense of income distribution with only Kota Jayapura experiencing growth inclusively. Inclusive growth in Papua has three determinants: education, health and GRDP. Health positively influences inclusive growth because it improves productivity. However, education and GRDP influence inclusive growth negatively due to a poorly educated and unskilled workforce.

Regencies in Papua should focus more on the distribution of benefits from economic activities by providing equal access to all people to basic public services such as education, health and social assistance. In terms of education, the local governments should find solutions to reduce students dropping out of school. Additionally, improving access, quality, and competitiveness of all levels of education ranging from elementary school to higher education is also significant. Increasing the average years of schooling will eventually support inclusive growth. Health requires better workers and facilities and insurance coverage in order to improve.

Lastly, industrial sectors other than mining need increased support in Papua so that citizens have access to financial products and services, business licenses and permits, and training in technology.
In this study, the authors acknowledge shortcomings. We exercise only one method to measure inclusive growth, that is, the Social Mobility Curve. Furthermore, this study only gives a general picture of the benefits of economic growth to all, without analysing the benefits of economic growth for each class of society. To make the study more comprehensive and robust, additional analysis to measure inclusive growth such as Poverty-Equivalent Growth Rate (PEGR) will help. Furthermore, future studies should take into account other variables and their proxies.
REFERENCES


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