



**PRO-POOR GROWTH:
Does it work in Indonesia?**

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List of Acronyms

BPS	Biro Pusat Statistik (Statistics Indonesia)
FEM	Fixed Effect Model
GDP	Gross Domestic Product
GRDP	Gross Regional Domestic Product
ILO	International Labour Organization
ISS	Institute of Social Studies
OLS	Ordinary Least Square
PAD	Pendapatan Asli Daerah (Own-Source Income)
REM	Random Effect Model
UNDP	United Nation of Development Program
WB	World Bank

Abstract

The main purpose of this study is to examine whether economic growth in Indonesia is categorised as pro-poor growth. It will be analysed through how economic growth affects poverty. To address this research, we will conduct the study using panel data. It consists of province-level data from 2004 - 2010 to estimate an econometric model that allows us to know the impact of economic growth, inequality, government spending, and fiscal capability on poverty rate. Therefore, the set of control variables consists of the Gini coefficient, per capita Gross Regional Domestic Product (GRDP), government spending, and own income resources.

The estimated results of this study have important policy implications. First, the finding shows that economic growth is good to enhance poverty reduction; government therefore should consider to rising up economic growth benefiting for the poor. In addition, empirical evidence suggests that the head-count ratio in Indonesia is more responsive on economic growth than on income distribution. Second, the effect of government expenditures varies for different type of spending. Government spending on education and health has significant impact on poverty alleviation through reduced income inequality; while public expenditure on social protection is insignificantly contribute to decrease poverty rate. Finally, the fiscal capability in each province is required to enhance poverty eradication.

Further, economic growth is needed to enhance the effectiveness of poverty reduction. Moreover, sustained growth should be accompanied by encouraging in human capital investment to accelerate poverty reduction. In addition, designing and implementing pro poor poverty reduction program should be done to accelerate poverty alleviation. Finally, this result suggests that economic growth during period 2004-2010 in Indonesia can be concluded as pro-poor growth.

Relevance to Development Studies

Poverty reduction and economic growth cannot be separated from development goals. This paper attempts to investigate the link between the goals of development, which is poverty reduction, and the indicator of development (growth).

Keywords

Poverty, Growth, Inequality, Government Spending, Indonesia

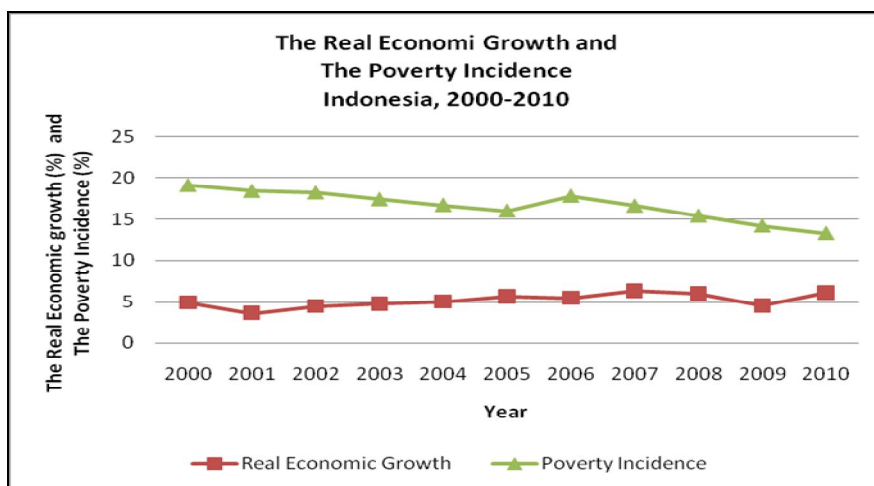
Chapter 1 Introduction

1.1 Problem Statement

Poverty reduction and economic growth cannot be separated from development goals. In its National Medium Term Development Plan for period 2004-2009, Indonesia had applied three economic development strategies which are the 'pro-growth, pro job, and pro poor' strategy. At that time, it was believed that economic growth acceleration would create a high job opportunities, would bring Indonesian households free from poverty, and seemed it was used as a catalyser to reduce poverty.

In this sense, these key development goals can be analysed through an approach known as pro-poor growth. This concept expresses how much the benefits of economic growth for the poor. Dollar and Kraay (2002) mention that the growth is good for the poor when the increasing of the poor's average income at the same rate as average overall income. Naturally, when government implements a 'pro-poor', 'pro-growth' and 'pro job' policies, it is not only on how to implement but also how to establish a development strategy for reducing poverty through economic growth.

Figure 1 The Trend of Economic Growth and Poverty Incidence



Source: Statistics Indonesia (Susenas various years, BPS), 2000 is the base year

As depicted in figure 1 above, when economic growth increases, the head-count index tends to decrease. The correlation between the rate of poverty and the rate of economic growth is in the opposite trend with. Therefore, it can be argued that the fluctuation of economic growth is closely related to the rate of poverty. However, it cannot be denied that the reduced poverty rate is contributed to various interventions, such as poverty reduction programs.

During 2004-2010, the data reveal that the number of the poor in Indonesia is fluctuated but the trend tends to go down. In 2004, the number of the

poor was 36.1 million people or 16.66 percent of total population, and in 2005, it decreased to 35.1 million people (15.97 percent). Unfortunately, in 2007, it rose up significantly to 39.3 million people (17.75 percent). In 2008-2010, it reduced to 15.42, 14.15, and 13.33 percent respectively. In fact, Government of Indonesia has been implementing 'the homogenous product' of poverty reduction program for more than 10 years to all provinces even though they have different characteristics. The result of those programs are vary that within the period 2005-2010 the reduction of poverty rate is about no more than 2 percent every year.

In addition, poverty reduction in Indonesia has aligned with one of the Millennium Development Goals (MDGs) that is to reduce halve of the poor (between 1990 and 2015). An indicator used to define the poor in MDGs is the proportion of people whose income is less than USD 1.00 a day. Indonesia has succeeded in reducing poverty levels, as measured by indicators USD 1.00 per capita per day, in half. The proportion of people living with per capita income of less than USD 1 per day dropped from 20.6 percent in 1990 to 5.9 percent in 2008. Nonetheless, the effort to reduce poverty rate as measured by the poverty line of the current national rate is still in progress. In 2010, the poverty rate was still high that was 13.33 percent.

Many studies have tried to analyze the effect of economic growth on poverty reduction or how pro-poor growth has been measured. Using different poverty measurements, previous researches argued that the effect of economic growth varies for different country. In spite of the wide literature on pro-poor growth, there is rarely attention on the role of public expenditure on decreasing poverty (Fan et al. 1999:3).

Regarding to the background explained above, this study wants to examine whether poverty reduction in Indonesia is affected by economic growth. Besides testing the effect of growth to poverty, this paper also aims to test the contribution of government expenditure to poverty alleviation. Although there are debates among economists whether economic growth can help reducing poverty, some evidence show that in some countries economic growth has a positive effect to reduce poverty rate. Pernia (2003) reveals that 'the relationship between growth and poverty is highly country-specific'. Moreover, he added that poverty reduction strategy is influenced by an important factor, which is pro poor growth. However, the progress of pro poor growth depends on the intervention of state to improve the poor's income and to reduce their vulnerability (Grimm 2007:15).

1.2 Justification of the Research

In the past, development in Indonesia was emphasized to achieve high economic growth, to decrease poverty, and to reduce unemployment, and to improve the quality of life. However, the fact shows that economic growth was still low, the welfare could not be attained significantly, and also there were some basic social problems. Timmer (2007) studied pro-poor growth in Indo-

nesia; he revealed that the poverty reduction in Suharto regime is reached by pushing domestic rice production and increasing rural development

During 2000-2003, at 1993 constant price, the average of economic growth was 4.3 per cent. Up to 2004, even though macroeconomic stability had been well managed, economic growth has not increased the welfare of the people. It is claimed by government that "the welfare of the people is very much affected by the capability of the economy to enhance income in a just and equitable manner" in its National Medium-term Development Plan period 2004-2009. Then, we can explore how much the economy growth could give benefit for people's welfare.

Analyzing a cross-country data from 80 countries, Son and Kakwani's paper (2008) found that the pro-poorness of growth is significantly associated with the regional location of countries. It can be inferred that the impact of increasing in growth has different result for different countries. Previous work done by Soubbotina (2004) claimed that there a strong positive relationship between economic growth and poverty reduction. In this paper, Soubbotina gave an example that East Asia (excluding China) can reduce almost a half of the number of the poor from 23 percent in 1987 become 14 percent in 1993. François Bourguignon (2004) shows the same result, he reveals there is positive effect of growth on poverty in Ethiopia. During his research period in 1981-1995, he found that growth could have reduced the poverty headcount by 31 percent.

However, Soubbotina (2000) could not find the same result in Sub-Saharan Africa where there is a negative relationship between economic growth and poverty reduction. It means that in Sub-Saharan Africa, the higher the growth, the higher the poverty rate. In addition, Dollar and Kraay (2002:219) reveal that growth is not necessarily the important thing to enhance the poor's welfare. They add that effective poverty reduction strategy in economic policy should be put in growth-enhancing policies.

Indonesia has been implemented fiscal decentralization since 1999, and it was revised in 2003 as one of policies to enhance welfare in all regions. As the consequences, the local government has to develop their own region with their own resources. During this period, some regions experienced reasonable-growth and poverty reduction while the others showed low performance in economic growth and poverty reduction. This fact is confirmed by Bolnick (2000) who stated, "The growth analysis should be viewed not just from a macroeconomic perspective, but also in terms of sectoral and regional building blocks for growth and poverty reduction".

The purpose of this paper is to see how economic growth affects poverty rate as a case study for different regional in one country incidence. This research becomes interesting because it will use provincial data in which each province has their own characteristic. Therefore, the analyses attempt to see how the potency of each province can catch up economic growth to reduce poverty. However, the main objective of this research is to know how economic growth could reduce poverty. Further, the research will focus on investigating the impact of economic growth on poverty reduction, and it will concern

on other determinants that are needed to reduce poverty as control variables in each region.

1.3 The research objective and Specific Research Question

1.3.1 The research Objectives

The magnitude of the economic growth is believed as one factor to reduce poverty. It means the higher the economic growth, the larger the poverty reduction. Regarding to this concept, the Government of Indonesia translated the concept that the poverty can be reduced through economic growth in its medium term development planning for period 2004 – 2009. Translating the important role of economic growth as a vehicle to intensify poverty alleviation, government embodies this into development planning through pro poor, pro-growth, and pro job strategy. Thus, the objective of this paper is to contribute to the understanding of these issues, focusing on the first two strategies implemented by government Indonesia in achieving higher growth benefiting for all people especially for the poor called pro poor growth.

Moreover, the research is to contribute to the previous research of these issues by examining the performance of economic growth on poverty reduction in 33 provinces in Indonesia. The previous studies of pro-poor growth are mostly differentiating the poverty measurement to know the impact of economic growth on poverty reduction. There is still a debate on how to measure the growth-poverty elasticity. One of the studies uses the incidence of poverty to measure the growth elasticity of poverty while another use the poverty gap or inequality rate (Ravallion 2004). In this matter, this study is largely in agreement with Ravallion (2004). Thus, this study is going to investigate the impact of growth on poverty reduction by using the absolute poverty measure.

The main reasons using the absolute poverty line, which is represented by the incidence of poverty, is the availability data for province level. In fact, the data for poverty gap and poverty severity are not available for the research period. In addition, policy makers and common people generally want to know how much the contribution of economic growth to reduce poverty rate or the incidence of poverty. In view of this, reducing poverty can be measured either to increase the income per capita, or to reduce the inequality among households in their consumption levels.

Since Indonesia is divided into 33 provinces with their own characteristics, this paper intends to investigate whether regional location of provinces has a signification on the level of pro-poorness of growth by giving provincial specific. To strengthen the analysis, we need to measure the factors that contribute to poverty reduction. Therefore, this study will examine other factors to reduce poverty, which are government expenditure and fiscal capability.

1.3.2 The research Question

Main Question:

Does Economic Growth Work To Reducing Poverty In Indonesia During 2004-2010?

Sub Question:

Knowing the role of economic growth to poverty reduction, we will know whether 'pro poor growth' strategy in Indonesia has accelerated to improve the poor's welfare. Thus, the sub question as follows:

- How does Indonesia's economic growth affect its poverty reduction?
- To what extent has Indonesia been able to achieve pro-poor growth?
- What are other determinants explaining the performance of poverty reduction in Indonesia?

1.3.3 Scope and Limitation

The study aims to know whether the economic growth can be categorized as pro-poor growth. The research period analysed in this paper is seven years, which is from 2004 to 2010. The reason for this time preference is that the Government of Indonesia had implemented three strategies of development: pro-growth, pro-poor, and pro-job in 2004-2009. Moreover, since 2004 the number of province has not changed, the paper therefore will cover 33 provinces in Indonesia. It also cover government spending on education, health, and social protection, and own local government revenue as control variables.

Limitation of this study is that it does not capture other public expenditures, such as infrastructure budget. Moreover, this paper does not take into account about population movement, labour movement inside and outside country, and it does not explain poverty reduction program implemented in each region. Further, this research cannot reveal which the best policy regime should be implemented to accelerate poverty in Indonesia is. Further, the short period of time series data and the assumption that the Gini coefficient data are not change for three-year period are the major limitation.

1.4 Data and Methodology

To address this research, it needs historical data on province. Our data were collected from various sources: Statistics Indonesia (BPS) and Ministry of Fi-

nance. To estimate the impact of economic growth to poverty, the main task of this observation is to obtain the complete data. Since the unit analysis of this paper is province, there is a lack of long time series of acquiring the availability of data related to other determinants affecting poverty rate in Indonesia.

By using secondary data, we can do forecasting by constructing models based on past data. To realize this purpose, it needs several steps as follows; firstly, preparing a panel data set that the unit of analysis is province. Secondly, we will do estimation using Ordinary Least Square (OLS), Fixed Effect Model (FEM), and Random Effect Model (REM). After that, we choose the best model to analyze this research. The model must be free from heteroscedasticity, autocorrelation, and multicollinearity. Finally, interpret the coefficients for each variable that determines the dependent variable that is poverty rate. The contribution of this paper is to study the effects of economic growth on poverty reduction in terms of evaluating pro-poor growth in Indonesia.

1.5 Chapter Scheme of Research Paper

The rest of paper is organized as follows: Section 2 provides a literature review; section 3 figures out the condition of poverty, economic growth, inequality, government spending, and fiscal capacity in Indonesia. Section 4 is devoted to data, methodology, and the analysis of the empirical results. Finally, the paper is concluded in section 5.

Chapter 2 Literature Review

2.1 The Concept of Poverty and Poverty Measurements

Poverty is defined as a condition where people cannot meet their basic needs (food, clothes, and house). World Bank (2005) gives more details about the poverty characteristics:

"Poverty is hunger. Poverty is lack of shelter. Poverty is being sick and not being able to see a doctor. Poverty is not being to go to school and not knowing how to read. Poverty is not having a job, is fear for the future, living one day at a time. Poverty is losing a child to illness brought about by unclean water. Poverty is powerlessness, lack of representation and freedom".

Another international institution, United Nation of Development Program (UNDP) measures poverty using the Human Poverty Index. This index consists of three basic components: (i) longevity, measuring the probability at birth of not surviving to age 40; (ii) literacy, measuring adult literacy rate; (iii) living standard, combination of population having access to basic health services, population without sustainable access to a clean water supply, children with malnutrition, and population below poverty line.

Statistics Indonesia or BPS (2003) defines poverty as living conditions of deprivation experienced by an individual or a household, and they are unable to meet the basic needs for their lives. A decent minimum need is reflected into the Poverty Line which is the minimum expenditure "consumption" to meet food and non-food needs that are basic (food, clothing, housing, health and education). Food poverty line is the rupiah value that must be spent to meet the need of energy at least 2100 calories per day. Non-food poverty line is the average value of spending in rupiahs from basic non-food commodities in urban and rural area. By using this poverty line, we can identify the population of poor people who have an average expenditure per capita per month below the poverty line.

Absolute Poverty and Relative poverty

The concept of absolute poverty is basically defined base on needs. It measures the number of people who cannot fulfil their subsistence, expenditure on essential services such as health, education, and sanitation. It is expressed as poverty line based on basic needs, which are different on a country-specific. In addition, poverty gap and severity index could be included as absolute poverty measurement.

If poverty is defined in relative terms, it has more meaning that is flexible and the standard of living in a society could be revised. The relative poverty

measures access disparity among groups in a society. It is expressed by how many the poorest people of the population are; usually the poorest is in the lowest quintile of the population, and by knowing disparity between urban and rural. Further, the indicator that usually uses as relative poverty measurement is Gini coefficient.

Poverty Line

The poverty line is a measurement to analyse poverty as an insufficiency problem in which people should meet a minimal standard of living or basic need on food and non-food (Nallari et al. 2011). A poverty line can be generated to evaluate whether an individual or a household is poor in a given group. In addition, due to changes in the price of goods used to measure a poverty line, nominal poverty lines can change over time (Nallari et al. 2011:20). However, the standard of living is different for each country. When a country becomes richer, its standard of living becomes higher. Soubottina (2000:31) says that 'the richer a country is, the higher is its national poverty line'. Different poverty line for each country makes the welfare comparison among country is not easy. Therefore, in 1985, the World Bank (WB) has recognized a standard poverty line which is measured as US\$ 1 a day per person.

Headcount index (P_0)

Headcount index measures the proportion of the poor (as an individual not as household) in the population. The formula of headcount index can be written as:

$$P_0 = \frac{N_p}{N} = \frac{1}{N} \sum_{i=1}^N I(y_i < z)$$

where z is the poverty line, y_i is the actual income, and $I(.)$ is an index function (taking value of 1 if the argument is true and 0 otherwise).

This poverty measurement (the head-count index) assumes that all poor are in the same level of well-being condition. Therefore, this measurement does not see the changes of people below the poverty line become poorer. Indeed, we cannot see the difference between poor people below close to the poverty line and those who are far to the poverty line. Therefore, when we want to reduce poverty using this measurement, we could target benefits to people living just below the poverty line because they can move out of poverty easier than those who live far from the poverty line (Nallari et al. 2011:23).

Poverty Gap Index (P_1)

Poverty gap is the average of the gaps between poor people's living standard and the poverty line. Poverty gap index measures the average extent that indi-

vidual falls below the poverty line. Further, the poverty gap can express the characteristic of the poor. It can be expressed as a formula:

$$P_1 = \frac{1}{N} \sum_{i=1}^N \frac{G_i}{z}$$

where $G_i = (z - y_i) \cdot I(y_i < z)$ is the poverty gap for poor individuals; the gap for everyone else is considered zero; and z represents the poverty line. However, this measurement violates Dalton principle¹ because it does not reflect the changes of inequality among the poor. In fact, related to poverty reduction programs, the poverty gap index is important for policy makers to decide the budget that should be provided to undertake to handle poverty.

Squared poverty gap (“poverty severity”) index (P_2)

The formula to measure squared poverty gap can be formulated by squaring the poverty gap index. Moreover, it accounts inequality among the poor. Mathematically, it can be written as:

$$P_2 = \frac{1}{N} \sum_{i=1}^N \left(\frac{G_i}{z} \right)^2$$

Unfortunately, this measurement is not commonly used because it cannot be interpreted easily.

2.2 The Concept of pro-poor growth

Before discussing more about the concept of pro-poor growth, it is better to know briefly the concept of economic growth. Debraj Ray gives a definition of economic growth as “annual rates of changes in income (total or per capita)” (Ray 1998:88). In 1939, Harrod Domar introduced the theory of economic growth. The basic feature of the Harrod-Domar model follows the Keynesian equilibrium or the fundamental notion of macroeconomic balance where saving is equal to investment. From Harrod Domar’s theory, we can conclude that by pushing up the capital used to produce output, the growth rate can be accelerated. Furthermore, another feature that must be considered to analyse per capita growth is the population growth rate. In the Harrod-Domar growth theory, it can be concluded that the higher the rate of population growth, the higher the rate of economic growth.

Conversely, the neoclassical view that justifies and reinforces the market system, the rate of saving and the capital-output ratio are determined by peo-

¹ See http://www3.u-cergy.fr/cdumas/_private/Cours/Dvlpt/Inequality.pdf

ple's preferences and technology. From this perspective, it could be used to analyse the implication of this theory for low-income economies. In most developing countries or low-income countries, the rate of saving is low. Most economists assume that saving is purposed for the higher of consumption in next period. The same logic applies to the poor. The poorer people have less ability to save for the future (Soubbtina, 2000: 32).

Reflecting from this theory, when there are low saving rate and low investment rate, then the rate of economic growth would be low. Low saving causes the needs of domestic investment that are physical capital and human capital decrease. These investments are used to increase economy's productivity and income. It appeared to promote investment by government intervention through government planning to accelerate economic growth. However, this prescription is not always useful since some countries, such as India, Nigeria, and Ghana. Those countries have an experience that the enforcement of capital accumulation promoted by government could not accelerate high economic growth rate (Hayami and Godo 2005:139). Moreover, three main instruments used to measure the rate of economic growth might be endogenously determined by economic growth. Thus, they are no longer exogenous to economic growth (Ray 1998).

Completing the growth theory from the Harrod-Domar model, Solow assumes that the capital-output ratio is endogenous, and it depends on capital and labour endowment. Another way of viewing this is that capital accumulation is not the engine of development. Therefore, in the Solow model, an increasing in the saving rate will push capital and output to a higher-level while in the Harrod-Domar model, the saving rate has growth effects. Based on Solow growth model and Harrod-Domar model, it seems that capital accumulation, technology, innovation, knowledge are important in increasing economic growth. However, they still cannot answer why some countries have a high economic growth while others have low economic growth. Hall and Jones stated that the institution and modern growth economy introduce the role of institution and government policy as important elements involving to economic performance in a country. These two aspects are called as social infrastructure (Nallari et al. 2011:60).

Next, some scholars in different perspectives and interpretations released the concept of pro-poor growth. There are two concepts of pro-poor growth: relative approaches and absolute approaches. Regarding to McKay (2007:21), the relative concept of the pro-poor growth is related to distributional pattern of growth. It can be inferred that pro-poor growth could be achieved when income of the poor increase faster than that of the non-poor, the inequality rate reduce. In other words, the inequality rate is fall. Moreover, the absolute concept of pro-poor growth is if growth could reduce poverty. Therefore, it seems that pro-poor growth explains how national economic growth improves the poor's welfare.

Pro-poor growth is defined as when growth brings more advantages for the poor than the non-poor in economic proportionally (Son and Kakwani 2008). Moreover, Kakwani and Pernia (2000) see pro-poor growth through the trickle down approach assuming that the poor receive some benefits from the

process of development reflected by increasing in economic growth. They mention that to minimize the gap of income distribution between the poor and the rich, government should promote pro-poor growth strategy to ensure that benefits gained by the poor are proportionally higher than the non-poor are. Again, they reveal that growth could reduce poverty, but promoting and implementing pro-poor growth strategy would reduce the rate of poverty reduction higher. However, the definition of pro-poor growth argued by the Kakwani-Pernia fails to provide a guidance to maximize the rate of poverty reduction because there is inconsistency assessment in which higher the rate of growth, higher inequality (Warr 2005:10).

On the other hand, Ravallion and Chen (2001:4) assume that the link between a reduction in poverty and the rate of pro-poor growth should be consistent and has the opposite direction. Ravallion-Chen's argument leads to the conclusion that "a reduction (increase) in poverty must register a positive (negative) rate of pro-poor growth". Still, they assume that pro-poor growth measure requires "the focus axiom, which states that the measure is unaffected by income changes for the non-poor; the monotonicity axiom, which states that any income gain to the poor will reduce poverty; and the transfer axiom, which states that inequality-reducing transfers amongst the poor will reduce poverty" (Warr 2005:10). Further, Datt and Ravallion (1992) suggest that investigating the link between growth, inequality, and poverty can be done by decomposing the changes in poverty into two components: growth and inequality measure.

Another view coming from Zheng (2011) who argues that the growth-elasticity pro-poor approach might be inconsistent to measure pro-poor growth for different growth rates. Additionally, the link between growth incidences curves and poverty reduction cannot easily be made and poverty decomposition are similarly misleading (Grimm 2007:14). Shortly, we can synthesize that growth can be called as pro-poor growth when growth could bring benefits for the poor. It can be interpreted that the income of the poor increases as economic growth increases. Afterwards, increasing income of the poor would bring them out of poverty at a certain point.

Grimm and Klasen (Grimm 2007:15) highlight some policy implications regarding to pro poor growth. Firstly, agricultural sector should be included in pro-poor growth strategy in poor countries and most of the poor live in rural area. Second, the progress of pro poor growth depends on the intervention of state to improve the poor's income and reduce their vulnerability. Third, the political leadership's dedication and the high government commitment to turn growth into pro-poor growth lead more stable pro-poor growth policies. Fourth, policies to reduce inequalities among regions and to combine regionally-targeted investment and infrastructure are needed.

Kraay (2004) mentions that there are three potential sources of pro-poor growth: (i) a high rate of growth of average incomes, (b) a high sensitivity of poverty (poverty elasticity) to growth in average incomes, and (c) a poverty-reducing pattern of growth in relative incomes (Nallari et al. 2011:70).

Success in growth and poverty reduction is not guaranteed (Farrington 2006). He mentioned that it can be threatened by several factors, such as slowing the global economy, changes in international trade and investment climates,

or rapid rises in the prices of primary commodities (especially energy). In addition, Besley (2006) suggests that there are some factors that must be known to implement pro poor growth in developing countries. The factors are (i) the labour regulation, which has been identified as an important element of the investment climate; (ii) access to finance, which can enable people to end the poverty by facilitating small businesses and other non-agricultural activities; (iii) human capital, as a key for increasing pro-poor growth; (iv) land reforms to increase security of tenure and abolish intermediaries have been central for reducing rural poverty; and (v) gender inequality in literacy.

In conclusion, definitions of pro-poor growth vary, but they generally correlate how the mechanism of economic growth on poverty reduction, even somehow it is linked to inequality component. To simplify, the change in the level of poverty measure is an outcome to be achieved, whereas the economic growth and change in the income distribution are processes (Timmer 2004:178).

2.3 Growth, Inequality, and Poverty

To begin with, poverty incidence, or simply poverty headcount index can be defined as a function of mean incomes and the inequality level. Therefore, to understand the relationship between growth and changes in poverty incidences, and the relationship between growth and changes in equality, this equation can be employed:

$$P = P(\bar{Y}, G)$$

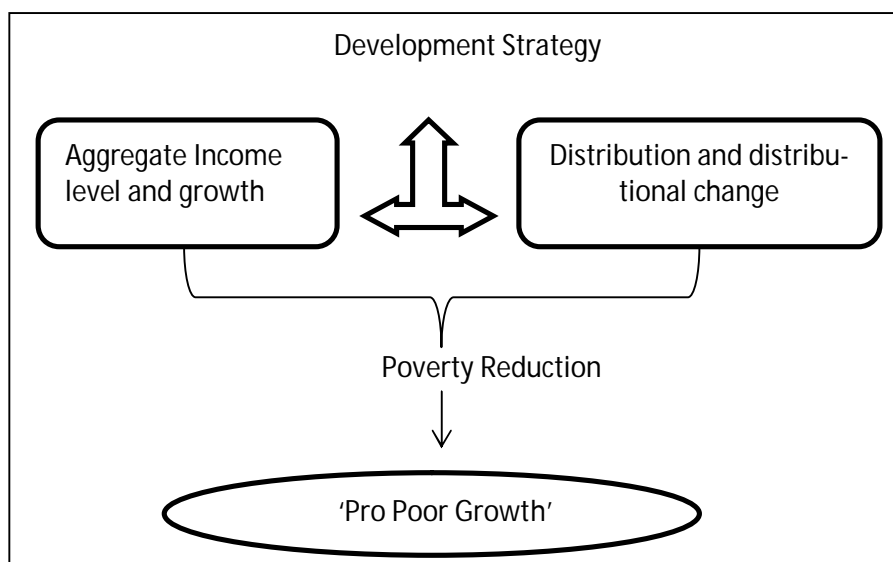
Where P is poverty headcount index, \bar{Y} is the mean of all household income per capita, and G is an inequality measurement, such as the Gini coefficient. Since there is no single measurement of inequality, the equation above cannot capture the income distribution accurately. Thus, the decomposition of the change of poverty incidence due to growth of mean household income and the changes in equality is modified by differencing the equation.

$$\frac{dP}{P} = \eta_1 \frac{d\bar{Y}}{\bar{Y}} + \eta_2 \frac{dG}{G}$$

Where dP/P denotes the changes of poverty incidence; η_1 denotes the partial elasticity of the poverty measurement with respect to mean household income per person; and η_2 is the partial elasticity of the poverty measurement with respect to the inequality measurement. The expected value of η_1 is below zero ($\eta_1 < 0$) and $\eta_2 > 0$. The perspective presented here is that if mean household income per person increases, the poverty measure will be lower. However, if the inequality measure rises up, the poverty measure will increase. The point of view argues here is that policy makers could combine growth per capita and changes in inequality to maximize poverty reduction by using this postu-

late. Moreover, it also depends on the structure of country's economic, politic situation, and social norms (Warr 2005:5).

Figure 2 The Triangle of Poverty, Inequality, and Growth



Source: Adopted from Timmer (2004)

The 'Bourguignon triangle' above emphasizes that to understand how growth can reduce poverty, or called pro-poor growth, it requires the connection between economic growth and the distribution of income (Timmer 2004:190). A consequence of this is that the mechanism of pro poor strategy could be achieved through two channels: initial condition for income and asset inequalities. Timmer (1999) argues that the mechanism of pro-poor strategy could be achieved through public investment in education and rural public health to enhance the poor's human capital.

2.4 Empirical Evidence

Looking at Afandi and Pellenyi's work (2007) which use cross-sectional data from household survey, they find that the impact of macroeconomic growth on poverty reduction in Azerbaijan is small. It is revealed that even though economic growth significantly increased during 1990s, it was not followed by a satisfied poverty reduction. Further, it is found that the elasticity of poverty with respect to economic growth was low which was around 0.5 percent. Their findings are slightly similar to study by El Quardighi and Somun-Kapetanovic's in 2010. Using panel data set which the unit of analysis is five Balkan countries –Albanian, Bosnia and Herzegovina, Croatia, Macedonia, and Serbia-Montenegro– in period 1989-2005, the result of the research shows that the growth has positively affected well-being reflecting that the growth enhances people's welfare. However, the effect is small for most countries, except Bosnia-Herzegovina and Croatia, which are categorized as high-income country (El Quardighi and Somun-Kapetanovic 2010).

An interesting case on pro poor growth discussion has been experienced by Uganda. During 1990s, growth has accelerated to reduce poverty called as pro poor growth. However, after 2000 growth no longer has direct impact to help to the objective of poverty alleviation (Kappel et al. 2005). In addition, it is found that this phenomenon has changed due to economic structural changes. Most poor people in Uganda live in rural area and their livelihoods come from agricultural sector. When economic structural has changed from agricultural sector in which the poor really depend on it to other sectors, the rate of poverty slightly increases. Thus, growth has no longer brought benefit for the poor. Looking closer, Kappel et al. (2005) found that knowing the sectoral pattern of growth is required to assess the pro-poor growth. Similarly, in Pakistan's case, it is found that the growth was pro-poor with varying degrees in 1970s, 1980s, and 2000s, but it was not pro-poor in the 1990s (Jafri and Omer 2008). However, they did not explore the pro-poor growth using the pattern of growth approach based on economic sector. Rather it is assessed through Growth Incidence Curve (GIC) and the Rate of Pro-Poor Growth (RPPG), and also the Ordinary Rate of Growth (ORG).

Arndt et al. do another comprehensive study on pro poor growth issue. They analyse the pro poor growth in Mozambique from two different approaches: absolute poverty measurement and relative poverty measurement. It is surprising that the result indicate different outcome. When pro-poor growth is analysed using the definition from Kakwani-Pernia (2000), it indicates that growth has brought favour for the poor and the rich, but the changes in inequality measure is insignificantly correlated to poverty reduction. Thus, it can be inferred that the pattern of growth in Mozambique in 1996-1997 cannot be called pro poor growth because growth is not accompanied by the reduction of unequal income distribution to reduce poverty. However, when pro-poor growth is investigated by Ravallion's definition, the growth can be categorized as pro-poor because higher growth is followed by lower poverty headcount index (Arndt et al. 2006).

To sum up, most of the evidence reveals that growth is generally associated with reduction in the incidence of poverty. The evidence on the determinants of growth shows that market reforms have mostly had a positive effect on growth. However, the impact of economic growth on poverty has not been obvious, and country experiences vary considerably. Growth is crucial for poverty reduction, but distributional change also matters. Therefore, we have to understand about pro poor growth which is the mean growth rate of the incomes (or expenditure) of the poor and indicates the extent to which the poor are benefitting from growth (Ravallion and Chen 2003). Thus, the question 'to what extent growth is associated with poverty reduction' is something that might be important to study the relationship between economic growth and poverty reduction.

Chapter 3

Poverty, Economic Growth, Inequality, Government Spending in Indonesia

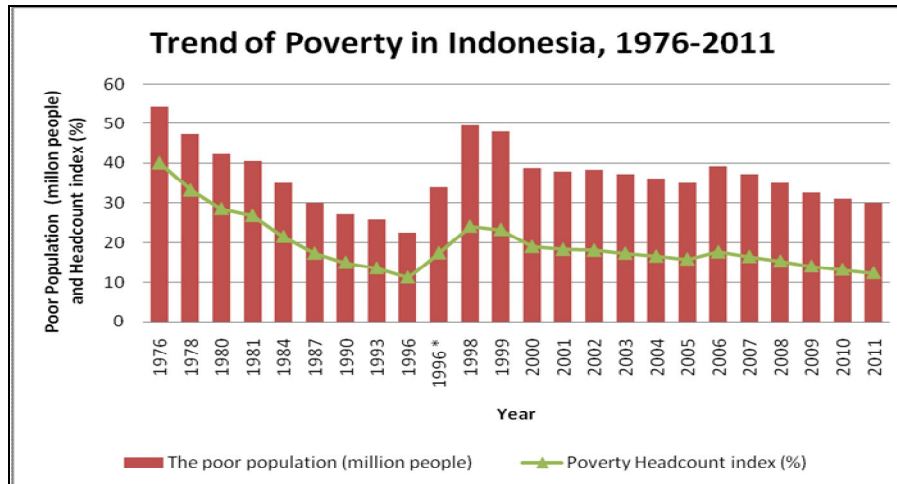
3.1 The Characteristic of Poverty in Indonesia

Until very recently, poverty has been considered as a development problem especially in developing countries. Most international organization, such as WB, United Nation Development Program (UNDP), and International Labour Organization (ILO), have done many researches on how to reduce poverty or enhance poor's welfare. However, the number of poor in the world is still high. Seeing Indonesia's poverty condition, we find that the number of poor is also still high.

Indonesia has experienced a fluctuation of the number of poor people. Economic crises and natural disaster have contributed to this fluctuation. For example, economic shock due to crisis in 1997/1998 led to a broad negative effect for the Indonesian people. Not only some people who were not initially classified as poor people become poorer, but there are also people that originally included the poor become poorer. This sparked a number of population of the poor increased sharply. If in 1996 the number of poor was 34 million people (17.5 percent), then in 1998 the number increased up to 49.5 million people (24.2 percent).

In addition, the fluctuation of poverty rate in Indonesia was determined by the rate of inflation. It happened when government increased the domestic price of fuel in October 2005. This policy have resulted an increase in inflation rate at the level 18 percent in 2006. The high rate of inflation caused the poverty headcount index increases from 15.9 percent in 2005 to 17.8 percent in 2006. Nevertheless, in the next year, the number of poor people tends to decrease as a result of various efforts made by the government together with all parties.

Figure 3 Trend of Poverty in Indonesia during 1976-2011



Source: Statistics Indonesian (various years)

Significant improvement has been achieved in the effort to reduce poverty. In the period 1998 – 2003, the total number of the people living below poverty line decreased and reached the level of 37.3 million persons or 17.42 percent in 2003 compare to year 1998 where the number of the poor is 49.5 million persons (24.2 percent). Further, in the next period 2004 - 2009, the total number of the poor is from 16.6 percent in 2004 to 14.15 percent. The reduction of poverty rate was not dropped significantly as it was hoped. However, the poverty rate declined in year 2010 and 2011.

In the crisis period, government revised the determination of poverty line. Prior to 1993, the poverty line is measured by calculating the total expenditure to buy food, which is worth with 2100 calories per capita per day. This method is adopted using basic need approach consisting of expenditure for food and non-food. While in 1996, Statistics Indonesia renewed the method to calculate the poverty line. Starting this period, the poverty line considered the component of non-food more detailed and sufficient. Hence, in figure 3 above we can see that in 1996 there are two points of headcount index. Using the old method, the poverty rate is 11.3 percent, while the new method shows that the poverty incidence is 13.7 percent.

Meanwhile, from table 1, in the period 2005-2010 the spread of population of the poor is uneven. Most the poor population, which is more than 50 per cent, is concentrated in the Java and Bali Island, followed by Sumatera Island, which is more than 20 per cent. However, the big concentration of poor people in Java is also because most of the population was concentrated in Java Island. Interestingly, even though the number of poor population in Java and Bali Island is high, the poverty headcount index is around 12 percent, which is smaller than the poverty rate in Papua Island that is more than 30 per cent. Knowing the number of the poor population and the rate of poverty in each province gives a big picture for policy makers to make a different strategy of poverty reduction among provinces in Indonesia.

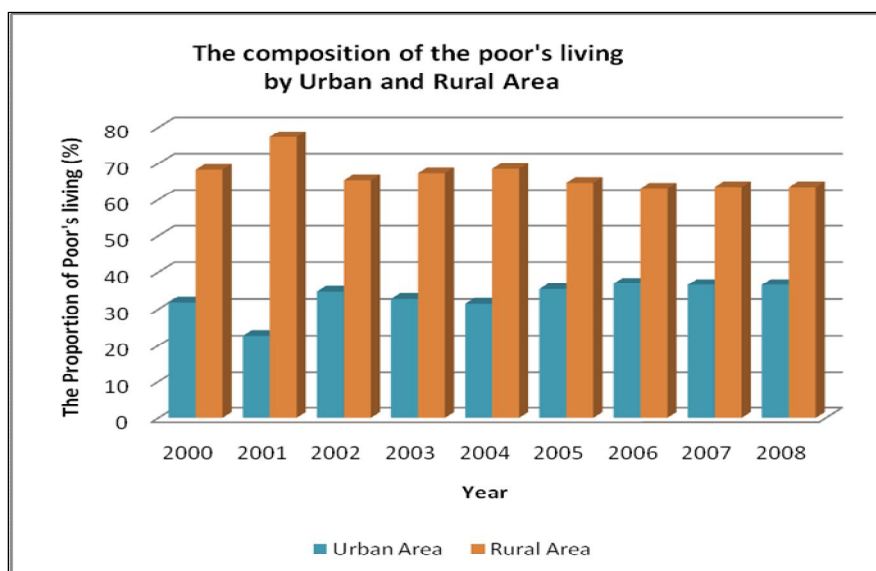
Table 1 The Spread of Poor People by Island, 2005-2010

No	Island	Percentage of the poor					
		2005	2006	2007	2008	2009	2010
1	Sumatera	21.77	20.92	21.11	20.86	21.07	21.44
2	Java dan Bali	56.55	57.75	57.37	57.75	57.21	56.39
3	Nusa Tenggara and Maluku	7.71	7.55	7.52	7.65	7.81	8.03
4	Kalimantan	3.79	3.7	3.64	3.47	3.12	3.28
5	Sulawesi	7.38	7.28	7.5	7.46	7.65	7.57
6	Papua	2.79	2.8	2.85	2.8	3.13	3.28
	Total	100	100	100	100	100	100

Sources: Statistics Indonesia

From figure 4 below, we can see that around 60-70 percent of the poor lives in rural area. The rural area in Indonesia is characterised with agricultural sector. Therefore, the revitalization of agricultural sector is considered as a key aspect of rural development strategy. It seems that rural development in Indonesia is identical to agricultural development that can be implemented to reduce poverty in rural area. However, Suryahadi et al. (2009) find that the dominant sector to reduce poverty in Indonesian's urban and rural area is services sector. However, we cannot underestimate the important role of agricultural sector in poverty reduction in rural area.

Figure 4 The Composition of The Poor's Living, 2000-2008

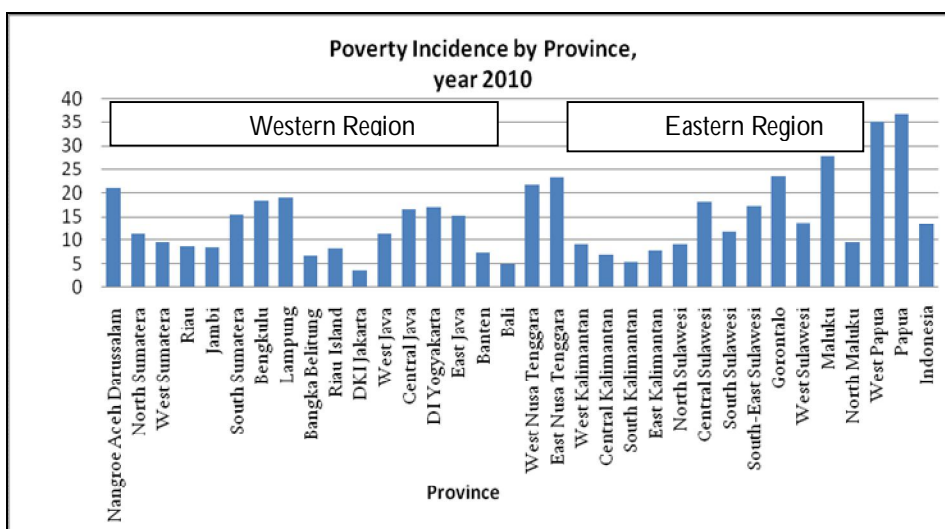


Source: Author's calculation based on data from Statistics Indonesia

According to data in year 2010, the poverty incidence varies among provinces in Indonesia. Generally, the western regions have lower poverty rate compare to eastern regions. As depicted in figure 5 below, it shows that Papua,

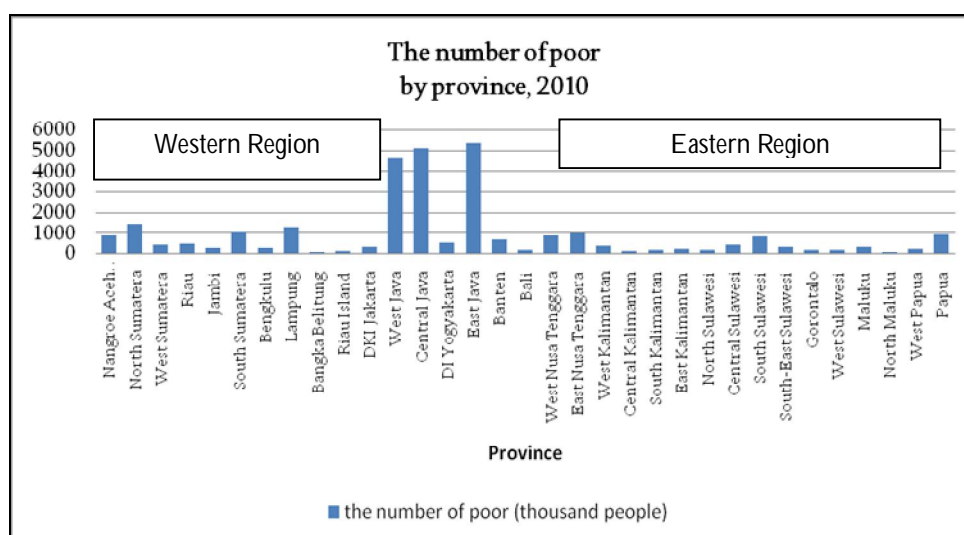
West Papua, and Maluku have the highest level of poverty, where the poverty incidence in those provinces is above 30 percent compare to 13.3 percent of national poverty incidence. Contrary, province DKI Jakarta, Bali, and Banten have the lowest incidence of poverty. However, from figure 6 we see the number of poor, the western regions have much more poor people, such as West Java, East Java, and Central Java, than the eastern regions, such as Central Kalimantan, North Maluku, and West Sulawesi. This uneven distribution is because most population is concentrated in the western region.

Figure 5 The Incidence of Poverty by Province in 2010



Source: Statistics Indonesia (Susenas, 2010), processed by author

Figure 6 The Number of Poor by Province in 2010



Source: Statistics Indonesia (Susenas 2010), processed by author

3.2 The Pattern of Economic Growth in Indonesia

During 2004-2009, economic growth in Indonesia has fluctuated. The average of economic growth in the period 2004 – 2009 has reached almost 6 percent,

which is the highest growth rate attained since the economic crisis of 1998. During these periods, Sulawesi Region shows the biggest growth, which is 7.57 percent. Gross Domestic Product (GDP) growth in 2010 reached 6.1 percent, rose from 4.6 percent in 2009. On the demand side, a higher economic growth was supported by robust exports, brisk investment growth and continued buoyant household consumption (Bank Indonesia, 2010).

A previous research done by Timmer (2004) investigated the road of growth in Indonesia. He divided the pattern of growth during the interval of mid-1960s to the mid-1990s into three periods. First, in mid-1960s to mid-1970s, the major resources of economic growth came from economic recovery and rehabilitation of the existing capital stock and infrastructure. Second period (mid-1970s to mid-1980s), growth was resulted from a highly agricultural sector productivity at that time due to the implementation new technology and intensive new investment in rural infrastructure. Third, in mid-1980s to mid-1990s, expanding foreign direct investment and export encourage the productivity of manufacture sector. Moreover, he found that during those three decades, the growth has helped reducing poverty in Indonesia.

3.3 The Rate of Poverty and Economic Growth

Government of Indonesia have established and implemented several policies to boost economic growth, to reduce unemployment, and to reduce poverty. Those policies are stipulated in President Instruction (*Instruksi Presiden-Inpres*) Number 6 year 2007 about the acceleration of the development of real sector and the empowerment of small and medium enterprises (SMEs). The instructions includes: 1) improving investment climate, 2) reforming financial sector, 3) accelerating infrastructure development, and 4) empowering SMEs.

Table 2 The Characteristic of Indonesian Provinces based on the Poverty Rate and Economic Growth

		Growth	
		High	Low
Poverty Rate	Low	DKI Jakarta, Bali, South Kalimantan, Banten, Centre Kalimantan, Jambi, North Sulawesi, West Sumatera, North Maluku, North Sumatera, West Java, South Sulawesi, Riau Archipelago	Bangka Belitung, East Kalimantan, Riau, West Kalimantan
	High	West Sulawesi, East Java, Centre Java, South East Sulawesi, Bengkulu, Centre Sulawesi, Lampung, West Nusa Tenggara, Gorontalo, Maluku, West Papua	South Sumatera, DI Yogyakarta, NAD, East Nusa Tenggara, Papua

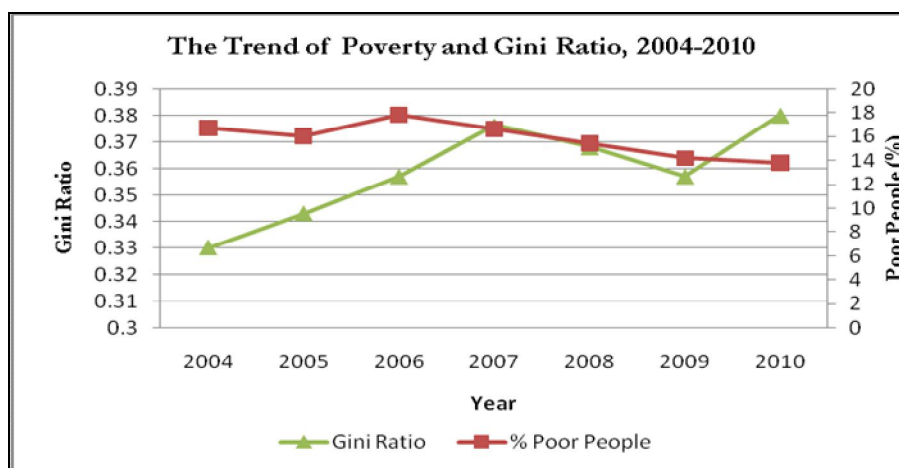
Table 2 above tells the condition of the rate of poverty and growth in Indonesia. The criterion of high and low growth is calculated based on the average of economic growth in the period 2006 – 2010, which is 5.2 percent. If a province has economic growth above 5.2 percent in 2010, it is categorized as

having a high economic growth, and vice versa. Then, similar to the criteria of high and low poverty rate, it is calculated based on the average of the incidence of poverty during 2006-2010 which the average is 15.4 percent. A province with the poverty incidence below 15.4 percent is characterized as having a low poverty rate, and vice versa. Then, the thirty-three provinces fall into four groups: (i) low level of the rate of poverty incidence with low economic growth rate; (ii) low level poverty rate that experienced with the high growth rate; (iii) high rate of poverty with high rate of economic growth; (iv) high rate of poverty rate and low rate of economic growth. Indeed, provinces in-group which have low rate of poverty and high economic are assumed as the best category.

3.4 Poverty and Inequality in Indonesia

Figure 7 below exhibits the trend of poverty and Gini ratio during period 2004-2010. During those periods, the number of poor people tended to decline from 16.7 percent to 13.8 percent. In contrast, the inequality of income that is indicated by the Gini Ratio tended to rise up from 0.33 to 0.38. This condition can explain why the estimated result suggests that the Gini Ratio is not significant to reduce poverty (see more on Chapter 4). The income inequality in Indonesia is categorized as medium inequality due to a coefficient ranging between 0.35 and 0.50².

Figure 7 The Trend of Poverty and Gini Ratio, year 2004-2010



Source: Statistics Indonesia (various year)

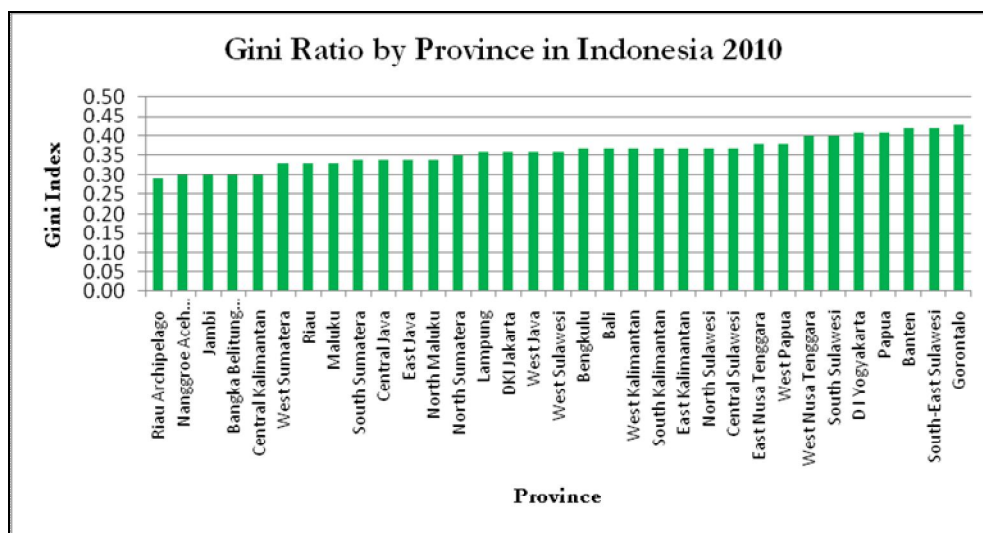
As illustrated in figure 8 below, in 2010, provinces are scored the income inequality ranging between 0.29 and 0.43. Most of the provinces have the Gini coefficient value between 0.3 and 0.37. The variation of inter-provincial distribution of consumption is caused by several aspects, such as geographical condition, natural resources endowment, population growth in each province, and

² see:

<http://www.apim.edu.vn/userfiles/file/Canhpercent20Docs/Topicpercent203.pdf>

also industrial development. Furthermore, the variation shows insignificant difference of trend over time across provinces.

Figure 8 Inter-regional Inequality in Indonesia, 2010



Source: Statistics Indonesia

3.5 Government Spending on Education and Health

Due to the complexity of poverty, the definition of poverty has largely developed from economic side that is income matters to multidimensional aspect, such as health, education, social, politics, and no longer related to income. Again, it undoubtedly that education and health are essential aspects of wellbeing. However, the poor still has limitation to access these two fundamental aspects. In developing countries, education sector can be characterized by low and inadequate of education facilities and infrastructures that cause high rate of illiteracy and unskilled labour. Similarly, health facilities and infrastructures are also insufficient to provide health services for people. In addition, a bad consumption pattern exacerbates the population health condition. Those condition imply that the role of government to provide a good education and health service for the poor is crucial. One of instruments that can be used to provide these needs and to eradicate poverty is public finance. With this in mind, knowledge and information about poverty have become important for a proper allocation of public finance to the target that is the poor.

The share of public spending from central government to regional government has clearly increased/decreased in most provinces during the research period. However, each province should provide its own public spending on education/health. After decentralization policy implementation in 2001, every region has its own authority to manage its own source of income. Therefore, the ability of local governments on public spending depends on their fiscal capacity. The perspective presented here is that different capability on public spending will result to different ability to reduce poverty. However, it also depends on policy and the effectiveness of poverty reduction program implemented in each region. Assessment of the significance of this factor would be

used to analyse the effectiveness of public spending, and how importance of government spending to reduce poverty.

It is believed that a good education in a country will contribute to a better and faster development. The return of education development can be seen when an individual increases their productivity in terms of economic, such as getting higher wages, producing higher output, and working more efficiently. Related to government spending in education, most developing countries enhance their public spending on education. For example, the ratio of education sector budget on GDP of Indonesia is increasing over years but still below 20 percent. It is believed that a good education in a country will contribute to a better and faster development. The return of education development can be seen when an individual increase their productivity in terms of economic, such as getting higher wages, producing higher output, and working more efficiently.

Chapter 4

Data, Methodology, and Empirical Result

This chapter discusses data and methodology used in this paper. Then, the next sub section, we will analyse the result based on panel regression methods to see the link between poverty, growth, inequality, and other control variables in Indonesia during period 2004-2010. Since we employ three panel methods, that are Ordinary Least Square (OLS), Fixed Effect Model (FEM), and Random Effect Model (REM), this paper will present all those regression result.

4.1 Data

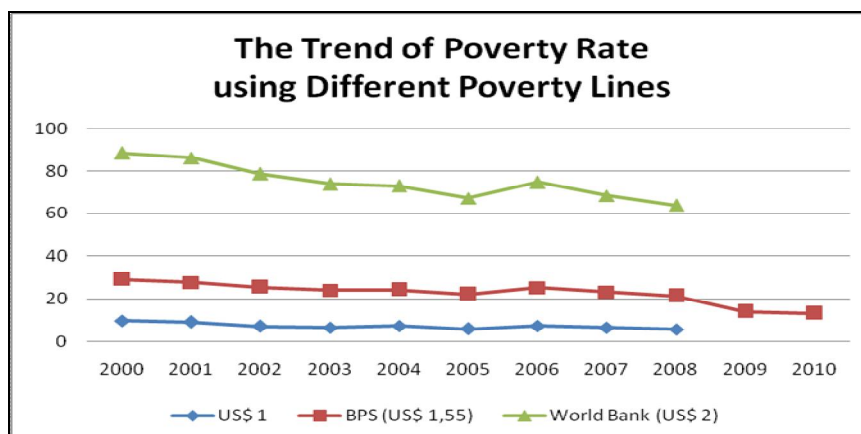
The data are taken from various sources. Headcount index or poverty incidence is used as a proxy of poverty measure. Per capita GRDP is a proxy of an economic growth measure. Gini coefficient will present as the inequality of income distribution. These data are obtained from Statistics Indonesia on National Socio-Economic Survey (*Survey Sosial Ekonomi Nasional-Susenas*) for several years. Other data to control the determination of poverty rate are government spending on education and health, public expenditures on social protection, and region's own source income. Those data are acquired from Ministry of Finance. The available data are compiled to analyse how growth affects poverty overtime (the within-provinces in Indonesia variability of the panel data). Then, the panel data set 33 provinces over the period 2004-2010 are crucial to understand how provinces with different levels of initial per capita GRDP or different growth pattern.

The set of control variables consist of the Gini coefficient, per capita GRDP, government spending, and own income resources. The coefficient of variable growth is predicted to be negative, while the coefficient of inequality measure is expected to have a positive sign, meaning the better income distribution the less poverty rate. Further, the term of government spending reflects human capital investment is also expected to have a negative coefficient. It means when the government spends more on public services, the poverty rate could be reduced.

Poverty Measure

Several poverty measurements keep arguable which the best method used to calculate the number of the poor accurately is. Even though using different poverty lines (US\$ 1 per day, BPS poverty line, and WB poverty line -US\$ 2 per day-), the rate of poverty in Indonesia shows the same trend. In the case of Indonesia, as described in the previous chapter, the measurement of poverty uses the absolute poverty term. The Statistics Indonesia was defined poverty as living conditions of deprivation experienced by an individual or a household, and they are unable to meet the basic needs for their lives (BPS 2003).

Figure 9 The poverty trend using several measurements



Sources: World Bank, Statistics Indonesia (various years)

Pro-poor growth literature mentions that the link between economic growth and poverty reduction are generally expressed by the elasticity of poverty to growth using two approaches: monetary indicators and nonmonetary indicators. The elasticity of poverty to growth based on the first approach, monetary indicators, is measured by the absolute poverty incidences or poverty headcount index. The second method, nonmonetary approach, defines poverty using other welfare indicators, such as healthy achievement, education return on economic, access to basic services, and access to information.

Then, regarding to study by Ravallion and Chen (2003) and following to Omer and Jafri (2008), this paper uses the absolute poverty measure which is the headcount index for several considerations. First, policy maker to figure the general condition of poverty in Indonesia generally uses headcount index. This measurement can capture the number of people living below the poverty line periodically. Further, this measurement captures country's characteristic in calculating the standard of living in Indonesia rather use WB standardization-US\$ 2 per day. This standard can be used as the basis to analyse the impact of economic growth to poverty. Second, the availability of data at province level is quite difficult. Third, assessing pro-poor growth using headcount index is more easily interpreted than relative poverty measure.

In addition, the disadvantage of using micro data to investigate pro-poor growth in Indonesia is the inconsistency of sample used in household survey. Consequently, the impact of growth on poverty cannot be comparable directly among household. Therefore, this study is going to use macro data, and the detailed data used in this paper will be elaborated below.

Economic Growth

Economic growth is derived from GDRP at constant market prices. Simply, it is defined as the rate of change of real economic output. Growth rate of GDRP express income or production progress of certain year compared to the previous year. However, some economists use different approach of economic growth to analyse pro-poor growth in which they use the consumer price index

as the deflator to convert the real value of household income and expenditure per person (Warr 2005:3). More detail, GDP is the sum of all final goods and services from all sectors in the economy in given period. Thus, GDP can be inferred as a measure of the value of economic activity in a country. Since the unit of analysis of this research is province level, thus it will use GRDP to explain the economic activity. GRDP is basically same as GDP; the difference is the total output is counted in a region (usually province based).

In the same way, several indicators can determine growth. Todaro (1992) suggests that economic growth can be channelled through the nation's GDP, the nation's per capita income, people's welfare, and also the existence and the accessibility of social services. Since the unit analysis of this paper is sub-country or province level, the economic growth therefore will be represented by GRDP.

Inequality Measure

For some considerations, inequality measure is related to link between growth and poverty reduction. First, some empirical evidences found that the growth has relatively small effect on poverty reduction with a high gap of income distribution. Second, a low unequal distribution is believed to maximize the effectiveness of targeted poverty reduction. Third, pro poor growth has dedicated to bring enjoyment of development more beneficial for the poor than the non-poor. It is supposed to be a vertical contribution from the rich to the poor. Therefore, the income distribution gap would be minimized.

Existing literatures have developed various inequality measurements. There is the Gini coefficient derived from Lorenz curve, an entropy index drawing different indicators of dispersions, axiomatic derivation of inequality indexes, normative measures traced from the function of social welfare (Kaplow 2002). The most common variable used for determining those inequality measures is income. This research will use the term of income distribution rather than the level of income. The inequality measure used in the research is the Gini Coefficient. The value of the Gini coefficient ranges zero until one. When the Gini coefficient is zero, it means perfect equality. Contrary, if the Gini coefficient is one, it means perfect inequality.

Government Spending

Poverty is not only the result of inability to comply with basic needs, such as foods, clothes, and shelter, but also due to the lack of access to basic needs, for example access to health facility, access to school, and access to information.

The success of the economic development process depends on the quality of human resources. Most poor people have limited access to education and health, and most of them cannot compete in the formal job. Therefore, they still work in informal sectors that tend having lower income. The gap in the quality of human resources could be overcome through government interven-

tion. It can be translated by providing government expenditure on health and education. In his paper, Klasen (2003) suggests that government spending is an indirect way to investigate whether growth is pro-poor. This public spending can be translated into providing basic social services such as education and health. This element takes the form how government contributes to promote pro poor growth. Still, public services provided by government can be considered to improve the better poor's living condition.

Government spends public funds on education as a form of investment in human capital. Human capital is the key of development. However, investing in human capital is not adequate to boost economic growth without the appropriate development strategy. The author uses the government spending on education and health rather than other indicators such as the rate of school enrolment, the rate of school participation, the rate of child mortality, and others. This is because the return of education and health cannot be measured directly to poverty reduction. However, human capital of poor and non-poor children is assumed can boost their income level in the future through enhancing their capacity.

Another public spending that will be included in the estimation to investigate indirect impact to poverty reduction is social protection expenditure. This expenditure reflects social protection intervention. Social protection expenditure can be formed into cash transfer or social benefit given to individuals or households who have a high risk on a certain defined condition.

Own-Source Income

Own source of income (*pendapatan asli daerah*-PAD) is revenues that are earned and collected by local government based on existing regulation. This income aims to give authority to local governments to fund the implementation of regional autonomy representing regional potential as a decentralization manifestation.

4.2 Methodology

In the period of the 1980s, most developing countries promoted economic development to attain high economic growth. At the same time, poverty reduction is one of development goals. Therefore, some scholars believe that economic growth can be used as a tool to reduce poverty. Despite the important role of economic growth on poverty alleviation, the large amount of attention of the issue for policy makers has addressed some discussion. The discussion such as: (i) how large the impact of economic growth to combat poverty, (ii) what are the channels explaining the effect of economic growth to reduce poverty could be attained, and (iii) what is the mechanism examining the link between growth and poverty.

The focus of this paper began with the current issue about the relationship between economic growth and poverty. The paper is motivated by the needs

for policymakers to determine fund resources and the allocation of public resources to finance government spending (Sarris 2001). In addition, theoretically it is indeed the case that growth of different economic sectors has a heterogeneous effect on poverty.

Basically, the model to estimate the impact of economic growth on poverty can be written as:

$$dP = \alpha + \beta y + \varepsilon \dots\dots\dots (eq. 1)$$

where P refers to the poverty rate; dP refers to the change in poverty rate; y represents the rate of economic growth; ε is the error term; and α and β are the parameters to be estimated. Existing literatures have debated the measurement of poverty used to assess the impact of growth on poverty.

However, analyzing the connection between growth and poverty cannot be separated from income distribution among the people in an economy. Therefore, we consider putting inequality measures in the model. Nonetheless, economic growth and income inequality are not sufficient to explain poverty reduction. Yao (2005: 183) mentions some factors determining or affecting the incidence of poverty. They are income growth, inequality, openness, economic structure, infrastructure, education, location, topography, gender, and rural industrialization. This paper is therefore formulating the model to measure the effect of economic growth, inequality, public expenditure, and regional capacity on the poverty incidence.

Adopting from Leite's research model (2002), this thesis uses a panel data set, yet it considers government expenditure on health and education as the policy variables. The model uses double-log functional forms, and then the observation with zero values will be deleted from panel data set. Moreover, incorporating prior per capita GRDP and poverty, the more efficient random-effects specification, and additional control variables, yields the following model:

$$P_{it} = c + \beta_1 Y_{it} + \beta_2 gini_{it} + X_{it}B + \alpha_i + \mu_t + u_{it} \dots\dots\dots (eq. 2)$$

Next, the Bourguignon theory assumed that a pro poor strategy could be achieved through an inequality reduction. Thus, this paper will add the interaction of the Gini coefficient with government expenditure on education and health and the interaction of the Gini coefficient with social protection expenditure. The idea of this specification is that we want to know the effect of human capital investment and social protection spending via the inequality measure. Moreover, by adding interaction terms in a model, we can explore the relationship among the variables more comprehensive. Hence, the model can be written as:

$$P_{it} = c + \beta_1 Y_{it} + \beta_2 gini_{it} + X_{it}B + \delta_1 gini * eduhealth + \delta_2 gini * socprot + \alpha_i + \mu_t + u_{it} \dots\dots\dots (eq. 3)$$

where,

- P_{it} : The natural log of the poverty rate in province i during period t
 Y_{it} : The log of per capita GRDP
 $gini$: The log of Gini coefficient
 α_i : Capture province-specific (assumed to be independent of all linear and nonlinear regressors)
 μ_t : Period-specific random effects (assumed to be independent of all linear and nonlinear regressors)
 u_{it} : A random (e.g shock)
 X_{it} : A vector of additional control variables, consist of:
 - the log of government expenditure on education and health
 - the log of government expenditure on social protection
 - the log of own income sources
- δ_1 : The interaction of the log of the Gini coefficient and the log of government expenditure on education and health
 δ_2 : The interaction of the log of the Gini coefficient and the log of government expenditure on social protection

4.3 The Empirical Results

To examine the impact of growth on poverty, the headcount index as a reflection the proportion of people living below poverty line will be a dependent variable, and other control variables in the right hand side as explanatory variables. Control variables determining the poverty rate are lagged growth, government spending (reflecting human capital investment), and the Gini coefficient (inequality measure).

The results presenting in this session are estimated using the data of 33 provinces in Indonesia over period 2004-2010. Table 4 exhibits the estimated coefficient in a poverty rate equation with the set of control variables. The results lead to answer the question 'how much does the poverty incidence change for one percentage point increase in GRDP?' In other words, we call it the elasticity poverty to economic growth. Next question that can be explained from the result is "how does income inequality affect the change in poverty rate", or known as the elasticity of poverty to inequality. The rest of coefficients will explain the effect of public expenditure on poverty reduction. Then, "how does regional capacity influence the headcount index in Indonesia". In short, not all the estimated coefficient has the expected sign.

4.3.1 The Bivariate Relationship between Economic Growth and Poverty Rate

As a first step in investigating the bivariate relationship between growth and poverty rate, we want to know the growth elasticity of poverty. This means how much the percentage of poverty measure can be reduced when income increases by one per cent. The coefficient of per capita GRDP is significantly negative in all regression. The coefficient resulted by fixed effect method is

higher than that of using OLS and random effect model. Using simple OLS, fixed effect model, and random effect model estimation (see table 3), the sign indicates that an increasing one-percentage point of per capita GRDP will be associated with a decreasing of the headcount index around 0.36 percent, 0.76 percent, and 0.62 percent respectively.

Following the approach used by Dollar and Kraay (2002), the statistical analysis reveals that the two variables (the change of poverty rate and the change of income) are negatively correlated (as generally expected) and the regression coefficient is 99 per cent significant. The F-statistic is also statistically significant. It refers that economic growth contributes significantly to the linear prediction of the change in poverty rate based on the observed data.

Table 3 The Linkage between Poverty and Economic Growth

Methods	OLS		Fixed Effect		Random Effect	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
Variable						
Per cap GRDP	-0.357*	0.048	-0.758*	0.08361	-0.624*	0.069
Constanta	5.819*	0.424	9.349*	0.7396099	8.163*	0.618
Prob > F	0.000		0.000		0.000	
R ²	0.2195		0.3341		0.3341	
Number of Observations	198		198		198	

Source: Author's calculation

However, if we only consider those bivariate relationships, this correlation might be false. The presence of unobserved region effects does not included in this correlation. Thus, other factors could explain the characteristics of each observation. With this in mind, it determines whether the poverty-growth correlation is robust when it is explained by adding third factors determining the change of poverty rate (inequality, public spending), time and country (in term of province) effects.

4.3.2 The Model Specification Test

After doing regression with three methods: OLS, FEM, and REM, then will decide the best model used for further analysis among those three frameworks. Software STATA will be used to investigate the estimated regression.

First, we will decide between pooled OLS and random effect framework through Breush-Pagan Lagrange Multiplier (LM) test. The result obtained show that the p-value is small enough to reject H_0 . Therefore, the estimation result is less biased under random effect model. Second, we conduct the Hausman test to decide between fixed or random effects. This test is to examine whether the error terms (u_i) are correlated with the explanatory variables. The null hypothesis is the individual effects are uncorrelated with other explanatory variables. The results show that p-value is 0.4304 it means we are

failed to reject the null hypothesis. Thus, instead of fixed effect, random effect model is favour to explain the model³. Since the result argues that the best model used to analyse this research, we do not have to test multicollinearity, heteroscedasticity, and auto-correlation⁴.

Table 4 Chow, Breusch-Pagan LM, and Hausman Tests

Test	Chi2	P-Value	Result
Breusch-Pagan LM	308.97	0.000	Random Effect
Hausman	4.16	0.7612	Random Effect

Source: Author's computation

4.3.2. Discussion

Since we have found that the best model is random effect model, thus we will report only for random effect framework⁵. Then, the role of economic growth on the objective of poverty reduction can be determined by knowing growth elasticity of poverty. The interpretation of the result should consider some limitations. First, this research is limited by the availability of time series data, which are short period. Second, the Gini coefficient data for year 2004 and 2006 are assumed as the same as year 2005 because Statistics Indonesia did not issue these data for those years. However, the empirical evidence proves that the low elasticity of poverty to growth in Indonesia supports the hypothesis that economic growth has reduced the poverty rate.

4.3.2.1 The Effect of Economic Growth on Poverty Reduction

It can be seen in table 5 and table 6 that growth appears to be negatively correlated with poverty rate. According to the estimated coefficient, we reject the null hypothesis at the 0.01 significance level for both equation 2 and equation 3. The estimated coefficients from two models are almost similar, which are (-0.29) and (-0.327). In other word, for every one percent of economic growth, 0.29 until 0.33 percent of the poor population will move out of poverty. It seems that the regression result suggests that the poor in Indonesia has benefited from the economic growth. A good effect of economic growth on poverty in Indonesia is contributed at least by two factors. First is that the growth strategies are accompanied by poverty alleviation programs (as explained in the previous section). At least government kept maintaining the purchasing power of the poor when shocks such as an increasing oil price and global crises affecting some people to lose their jobs. Second, the growth strategy is combined with pro job strategy. It means that a rapid economic transformation should be followed by providing job opportunities especially for the poor.

³ See <http://dss.princeton.edu/training/Panel101.pdf>

⁴ More explanation can be seen in <http://www2.sowi.uni-mannheim.de/lsssm/veranst/Panelanalyse.pdf>

⁵ See <http://www.iuj.ac.jp/faculty/kucc625>

The data shows that economic growth of Indonesia before crisis 1997/1998 was higher than recent economic growth. Related to poverty alleviation, the poverty rate could be reduced faster before the crisis. From these facts, various factors are likely to explain why the economic growth has small effect on poverty reduction during the research period. First, with low economic growth, employment cannot be highly absorbed. As a result, people's incomes become lower. Extremely, the poor face hard challenge to escape out from poverty. Second, Indonesia's economy is more vulnerable as the impact of globalization. Moreover, the domestic economy is affected by other countries' economy and global market. Consequently, it is difficult to sustain economic growth at a high level. As argued by Cervantes-Godoy and Dewbre (2010:16), rapid decline in poverty rate is difficult to be achieved with 4-5 percent of economic growth for most of the first decade of the 2000s. However, they find that before crisis, Indonesia could reduce the rate of poverty significantly when the national economic growth was 7-9 percent.

In analyzing economic growth and poverty reduction in Nigeria, Ijaiya et al. (2011: 152) distinguish economic growth into the initial level and the changes of economic growth. The study is conducted using a multiple regression analysis, and they find interesting facts. They reveal that the two approaches of economic growth have different effect on poverty. The initial level of economic growth does not indicate having an impact to reduce poverty, while a positive change of economic growth leads to help reducing poverty measure.

Table 5 The Estimation Result of Poverty Rate, per capita GRDP, Gini Coefficient, and Control Variables (For Equation 2)

Methods	OLS		Fixed Effect		Random Effect	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
Variable						
Per cap GRDP	-0.169*	0.049	-0.300*	0.084	-0.290*	0.065
Gini	1.349*	0.296	-0.189***	0.104	-0.151	0.108
Eduhealth_Exp	0.067***	0.034	0.041*	0.010	0.040*	0.010
Socprote_Exp	0.147*	0.044	-0.037*	0.012	-0.033*	0.013
PAD	-0.311*	0.036	-0.080*	0.016	-0.088*	0.017
Constanta	8.536*	0.849	7.010*	0.828	7.100*	0.690
Prob > F	0.000		0.000		0.000	
R ²	0.4417		0.5823		0.5814	
Number of Observations	198		198		198	
Variable Definition						
Povrate	Log rate of headcount index					
Per cap GRDP	Lag of Log rate of per capita GRDP					
Gini	Log of Gini Coefficient					
Eduhealth_Exp	Log rate of government spending on education and health sector					
Socprote_Exp	Log rate of government spending on social protection					
PAD	Log rate of own source income					

Source: Author's computation

Note: * significant at 1%; ** significant at 5%; *** significant at 10%

4.3.2.2 The Relationship between Inequality and Poverty Alleviation

Employing OLS method for equation 2 and 3, the result shows that coefficient for gini index variable is positive and significant. This result indicates that the higher income inequality, the higher the poverty rate. Theory in the literatures confirms this finding. However, using FEM and REM, the coefficient for the Gini index shows opposite sign compare to the result using OLS. Besides the negative sign, Gini index also insignificant to the poverty rate. The sign is expected to be positive and significant similar to OLS method result. In other words, Gini index is insignificant to minimize the poverty rate. It could be because the income distribution gap among people in Indonesia is not quite far. In other words, the difference of income level between people living nearly above poverty line and people living nearly below poverty line are insignificantly different. However, the result shows a different perspective from Timmer (2004). He argues that simultaneous and balanced interaction between growth and the process of income distribution is required to achieve rapid pro-poor growth.

Bourguignon (2004) states that when a country with higher rate of average income growth, low initial inequality, and where income growth is combined

with lowering inequality, poverty rate would be reduced faster than other countries. In order to reduce the gap of income distribution, it is necessary that the economic policy should be considered to strengthen the capacity of poor household to involve in development. It is expected that human capital investment can grow and develop the poor with the ability to compete in economic activity. From table 6, we can see that the coefficient for the interaction variable between the Gini coefficient and government expenditure on education and health is negatively significant. Therefore, we can say that human capital investment helps to lower poverty through its effect on reduced inequality. In contrast, the estimated coefficient of the interaction variable between the Gini coefficient and social protection expenditure is positive and statistically significant. Based on those findings, we cannot say that government expenditure on social protection will reduce poverty by lowering the income inequality.

Table 6 The Estimation Result of Poverty Rate, per capita GRDP, Gini Coefficient, Control Variables, and the Interaction Variable (For Equation 3)

Methods	OLS		Fixed Effect		Random Effect	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
Variable						
Per cap GRDP	-0.164*	0.049	-0.375*	0.087	-0.327*	0.066
Gini	14.014***	7.215	-0.600	1.851	-0.155	1.966
Eduhealth_Exp	-0.456	0.373	-0.147***	0.087	-0.143***	0.092
Socprote_Exp	0.161	0.365	0.195**	0.086	0.176***	0.09
PAD	-0.312*	0.036	-0.074*	0.016	-0.085*	0.017
Gini * Eduhealth Exp	-0.483	0.344	-0.171**	0.079	-0.168**	0.084
Gini * Socprote Exp	-0.018	0.328	0.212*	0.078	0.191**	0.081
Constanta	22.372*	7.948	7.060*	2.194	7.301*	2.279
Prob > F	0		0		0	
R ²	0.4513		0.6021		0.6005	
Number of Observations	198		198		198	
Variable Definition						
Povrate	Log rate of headcount index					
Per cap GRDP	Lag of Log rate of per capita GRDP					
Gini	Log of Gini Coefficient					
Eduhealth_Exp	Log rate of government spending on education and health sector					
Socprote_Exp	Log rate of government spending on social protection					
PAD	Log rate of own source income					
Gini*Eduhealth Exp	The interaction of Log Gini Coefficient with Log rate of government spending on education and health sector					
Gini*Socprote Exp	The interaction of Log Gini Coefficient with Log rate of government spending on social protection					

Source: Author's computation

Note: * significant at 1%; ** significant at 5%; *** significant at 10%

4.3.2.3 The Effect of Government Spending on Education and Health to Reduce Poverty

In this paper, government spending on education and health reflects human capital investment. The empirical evidence from two models shows different result. Using equation 2, the regression shows that the coefficient for public expenditure on education and health is positive and significant. In other words, we can say that public expenditure in education and health sector is not pro-poor budget policy. Conversely, the estimated coefficient resulted from model 3 is negative and it is statistically significant at the 0.1 significance level. It is explained before that the effect of education and health expenditure will reduce poverty via lowered inequality. Since the value of coefficient is low (-0.143), we can say that government spending on education and health in Indonesia is relatively low sensitive to reduce poverty. In view of this, an increase in human capital investment will contribute to reduce poverty.

This finding is similar to Fan and Zhang's research (2008). They observed the impact of government spending on rural poverty reduction. Focusing on public expenditure on agricultural research, rural roads, education and health, the results are evident that government spending on agricultural research, rural roads, and education had an impact on a reduction in rural poverty. At the same time, the public spending on health sector did not have a significant impact on rural poverty alleviation. While Fan and Zhang's study distinguish between education and health expenditure, this paper combines those two public spending. Nonetheless, the estimated result allows us to draw the conclusion that government spending on education and health in Indonesia has an impact on a reduction of poverty, but it has a small impact.

This interesting result can be elaborated as follow. First, the government spending on health and education has not been quite effective or even mis-targeting. It means that the non-poor might enjoy some of those public spending. Second, public spending on education and health should be accompanied by projects or program targeted o rise up poor household's human capital. Third, the effect of public spending on education and health to poverty cannot be seen in a short time. Finally, the government spending on education and health are more effective when the income inequality among people is lowered.

Furthermore, the indirect effect of education and health expenditure on poverty reduction for each province might vary regarding to region specific components to the relation between the government spending and poverty alleviation. There is also the fact predicted earlier that in the wealthiest provinces, an increasing proportion of public spending could help their people out of poverty more successful than less wealthy provinces.

4.3.2.4 The Effect of Social Protection Expenditure on Poverty Reduction

In contrast to the effect of public expenditure on education and health sector, government spending on social protection is consistent as expected. It is found that this public expenditure is negative and significantly helps to decline poverty (see table 5). For ten percent increase in social protection expenditure, the incidence of poverty will decline for 0.3 percent at the 0.05 significance level. Therefore, it can be argued that public spending can directly reduce poverty without reducing income inequality. The estimated coefficient resulted in this study is similar to Ferreira et al.'s observation (2010). Using model poverty dynamic over two decades (1985-2004), their finding suggests that social protection expenditure in Brazil declined the incidence of poverty. It is explained in their paper that in early 2005 Brazil expanded and redistributed large social protection system as mandated by the 1998 constitution. They seem to be claiming that this mandate brought a good impact on poverty.

Notwithstanding, if we add the interaction term between social protection expenditures and the Gini coefficient as captured in equation 3, the coefficient of this variable becomes significantly positive. The result is not like education and health expenditure, which is significantly negative. It can be explained that social protection expenditure is not a systematic expenditure. The use of social protection is not targeted and the recipient is not only the poor. Moreover, this spending is likely to be influenced by political interest. Moreover, Social protection mostly is allocated for disaster relief, and it is not paid regularly to the poor. Thus, it is considered that social protection does not help to reduce poverty.

These following factors might explain the findings. First, the distribution of this kind of spending can be considered as inefficient or not well targeted. It can also be regarded as non pro-poor budgeting. In the second place, the mechanism of social safety net in Indonesia has not well established yet. Next, the amount of social protection budget and the social protection coverage is relatively low, thus the effect of this spending is not significantly minimize poverty.

After all, we can say that social protection expenditure is still important as one aspect to eradicate poverty especially poverty caused by unstructured factors, such as natural disaster. Consequently, government should focus more on determining the target related to the allocation of this expenditure, and build a better mechanism in order to reach the goal that is to reduce poverty.

4.3.2.5 The Effect of Own Source Income on Poverty Reduction

Identifying the coefficient of variable own income resource, it is found that the coefficient is negative and significantly affecting poverty reduction. It shows that for every ten percent of economic growth, the incidence of poverty will decline for about 0.85 (see table 5) until 0.88 percent (see table 6). Regarding to

Law No.32 year 2004 about Local Government, there is supposed to be a strong relationship between decentralization and poverty alleviation. The estimated coefficient is strengthening this statement. The law mentions that local government has been given authorizations that are supported by own income resources and centre-region fiscal transfer. Regional autonomy also provides flexibility to local government for planning, executing, controlling, and evaluating development policies. In the decentralization era, local government is required to take a role on accelerating to attack poverty.

To sum up, poverty rate can be reduced by maximizing growth, while the Gini coefficient shows insignificant value which means that the Gini coefficient does not significantly contribute to reduce poverty rate. The fact shows that in Indonesia, growth has actually elevated income inequality. In addition, when analysing the variation of growth effect on poverty alleviation across provinces, the results are varies. The initial level of inequality, the initial poverty rate, and the capability of local government on enhancing growth are associated to the poverty-growth elasticity for each province. Therefore, the speed of poverty reduction in term of absolute poverty measure depends on the rate of average income growth, the initial level of inequality, and the changes in the level of inequality (Ravallion 2004). In Addition, the implementation of decentralization brings a consequence that each province should be responsible to promote its economic growth. It is assumed that all regions have given the same poverty reduction programs from central government. That is why the impact of growth on poverty reduction varies among regions. It seems that different initial condition or different growth pattern will not lower poverty rate equally.

Chapter 5

Conclusion

This paper attempts to investigate the link between the goals of development that is poverty reduction and the indicator of development (growth). The analytical answer is important to know whether the progress of development gained is bringing benefit for the marginalized or poor people. Regarding to this aim, this paper begin with a simple framework to know the connection between growth and poverty. After that, additional elements are added as indirect way to reduce poverty.

In general, this paper concludes several things. First, an increase in economic growth and an income inequality reduction are good for the poor. Second, empirical evidence suggests that the headcount ratio in Indonesia is more responsive on economic growth than on income distribution. Third, the effect of government expenditures varies for different type of spending. Finally, the fiscal capability in each province is required to enhance the reduction of poverty.

The empirical evidence proves that the link between economic growth and poverty alleviation are negative relationship. It indicates that a better economic performance, which is represented by economic growth, brings to an increase in the poor's welfare, which is reflected by lower number of the poor. Based on data, the realization of economic growth in the period 2003-2008 is around five per cent. The fact reveals that it is inadequate to catch up the largest number of Indonesia's population to gain the economic growth. However, although the role of economic growth on poverty reduction has a significant contribution, it is undoubtedly that economic growth matters in the economy as one of development indicator. Thus, economic growth is good for the poor but it is not sufficient (Kraay 2006). In other words, economic growth is not the only tool to realize the objective of poverty reduction, but government interventions are also required to accelerate poverty eradication.

Then, during the research period, the coefficient of Gini index indicates a negative insignificant relationship to poverty reduction. Contrary to research done by Timmer (2004), Nssah and Lambert (2006), during three decades (1960s-1990s) growth has significantly associated to reduce poverty even though there was an inconsistency in the inequality measure. Moreover, the coefficient of public spending on human capital investment in term of health and education is positively significant related to the headcount ratio. It implies that public expenditures on health and education do not help to eradicate poverty. Resulting from this, government spending on those sectors can be said as non pro-poor policy. It can be said that the poor do not accurately enjoy the use of this spending. However, the effect of education and health expenditure to reduce poverty can be channelled through lowering income inequality. In addition, to make this expenditure becomes pro-poor budget, it is not only the matter of increasing public expenditure of education and health sectors, but also expanding and distributing basic education and basic health services to the poor.

Related to social protection expenditure, the government spending on this sector is significant to reduce poverty. Therefore, government should give more attention on targeting especially in this public expenditure to accelerate poverty alleviation in the future. In addition, a well designed of social protection system might be an effective tool and a key role to reduce poverty. Additionally, Ferreira et al. (2010) pointed out the important argument that is the expansion of social security and social safety net could be driven through an increase in coverage and an increase in the average benefit levels. Analysing the effect of fiscal capability, it is found that the higher the own resource revenue, the lower the poverty rate.

A good impact of an economic growth to reduce poverty or to raise pro-poor growth can be achieved through several strategies. It can be categorized into two fiscal policy and monetary policy strategy. Firstly, fiscal policy, it can be translated into pro-poor budgeting and social spending. In order to help the poor to improve their health and education, resources to provide physical, social, and intellectual infrastructure should be allocated by government. The second is through monetary policy, which can be channelled through micro-credit programs that are given to the poor. The programs are expected as a mechanism to create job opportunities for everyone. In the future, it could be the main avenue for reducing income poverty and achieving pro-poor growth. As suggested by Jaiya et.al (2011), Macroeconomic stabilization reflected by country's fiscal and monetary policies is essential to support investment climate. That investment is expected to increase the productivity, and it further brings benefit for the poor and non-poor.

In conclusion, the growth is still needed to enhance the effectiveness of poverty reduction. Sustained growth should be accompanied by encouraging in human capital investment to accelerate poverty reduction. Therefore, the collaboration of inclusive growth and effective government intervention are expected to attain significant poverty reduction in the future. Then, since government expenditures are purposed to correct market failures and improve equity among people in an economy, government should allocate and distribute the public expenditures accurately. In addition, a well design and a good implementation of poverty reduction program should be done. This is the requirement to accelerate poverty alleviation. Finally, the result of the paper suggests that economic growth during period 2004-2010 in Indonesia could be concluded as pro-poor growth.

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