



**Economic Growth, Pro-Poor Growth and
Inclusive Growth from Social Expenditures
Perspective:
Evidence From 33 Provinces in Indonesia
on 2006-2012**

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List of Acronyms

ADB	Asian Development Bank
APBD	<i>Anggaran Pendapatan dan Belanja Negara</i> (Local Government Budget)
BIC	Bayesian Information Criterion
BOS	<i>Bantuan Operasional Sekolah</i> (School Operational Assistance)
FEM	Fixed Effect Model
GDP	Gross Domestic Product
GRDP	Gross Regional Domestic Product
HDI	Human Development Index
INDO DAPOER	Indonesia Database for Policy and Economic Research
JPS	<i>Jaring Pengaman Sosial</i> (Social Safety Net)
NPL	Non Performing Loan
OECD	Organizations for Economic Co-operation and Development
OLS	Ordinary Least Square
UNDP	United Nations Development Programme
PKH	<i>Program Keluarga Harapan</i> (Family Welfare Programme)
PPP	Purchasing Power Parity
US	United States

Abstract

While battling poverty incidence, Indonesia is also confronted with two interwoven rudimentary challenges, sustained economic growth fueled with prevalent income inequality. Henceforth, the Government had intervened by executing redistributive policy through the inclusive growth strategy by social expenditures provision in the form of social assistance spending and education support spending (BOS Program). Nonetheless, little has been proven empirically concerning the effect of social expenditures to economic growth and whether such spending can be categorized as pro-poor growth and inclusive growth strategy in the Indonesian context.

Against this backdrop, this paper attempts to shed a light in this area by employing regression analysis through the Fixed Effect Model to investigate the effect of social assistance spending and education support spending (BOS Program) to economic growth in 33 Indonesian provinces from 2006-2012. After identifying the type of social spending which is able to stimulate economic growth, this paper then tries to determine whether such social spending can be categorized as pro-poor growth and inclusive growth instrument in the context of its efficacy on poverty alleviation and human development improvement respectively. The result suggests that only education support spending (BOS Program) that statistically significant in uplifting economic growth level. Furthermore, closer investigation indicates that this particular spending can be classified both as pro-poor growth and inclusive growth instrument.

Relevance to Development Studies

Human development, poverty incidence, and economic growth, three interlinked subjects that possibly, have been the most perennial discourse in the planet, broadly in the development studies, and specifically in the economics sphere. Through the lens of social expenditures, this paper strives to offer comprehensive and vigorous analysis encircling to what extent this particular spending is associated with these three subjects in the context of Indonesian provinces.

Keywords

Social expenditures, social assistance spending, education support spending, BOS program, economic growth, pro-poor growth, inclusive growth.

CHAPTER 1

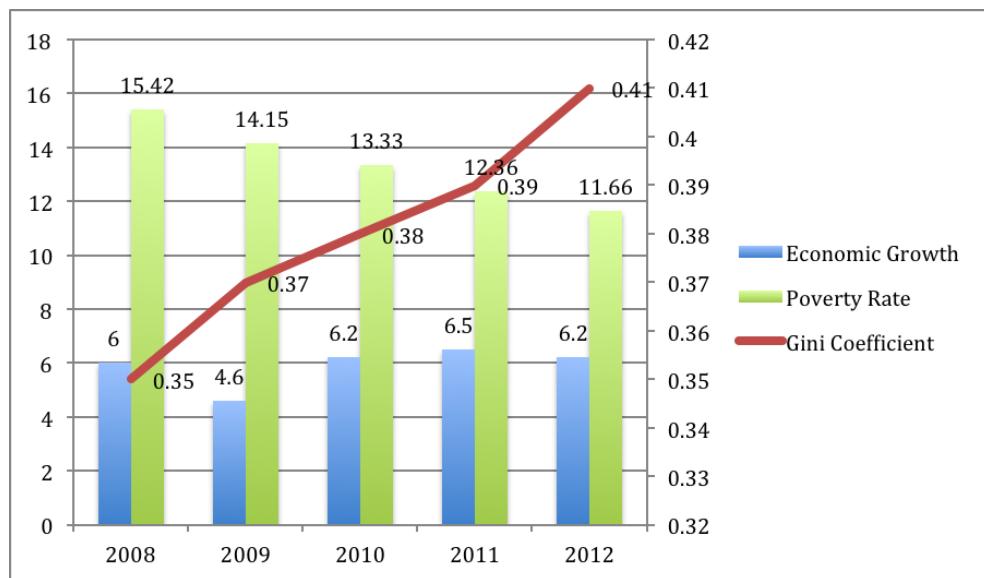
INTRODUCTION

1.1 Background

Why is it crucial for policy maker to prioritize economic growth in the first place? The answer is stark since economic growth is a passport to enhance not only the living standards of the deprived but also everyone else's in the society (Dollar and Kraay, 2002). Economic growth is of considerable significance to the improvement of nation's social welfare indicators such as health, education, and political condition. Higher economic growth can also be translated into higher job creation.

However, it is beyond a shadow of a doubt that the key challenge faced by every nations nowadays is how to promote more inclusive growth in the midst of rising inequality and high poverty rate on most part of the globe. Milanovic (2012) argues that, global inequality nowadays is around 70 gini point. Thus, it can be inferred that bottom 50 percent of the world population only acquires 6.6 percent of total income while top 1 percent of it obtains 13 percent of total income. Furthermore, in spite of being successful in halving 1990 poverty rate in 2015, world inhabitant living in extreme poverty are still intolerably high. Jaw-droppingly, more than one billion global population in 2011 lived in less than \$1.25 on a daily basis (World Bank, 2015).

Figure 1.1 Indonesian Economic Growth, Income Inequality, and Poverty Rate



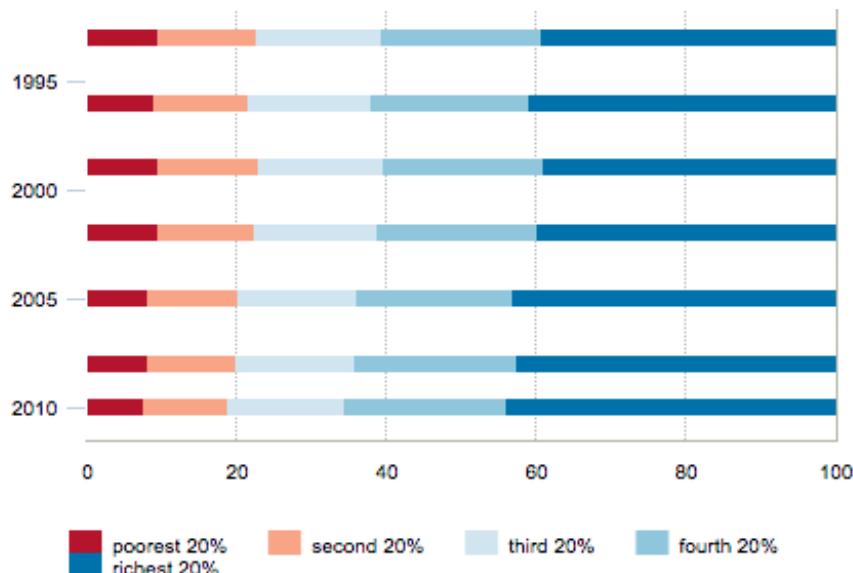
Source: Statistics Indonesia

Figure 1.1 depicts two interlaced rudimentary challenges of Indonesian economy: maintaining economic growth while facing slowing pace of poverty

reduction. For five-year-period, Indonesia had been able sustaining its GDP growth rate at no less than 6 percent level. However, it plunged to the level of 4.6 percent in 2009 due to global economic crises by which it impacted world demand for Indonesian exports.

Interestingly, there had been a hike in income disparity as measured by the Gini Coefficient from 0.35 point in 2008 to 0.41 point in 2010. Notwithstanding the rising trend of income inequality, for a half decade the world largest moslem population country had been able to lessen its poverty rate for 3.76 percentage point from 15.42 to 11.66. Surprisingly, poverty alleviation pace in Indonesia is slowing as mirrored in this figure. The reduction of poverty from 2010 to 2011 and from 2011 to 2012 is 0.97 and 0.7 percentage point respectively. In addition, from **Figure 1.2**, it can be shown also that in 2010, 20 percent of poorest Indonesian population (first quintile) accounts for only 7.6 percent of total income while 20 percent of wealthiest Indonesian population (last quintile) accounts for up to 43.7 percent of total income. In other words, the deprived are gaining relatively low from the Indonesian economic growth.

Figure 1.2 Indonesian Distribution of Income by Quintile



Source: Poverty & Equity Data Bank and PovcalNet

Furthermore, Alesina and Perotti (1996) stress the growth-eroding effect of inequality through the inefficiency it could brings. To explain further, the persistence of inequality could elevate crime rate in the society. Such rioting forces household to sacrifice resource to protect their private property. Against this backdrop, it is become evident that to circumvent the income gap through poverty reduction and human development improvement, Indonesian government should develop inclusive growth strategy to ensure that every citizens including those vulnerable and deprived could be actively involved both as actors and beneficiaries in the output growth creation.

According to the Medium Term Indonesian National Development Plan 2004-2009 and 2009-2014, Indonesian government had pursued inclusive growth

strategy through the provision of redistributive transfers in the form of social assistance spending and education support spending (School Operational Assistance/BOS Program). Handayani (2014) from ADB argues that such social spending is regarded as silver bullet both as a pillar to support pro-poor growth and inclusive growth and also as a stabilizer for income support and demand during the recession. Nevertheless, in the Indonesian context, little has been proven empirically concerning the effect of social expenditures to economic growth and whether such spending can be categorized as pro-poor growth and inclusive growth strategy.

1.2 Relevance and Justification

In the midst of three interwoven fundamental challenges: bolstering up economic growth while attempting to narrow income inequality and alleviate poverty, Indonesian government had implemented redistributive policy through the inclusive growth strategy by providing social expenditures in the form of social assistance spending and education support spending. Theoretically, social expenditure in the form of social assistance could depress economic growth when government impose tax to productive activity and redistribute it to unproductive people in the society, which in turn discourage them to work and innovate.

According to Lee and Chang (2006), social assistance spending and economic growth could exert downward pressure on economic growth since such spending has transfer payment attributes which can be considered as passive expenditure for consumption. Yet, they argue that if the social security system is not well-established, there will be higher social costs in terms of rising unemployment rate, poverty rate, and school drop out rate which has adverse impact on human capital accumulation. On the other hand, there have been consensus when it comes to social spending in the form of public education. This type of social spending is known to have positive impact on economic growth through human capital formation and externalities that brings higher children education achievement and attainment for children, better health and lower mortality rate of children which in turn increase productivity and lead to rise in economic growth (Abhijeet, 2010).

Nevertheless, **there have been lack of empirical studies in Indonesia studying the effect of redistributive transfers in the form social expenditures to economic growth and whether such spending is able to alleviate poverty and enhance human development.** Hence, this study tries to throw a light in this area by studying these variables according to Indonesian context.

1.3 Objectives and Research Questions

This study aims to understand the relationship between social expenditures and economic growth in 33 provinces in Indonesia from 2006 to 2012. This particular period is analysed since the government had been promoting inclusive growth strategy so that the poor and the vulnerable and every layer in the society can be benefitted from the output growth creation.

Social expenditures in this study will be divided into social assistance spending and education support spending. These two spending needs to be separated due to their different nature in affecting economic growth. Social assistance spending entails passive expenditure attribute for consumption while education support spending is considered to be more productive to economic growth

After understanding which type of social outlay can affect economic growth, **this paper then tries to determine whether such social spending can be categorized as pro-poor growth and inclusive growth instrument in the context of its efficacy on poverty reduction and human development improvement respectively.** Therefore, to achieve these objective, this study will address following questions:

- i. What is the relationship between social assistance spending to economic growth in Indonesia?
- ii. What is the relationship between education support spending (BOS Program) to economic growth in Indonesia?
- iii. Which type of social spending that can be categorized as instrument of pro-poor growth related to its efficacy in reducing poverty?
- iv. Which type of social spending that can be categorized as instrument of inclusive growth related to its efficacy in improving human development in the society?

1.4 Scope and Limitations

From the data standpoint, short period of the data series employed in this study is because the BOS Program has just been started in 2005. Furthermore, to precisely capture the behaviour of BOS program, this study employs BOS Program realization data (not allocation data). However the availability of the this data is limited to 2013 only.

In relation to the analysis of the efficacy of social expenditures in reducing poverty rate, this paper only employs poverty headcount ratio as the measurement of the poverty rate. The analysis would have been much deeper, had the other poverty measurement such as the poverty gap be utilized. This paper uses poverty headcount index based on the consideration that the Indonesian government regularly monitor the poverty condition by using this particular measurement.

1.5 Data and Methodology

Data in this research are obtained from various sources. To acquire social assistance spending, education support spending (BOS Program) and local government investment, this research employs Local Government Budget (APBD) data from Directorate General of Fiscal Balance Ministry of Finance Indonesia. The data of GRDP and several growth determinants namely share of agriculture sector on GRDP, and human literacy rate are acquired from Statistic Indonesia. The Human Development Index Data is also acquired from this particular source. In addition, the poverty rate and access to infrastructure data are obtained from Indonesia Database for Policy and

Economic Research (INDO DAPOER)-World Bank. In addressing the objectives of this study, the author develop three models and conduct regression analysis through the Pooled OLS, Fixed Effect Model, and Random Effect Model. Model specification test is employed to choose the most appropriate model to be analyzed further.

1.6. Organization of the Paper

In order to answer the research questions of this study, the author organizes this paper as follows: **Chapter 1** provides reader with the background that motivates the author to conduct this particular study. **Chapter 2** explains the theoretical and empirical framework utilized to address the objectives of the study. **Chapter 3** provides reader with the insight concerning the subject of this research in retrospective, existing, and prospective manner. **Chapter 4** explains the data and the methodology employed by the author to address the objectives of the research. **Chapter 5** provides reader with the estimation result and in-depth analysis of the research subject. **Chapter 6** provides reader with the summary of the paper.

CHAPTER 2

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

2.1 The Theory of Welfare State in Retrospect

Welfare state notion can be defined as a concept by which state plays an essential role in nurturing and protecting the economic and social well-being of its citizen according to the basis of equal opportunity, equitable wealth distribution, and government responsibility to those incapable to provide themselves with the basic needs. According to Blau (1989), the discourse of welfare state emerged in the midst of the Great Depression era in the 30's. However, the discourse of welfare state had been directed towards government institution subsequent to the World War II. Afterwards, Blau argues that welfare state theories have mushroomed and can be categorized into three main theories; the conservative, moderate and left views.

The first theory was jolted by the economic downturn by which the excessive size of welfare state hold responsible for such economic slowdown. The conservatives insisted that too much welfare state can lower the natural productivity of capitalism. Too many social benefits received by welfare client create counterproductive effect which lead to dependency. One of the conservatives - Charles Murray, (1984, as cited in Blau, 1989) claimed that to avoid the dependency, the welfare state system should be reformed by jettison the social welfare program like, in the United States, Medicaid and unemployment insurance.

The second theory - the moderate view includes the neoliberal welfare which believe the bottomline of human capital investment through social expenditure. It is not because the government is benign or the deprived is needing assistance that this kind of spending is allocated. The logical argument is that to achieve global competitiveness and efficiency, the budget is better allocated to arm the poor with practical ability.

Lastly, the radical theory which views the interaction between welfare state and market economy. In other words, the state should maintain the existing political and economic institutions so that the capital accumulation activity of the entrepreneur can be sustained. Hence, tax can be levied from such business activity so that the government could get revenue to finance its social welfare programs (Blau, 1989).

The rationale behind the state role in promoting its people's welfare can be traced back in one of the most ancient tenet of political science: the welfare of the people is the highest law (Hobbes, 1968, as cited in Spicker, 2000). Therefore, since government has moral obligation to nurture their citizens welfare, they have to instigate activities which will lead to nation prosperity including social security system. Spicker argues that government should actively ensure social welfare through social protection since "markets" cannot be relied upon to secure welfare. Markets are unable to provide welfare to all

of the society in the sense that, the range of services of such market based social protection system is limited to number of people. In this context, markets comprise of non-profit or profit oriented institution such as private hospitals, not commercial market terminology which is extensively used in conventional economic theory.

2.2 Social Expenditures

There has never been a consensus of social spending specific definition across the nations. While every countries has their own characteristics, IMF (see Elekdag, 2012) underlines the common feature of social spending as programs associated with healthcare, education, and social security nets including pension plans and income support for both the working-age and elderly population.

(Lindert, 1996) defines social expenditure as social transfers which include state expenditure on well-being, unemployment compensation, pension, healthcare, and employees compensation plus spending on education sector. It is important to note that social expenditures analyzed in this study will be narrowed into **social security spending and education support spending**. The social security spending will be further defined as the social assistance spending and exclude the social insurance spending (e.g pension fund).

2.3 Social Security Expenditures and Economic Growth

The terms of social protection, and social security are often equivalently used by various institution. OECD classifies the first term as state responsibility in providing assistance to maintain the living standards of vulnerable groups including low-income family, the old-age, the incapable, the sick, the jobless, or young persons. Such assistance involves cash benefits, direct in-kind facilities of goods and services, and tax holiday with social purposes. Whereas ILO categorizes last term as provision of basic income for the unemployed, the sick and injured, the elderly and pensioners, the disabled, the pregnant and the children and household without breadwinner. On the other hand, UNDP (2006) viewed the role of social protection as the instrument to minimize the vulnerability of the deprived so that they can participate more and get more advantage from the economic pie. Albeit there is no single definition that is broadly accepted, social protection and social security constitutes actions and policies to further improve the capacity of the needy and the vulnerable.

The existing state of knowledge is not able to making clear cut generalization of the economic effects of social security expenditure, whether it is detrimental or beneficial. One side of the argument confirms that social protection will adversely impact economic growth through its depressive effect on physical capital accumulation (Bellettini and Ceroni 2000). Since social security is financed through distortionary taxes, it exerts downward pressure on national saving and national investment. Feldstein (1996) argues that social security expenses trims down saving by nearly 60 percent. However, the magnitude in this findings is extremely dubious. Furthermore, this mechanism is limited and tends to ignore essential framework by which redistributive expenditures through social security spending could positively affect economic growth.

In contrast, another side of the argument argue that conducive environment to investment as a propeller of growth may be created by ensuring socio-political stability through more allocation in redistributive expenditures (Buiter and Kletzer 1993, as cited in Belletini and Ceroni, 2000). In a study conducted by Sala-I-Martin (1992, as cited in Belletini and Ceroni, 2000), he confirmed positive nexus between social security expenditures and the level and productivity of investment through the social cohesiveness and political stability which social security could brings. In other words, in the absence of such social cohesion, economic growth could be fostered by way of preventing capital disaccumulation (Foa, 2011). Sala-I-Martin (1996) also suggests that when economy is politically stable, market activities will be more efficient and eventually lead to more productive physical capital investment.

2.4 Education Expenditures and Economic Growth

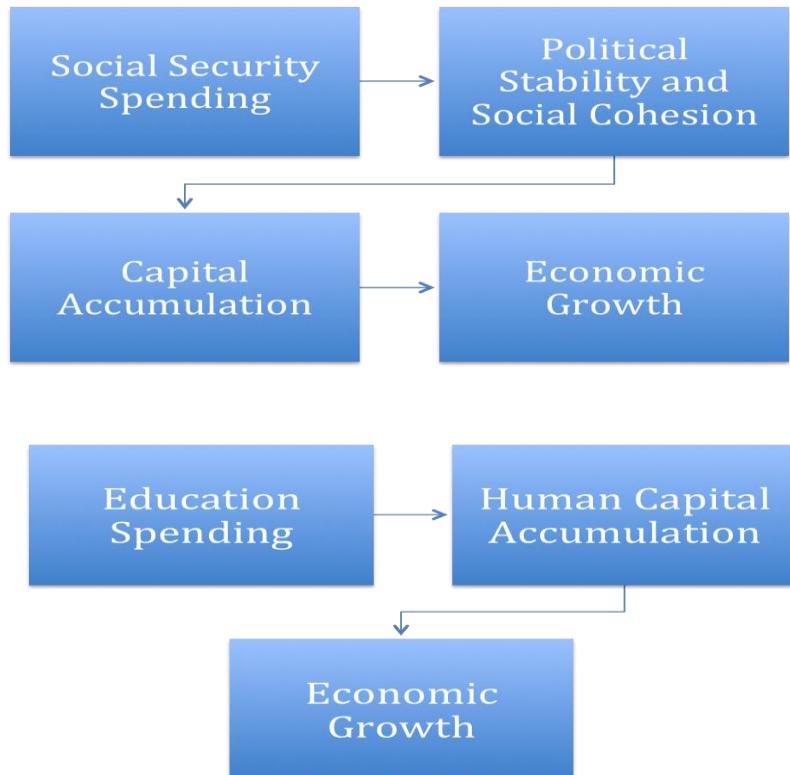
Another social outlays studied in this research is the education support spending. It has been universally confirmed that investment on education sector plays critical role in promoting income growth via human capital accumulation. No countries across the globe could sustain its economic growth without investment in human capital. The “Asian Miracles” countries which associated with high productivity economic growth like South Korea is found to had been investing more on primary and secondary education (see Aghion et. al, 2009).

The link between education spending, human capital accumulation and economic growth has been studied under the Endogenous Growth Theory formalized by Paul Romer and Robert Lucas in mid 80’s. This theory emerges since its problematical assumption of the Standard Neoclassical Growth Model: the diminishing return of capital. Thus, according to such model, a nation without technological progress will converge to its steady state by zero growth per capita.

On the contrary, the Endogenous Growth Theory improved the model by incorporating another form of capital: human capital, so the diminishing return assumption need not be applied into this new model. Another reasoning of the incorporation of human capital was that, long run diminishing return could be avoided by a country’s economy only by taking into account technological progress in the form of the inception of knowledge. Hence, the Endogenous Growth Model emphasizes the importance of investment in human capital, innovation and knowledge in determining economic growth (Barro and Sala-i-Martin 2004). Study conducted by Mankiw, Romer, and Weil (1992) also confirmed Robet Lucas findings that rate of growth of an economy depends on human capital formation. Such accumulation may increase productivity and would ultimately enhance economic growth.

There have been ample studies which found significant and positive relationship between education expenditures and economic growth including studies by Easterly and Rebelo (1993 as cited in Glomm and Ravikumar, 1997), Godspeed (2000), Kneller, et. Al (2000), and Aghion et. al (2009). (Kaganovich and Zilcha 1999) analyze the effect of government spending on education sector financed by waged income taxes to economic growth and suggests that higher investment on such sector pave a way to higher aggregate output of the economy in subsequent period.

Figure 2.1 Conceptual Framework of the Social Expenditures Effect to Economic Growth



2.5 Broadening the Scope: Another Determinants of Economic Growth

Economic growth of a country is plausibly determined by structural transformation. It indicates the structural change of economic activity across three main economic areas; agriculture, manufacturing, and services (Herrendorf et al. 2013). Every sector in the economy has their own behavior so that they give different portion and impact to economic growth. Barro (1997) suggests that when there is huge switch of structural transformation, structural change of the economy variable is essential to control the way growth determinants explaining output growth.

Public investment has also been known as one of the determinant of economic growth. However, there has been lively debate whether government investment in the economy should be encouraged or minimized. Theoretically, according to John Maynard Keynes in his famously written book "*The General Theory of Employment, Interest, and Money*", government outlays can be the engine of economic growth since it spurs purchasing power in the economy. Keynesian proponent even suggests the government officials to run budget deficit in the midst of economic downturn to help restore the stability (see Mitchell, 2005).

On the contrary, it is argued that the government size should be kept down at its minimum level since bigger government spending harms economic growth due to inefficient allocation of resources (see Mitchell, 2005). Khan and Kemal (1996) confirm the growth-hampering effect of public investment by

proclaiming that, instead of actively involved in the economy, government should step down and provide favourable condition by which private sector could be blossomed and become the driver of the economic activity. They also suggest that if government could not vigorously choose the type of investment which is complementary to private investment, there will be consequences that should be paid in terms of lower productivity and growth. Folster and Henrekson (1999) indicate that when government is investing in the sector that can curb private sector activities, it could creates inefficiency in the economy.

Another growth determinants that have been identified is literacy rate. It has been regarded as one of the stimulant of economic growth and the most reliable measurement of human capital. Columbe and Tremblay (2006) argue that unlike literacy rate, others proxy of human capital such as school enrolment rates and educational attainment entails measurement error and comparability issue due to the differences of education system across the globe. They also found that higher level of literacy rate brought about a bigger delta of output growth.

2.6 The Concept of Pro – Poor Growth

The nexus of economic growth and redistribution is tightly entangled to the pro-poor growth concept. It is interesting to note that from the existing literatures, the notion of pro-poor growth is often used interchangeably with inclusive growth. For example Grosse et. al (2008, as cited in Ranieri and Ramos, 2013) interpret inclusive growth as “weak absolute of pro-poor growth” whereas Habito (2009, as cited in Ranieri and Ramos, 2013) consider inclusive growth as economic growth that creates poverty alleviation. On the other hand, Klasen (2010, as cited in Ranieri and Ramos, 2013) defines pro-poor growth as growth that benefit only to people below poverty line while inclusive growth focuses on each layer in the society.

Economists and policymakers around the world have long been concerned on how to promote equity embodied in the economic growth creation in the society since the “trickle down effect” of economic growth has failed to prevail. Initially, it is generally perceived that to trim down poverty level, economic growth has to be spurred first and subsequently redistribute its fruit to the whole society (see Pieterse, in Mers, 2012). Dollar and Kraay (2002) convinces that economic growth coalesced with sound fiscal policy, low inflation rate, and trade openness would simply lead to the increasing income of the deprived. However, instead of being shared, the benefit of economic growth is only benefitted to a spesific segment in the society as reflected by towering inequality and persistent level of poverty (see Ranieri and Ramos, 2013). Thus, in an attempt to battle world poverty, Berg and Ostry (as cited in Anand et.al, 2014) points out the importance of pro-poor growth policy in such a way that the deprived can be benefitted from economic growth.

From the theoretical standpoint, the concept of pro-poor growth can be divided into absolute and relative terms. The first approach views growth as pro-poor if the economic growth is able to ramp up the income of the poor irrespective the relative impact of the growth itself. To explain further, the absolute view considers growth to be pro-poor whether the poor's income is increased by \$2 while the rich is increased by \$2000, or whether both of their income are increased by the same amount. Conversely, the second approach entails the relative impact of the growth in the economy. Economic growth is

considered to be pro-poor in relative term if the income of the deprived is growing faster than the income of the rich. Therefore, the relative approach stresses the importance of income gap reduction in alleviating poverty rate.

2.6.1 How to Measure Pro-Poor Growth

Theoretically, there are several ways to determine whether economic growth categorized as pro-poor as follows:

1). Growth Elasticity of Poverty Rate

This particular measurement explains the efficacy of economic growth in reducing the poverty rate. In other words, the elasticity shows percentage change of poverty level with respect to one percentage change of GDP growth.

$$\epsilon_H = \partial H / \partial GDP \times GDP/H \quad (2.1)$$

Where H represents the headcount index to measure poverty rate, and GDP represents economic growth. Low elasticity/inelasticity indicates the inability of economic growth to significantly lessen the poverty level whereas high elasticity indicates the considerable effect of economic growth in reducing poverty level.

2). The Pro-Poor Growth Rate

Ravallion and Chen (2001) suggests that to acquire valid measurement of pro-poor growth, there are several caveat that should be met such that: (1). The measurement should be in harmony with the poverty direction in the sense that positive pro-poor growth implicate the decrease in poverty rate, and vice versa; and (2). The poverty measurement embedded in the pro-poor growth measurement should fulfil the poverty measurement standard principle. They argues that the measurement that consistent with these two properties is the Watts index. Such index is calculated by taking logs of the poverty line by income division and then finding the mean over the deprived. Hence, the pro-poor growth rate generates the change of the division of Watts index by the headcount index (Ravallion, 2004).

3). The Pro-Poor Growth Index

This index is formulated by Kakwani and Pernia (2000) by firstly separating the effect of one percent increase of economic growth to poverty rate into two effects, the pure growth effect and the inequality effect. The first effect is associated with the effect of economic growth to poverty rate when the income inequality is constant while the second effect is related to the economic growth effect to poverty rate when economic growth is accompanied by income inequality. Hence, these two effects can be written as follows:

$$\Delta O = \Delta(O)_G + \Delta(O)_I \quad (2.2)$$

where ΔG , and ΔI represents the growth effect, and the poverty effect respectively. On one hand, the sign of the first term in the right hand side of **Equation (2.2)** is always negative. It indicates that increase in economic growth is always reducing poverty level. On the other hand, the second term's sign can be either negative or positive. When the sign is positive, the change of the output in the economy is followed by widening income gap in the expense of the poor. Another sign implies the shrinking income gap which favouring the poor when there is economic growth.

After the decomposition, the Pro-Poor Growth Index can be formulated as follows:

$$\Phi = \eta / \eta_G \quad (2.3)$$

where η_G and η are proportionate change in poverty rate due to one percent increase in economic growth in the absence of income inequality and proportionate change in poverty rate caused by economic growth coexisted with income inequality respectively. Afterwards, Kakwani and Pernia classified the index as follows:

- $0 \geq \Phi$: non pro-poor growth
- $0.33 \geq \Phi > 0$: weakly pro-poor growth
- $0.66 \geq \Phi > 0.33$: fairly pro-poor growth
- $1 \geq \Phi > 0.66$: strongly pro-poor growth
- $\Phi > 1$: pro-poor growth

It is noteworthy that the nature of this index implies that economic growth will lead to faster pace of poverty reduction in the absence of income gap. To explain further, let us consider the example of Lao People's Democratic Republic between 1992-1993 and 1997-1998. An increase in Laos economic growth on that period by one percent reduced their poverty incidence by 0.8 percent. Based on **Equation (2.2)** this figure is determined by two effects: -3.2 percent of the pure growth effect and 2.6 percent of the income inequality effect. In other words, the poverty incidence in this country could have been reduced by 3.2 percent (or even more) had their income disparity level remained constant (had shrunked). Therefore, according to **Equation (2.3)**, the Pro-Poor Growth Index of Laos is 0.21 which implies that this nation's economic growth is weakly pro-poor (Kakwani and Pernia, 2000).

2.7 Inclusive Growth and Human Development

Notwithstanding the fact that there has never been a consensus about the distinction between pro-poor growth and inclusive growth, the clear delineation can be made between these two phrases. While the pro-poor growth notion constitutes a trickle down effect of economic growth only to those below the poverty line and the vulnerable, the idea of inclusive growth simply cannot be detached from the human development, not only that of the marginalized but also that of every tier in the society.

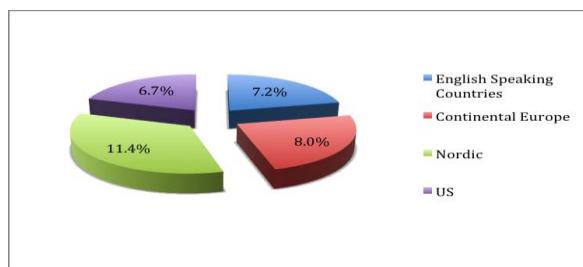
Consequently, the concept of inclusive growth is broader in the sense that it unites a missing link between economic accomplishment measured by GDP and human development gauged by the Human Development Index (HDI) (UNDP). Therefore, economic growth will only be regarded to be inclusive not only from its capacity in propelling level of income but also its capability in nourishing multifaceted social well-being such as health and education (UNDP, 2014). This denotation of inclusive growth is also confirmed by Ranieri and Ramos (2013) which stated that this term is associated with the improvement of people's standard of living.

According to Ranis and Stewart (2002), inclusive growth runs when there is redistribution of income to the area that can improve human development. He further emphasizes that this resources allotment will have greater magnitude to the human development of the poor household since scarcity is the most

prevalent among them. Furthermore, according to McKinley (2010), inclusive growth works when people acquire access to the services that can ameliorate their capabilities in seizing economic opportunities so that they are ready to be employed. Such services include health, education, clean water, and sanitation. Thus, improvement in human development will in turn enhance their capability to actively involved in the growth creation and would ultimately ramping up society's income and accelerating the output growth pace.

Importantly in the provision of the education services, Sapir (in Mello and Dutz, 2012) points out the accomplishment of Nordic countries in the international competitiveness level for the past 15 years by having higher share of education service to their GDP level than other advanced countries do (**Figure 2.2**). He further explains that, by redistributing the benefit of growth in the form of “capacitating services” provision like education, Nordic government have been able to shield their people from the threat of the poverty. Afterwards, having been equipped with knowledge and skills, people will be ready to enter labour market so that they can actively engaged in the economic growth creation.

Figure 2.2 Direct Provision of Services including Education as a Share of GDP



English speaking: Australia, Canada, Ireland, New Zealand, UK and US.

Continental Europe: Austria, Belgium, France, Germany, Italy, Netherlands.

Nordic: Denmark, Finland, Norway, and Sweden.

Source: OECD (2004, Mello and Dutz 2012).

Chapter 3

Social Security System in Indonesia

3.1 The Evolution of Indonesian Social Security System

3.1.1 Social Security System in Indonesia Prior to the Asian Financial Crisis 1997-1998

Indonesian social security system, before the breakout of Asian economic turmoil in 1997, was such a system which was not well integrated and well structured. The scope of the system including health insurance, work injury, pension and death benefit was only limited to public servant, member of Indonesian Army, and those worked in private sector and not covering the people worked in informal sector. Moreover, The Government of Indonesia had not explicitly mentioned the social protection system as one of its development agendas.

Initially, the concept of health insurance which provided only for civil servant, member of Indonesian Army and all of its family was introduced through the Presidential Decree 230/1968. It was organized by the Healthcare Fund Agency (Badan Penyelenggara Dana Pemelihara Kesehatan) as the embryo of Healthcare Insurance Ltd (PT. Askes). Afterwards, through the Government Regulation 69/1991, the Indonesian healthcare system had evolved by the inclusion of veteran war and all of its family as one of the beneficiaries. This improvement had also paved way for those worked in business entity to become beneficiaries of the insurance.

Interestingly, before there was formal health insurance initiated by the Government, the society had already started their own version of health insurance by virtue of regular social gathering (arisan) activity which had grown rapidly. By and large, this cultural based activity is held at an agreed fixed interval (usually monthly) at each member's home in turn and aims to form some sort of "community saving scheme". The agreed amount of money paid by arisan member to each other member is equal the amount received when the arisan is organized. To determine the revolving arisan holder, lots will be drawn and he/she will receive payment from every other members and should become host to provide food for those members in the next arisan.

Based on such activity, the government then spearheaded the healthcare insurance program in 1980's by the name of Society Health Fund (Dana Upaya Kesehatan Masyarakat). Contribution gathered from the community in the level of grass roots such as from the village level to the sub-district level is managed by the society themselves and is used to provide healthcare services. Alas, this informal insurance could not be relied upon by the society as a sound protection scheme. Several justifications have been proffered including the low financial capability of the participants, and small scope of its membership. Related to that, the desirability of informal insurance system implementation was called into question. Therefore, the government is no longer developing such scheme and focusing more on expanding the promulgation of insurance system provided by formal institution.

From the planning and regulation standpoint, the more structured version social security system is originated in 1994, when the Government of Indonesia had begun to incorporated poverty alleviation as one of Indonesian development goals. Whereas in 2004, the Government came up with National Long Term Development Plan and National Social Insurance System Law 40/2004 which stress the importance of social protection, inequality reduction and poverty alleviation as the bottomline of national development.

Another category of social security system before the crisis was the formal employment insurance. It was initiated through the Social Security Employment Law 3/1992 followed by the appointment of PT. Jamsostek as the agency through the Government Regulation 36/1995. Surprisingly, the pension program for public employees and member of Indonesian Army had already been established three decades earlier through the Government Regulation 15/1963. Even though it had not been properly devised in a well integrated manner, such program had evolved and much has changed in the subsequent period.

It is also worth noting that prior to Asian economic turbulence from 1997 to 1998, society's empowerment program such as the Development of Remote Village Program (Inpres Desa Tertinggal), and the Improvement of Family Welfare Program (Program Pembangunan Keluarga Sejahtera) had been the epicentre of Indonesia's social security system. The first program which had been implemented in every region from 1993 to 1997 was accompanied by infrastructure provision program through the Provision of Infrastructure for Remote Village Project (Proyek Pembangunan Prasarana Pendukung Desa Tertinggal). Before these two programs were implemented, there had been an almost identical program yet in smaller scale like the Improvement of Farmers/Fishermen's Income Program (Program Peningkatan Pendapatan Petani/Nelayan) coined in 1979. Before the economic calamity erupted, it should be noted that the Indonesian Government efforts in providing social security were in the form of subsidy and public service provision such as education, healthcare, and other services, not in the form of cash transfers (National Development Planning Agency, 2014).

3.1.2 Social Security System in Indonesia in the Midst of the Asian Financial Crisis 1997-1998

In the period of 1997 to 1998, several nations in Asia particularly East Asia and Southeast Asia including Indonesia had been experiencing fiasco subsequent to their outstanding economic performance. Since the late of 1960's, Indonesia had been able to sustain its GDP growth rate, to manage low inflation rate and to increase its standard of living. However, the now-fourth largest populous country in the planet and the fifteenth largest economy-was severely impacted by the slump. Thanks to massive sudden reversal of capital inflow fueled by the doubt in political situation since the President-Suharto had been in the position for 32 years or had won sixth consecutive term in office. This huge capital outflow had heightened the burden of foreign debt denominated in US Dollar and provoked the authority to announce the folding of 16 banks due to elevated NPL (Kaur and Singh, 2014). As the economic and political turmoil worsened, the welfare of the Indonesian was deteriorated mirrored by high unemployment rate, hunger, and real income reduction. To provide "shock absorber" against the side effect of the crisis or at least easing the burden of

those affected, the government solemnly executed the social safety net program by the name of Jaring Pengaman Sosial (JPS) which mainly encompassed three areas: food, employment, education and healthcare.

This so called JPS in food area had come with the provision of subsidized rice for eligible recipients since rice is staple food for Indonesian. By subsidizing, the recipients were able to purchase rice below its market price. Meanwhile, in the employment area, the government tried to maintain people's purchasing power through the creation of labor-intensive job. It was done since large number of breadwinners had been thrown out of work due to lengthy lay-off conducted by the bankrupt enterprises. On the other hand, in the education and healthcare sector, the government had provided scholarship for primary and secondary school student and direct support for school operating cost and subsidized medicine, medical tools, and food supplement for infant and pregnant women.

To spur economic activity, the Regional Empowerment in Response to Economic Crisis (Pemberdayaan Daerah dalam Mengatasi Dampak Krisis Ekonomi) program had been launched by providing revolving fund for the poor and the unemployed. This particular funding was allocated according to the size of the region area and can be used to build physical infrastructure and to provide initial outlay for entrepreneur. Meanwhile, to improve the local governance system and alleviate poverty in the sub district/village level, the central government had provided funding coming from state budget, grant, and even loan from the donor for the local government and encouraged the local society to actively participate in the formulation of allocation plan (National Development Planning Agency, 2014).

3.1.3 Social Security System in Indonesia in the Aftermath of the Asian Financial Crisis 1997-1998

By the end of the economic and political upheaval, the pendulum has gradually swung. However, despite the termination of the JPS program, the vulnerable and the deprived are still necessitating a comprehensive social security framework. This circumstance had provoked the authority to redefine the social security system to build resiliency during the hardship and after the storm. In the beginning of 21st century until now, Indonesia's social security system mainly comprises of two items: social assistance and social insurance.

3.1.3.1 Social Assistance Program

Social assistance is provided to contain risk and vulnerability of its recipient and is clustered into regular social assistance and temporary social assistance. While the regular one is continuously given for individual/household, the temporary social assistance is given only on the event of natural disaster, social disaster, and economic crisis. Besides these two particular social assistance, the Indonesian government also allocates education support spending in order to provide nine-year education programme without tuition fee.

• Regular Social Assurances

The regular social assurances made up of social rehabilitation and protection for children, social empowerment through entrepreneur group, benefit for senior citizen and the disabled, prosperous family program program, education support spending, and in kind-transfer

The first form of regular social assistance program is the social rehabilitation and protection for children program and designed for the unlucky children which faced harsh reality such as disability, poverty, exploitation, violence, and discrimination. They received support in the form of the fulfilment of basic needs, and basic social services access such as birth certificate, education, healthcare, housing, clean water, and sanitation. The government also disseminated the importance of children protection to parents and/or family.

Secondly, the social empowerment through the establishment of numerous group entrepreneurship which were launched by the government to alleviate poverty and improve the purchasing power of the poor. The government then allocating working capital conducting capacity building and mentoring for such group so that the economic activity in the society can be sustained.

Thirdly, to protect the elderly and to maintain their well-being, the government has had provided support such as nursing home subsidy, regular social services within the nursing home, and day care. Social services outside the nursing home were also provided which include day care services, foster care, and home care. Cash transfer is also disbursed to satisfy basic needs of the old. Meanwhile, to bolster up the welfare of the disabled, the state has had granted day care, expertise support for social organization and society-based social rehabilitation, and established number of entrepreneur groups among the disabled. In addition, from 2006 to 2013, the government had been giving cash transfer to the total disabled across the provinces since they can no longer be rehabilitated and empowered.

Fourthly, the government also established a program to the very poor household in the country by the name of Prosperous Family Program (Program Keluarga Harapan) by giving conditional cash transfer for household suffered from extreme poverty in the country. In the short term perspective, this program is intended to ease the burden of the household in satisfying their basic needs in the short run while attempted to circumvent the vicious cycle of poverty through the improvement of human development in the long run. The eligible beneficiaries were the one that meet at least one of these three criteria: (1). Family that has an expectant mother; (2). Family that has infant or preschool children; and/or (3). Family that has 15-18 year old teenager who has not accomplished primary education.

- **Temporary Social Assistance**

This kind of assistances comprise of cash transfer for the victim of natural and social disaster and also unconditional cash transfer for those suffered from economic shock. The victims of wide variety of natural disaster such as earthquake, tidal wave, volcano eruption, hurricane, flood, and draught are covered by this temporary social assistances. The centrifugal forces that can rip the society from within such as civil war, revolt, conflict, terror, and also disease outbreak are also the impetus of the temporary social assistance provision. In addition, to sustain the purchasing power of those heavily affected by economic shock like sharp increase of fuel price, unconditional cash transfer is given until the magnitude of the impact is diminished.

- **Education Support Spending**

Next regular social assistance that is given to the beneficiaries is the assistance in the education area by the name of School Operational Assistance Program

or Bantuan Operasional Sekolah (BOS). BOS Program is offered to ease the burden of educational funding in completing the nine-year compulsory education programme. This program is a manifestation of Article 34 Law 20 of 2003 articulating the obligation of both central government and local government to ensure that every citizen should accomplish at least basic education without paying any tuition fee.

Such educational support assistance includes direct support for school operating costs, and financial assistance for poor students and it is shelled out by the central government to local government and then disbursed it to primary school, junior high school, and senior high school across the provinces. Additionally, this Law also requires schools to implement school based management standard to intensify the application of good governance in the education sector. Thus, BOS funding and school based management principle are mutually reinforcing in such a way that BOS equips school with systematic funding scheme in order to successfully formulate and execute school development design (World Bank, 2014).

3.1.3.2 Social Insurance Programme

As the country provides social assistance to the vulnerable and the deprived, these “special” residents are also being provided the social insurance in the employment and healthcare areas.

- Employment Insurance**

Before the government came out with National Social Insurance System Law 40/2004 which is followed by National Social Insurance Agency Law 24/2011, Indonesian employment insurance had been provided by three state owned enterprises-PT. Taspen, PT. Asabri, and PT. Jamsostek which managed insurance for government employee, Indonesian army and police, and state owned enterprise workforce respectively.

PT. Taspen provided pension fund for public servant while its counterpart-PT. Asabri accommodated the needs of pension fund for Indonesian army and police. The beneficiaries that has paid contribution will receive the benefit once they are in the retirement age. On the other hand, the state owned enterprise employee relies on PT. Jamsostek in the provision of pension benefit, working injury benefit, and death benefit. The coverage of working benefit includes compensation and rehabilitation due to an accident at work, and an accident while travelling directly to or from workplace, while the death benefit incorporate funeral expenses for the departed, and assistance for the surviving relatives of the deceased. Additionally, in order to extend the employment benefit provided by PT. Jamsostek to those working in informal sector, the Indonesian Ministry of Social Services provided the Social Welfare Insurance Programme. The purpose of such program is to insure poor breadwinner working in informal sector against the risk of job loss due to death and injury.

- Healthcare Insurance**

This kind of insurance is mainly divided into healthcare insurance for the poor and for non-poor. The first category-by the name of Jamkesmas (Jaminan Kesehatan Masyarakat)-is introduced in 2007 and managed by the Indonesian Ministry of Health. The second category of healthcare insurance is provided by PT. Askes and PT. Jamsostek. The first state owned enterprise manages healthcare insurance for civil servant, retired civil servant, war veteran, and all

of their family. Meanwhile, the second state owned company insure the non-government employee in formal sector which include promotion, prevention, treatment, and rehabilitation. On the other hand, the active Indonesian Army and police healthcare insurance is managed by the Indonesian Ministry of Defense (National Development Planning Agency, 2014).

3.1.4 The New National Social Insurance System under Law 40/2004.

The enactment of Law 40/2004 which is implemented in 2015 has become a milestone of the Indonesian social security system since the old system is plagued by lack of transparency, overlapping regulation, and limited scope of the benefit which only reach few number of people mostly working in formal sector. When the onion is peeled a little bit more, from the program execution standpoint, the three state owned entities providing the social insurance namely PT. Askes, PT. Taspen, and PT. Asabri are operating based on different, regulations which are inconsistent and contradicting each other. Therefore, this law is designed to circumvent these shortcomings of the previous social security system

In accordance with the National Social Insurance Agency Law 24/2011, the new system is administered by the National Social Insurance Agency (Badan Penyelenggara Jaminan Sosial Nasional) which amalgamates PT. Askes, PT. Taspen, and PT. Asabri as the former social insurance agency. The new agency is then split into Health Insurance Agency and Employment Insurance Agency responsible in healthcare and employment insurance provision respectively.

The new healthcare insurance system involves comprehensive healthcare services including individual healthcare services, health improvement, prevention, medication, and recovery. The stark difference between the new healthcare insurance system and the old one is that the new system embraces all of Indonesian citizen aside from the amount of contribution. In other words, the poor who cannot afford to pay the contribution will be supported by the state and will receive the same treatment as others.

Meanwhile, the new employment insurance system comprises of pension benefit, working injury benefit, and death benefit which act as the reinvigoration of the old system. For pension fund, the contribution will be shared by the employer and the employee and determined based on the percentage of the income. On the other hand, for the working injury benefit and the death benefit, the contribution is totally borne by the employer. By the end of 2019, it is expected that all of Indonesian workforce both in formal and informal sector is covered by this new system. For the latter sector, the expansion of the coverage will be conducted gradually-first in agriculture sector and then it will be followed by trade, industry, and other remaining sectors (National Development Planning Agency, 2014).

3.2 Social Assistance and Education Support Spending (BOS Program) in the National Budget

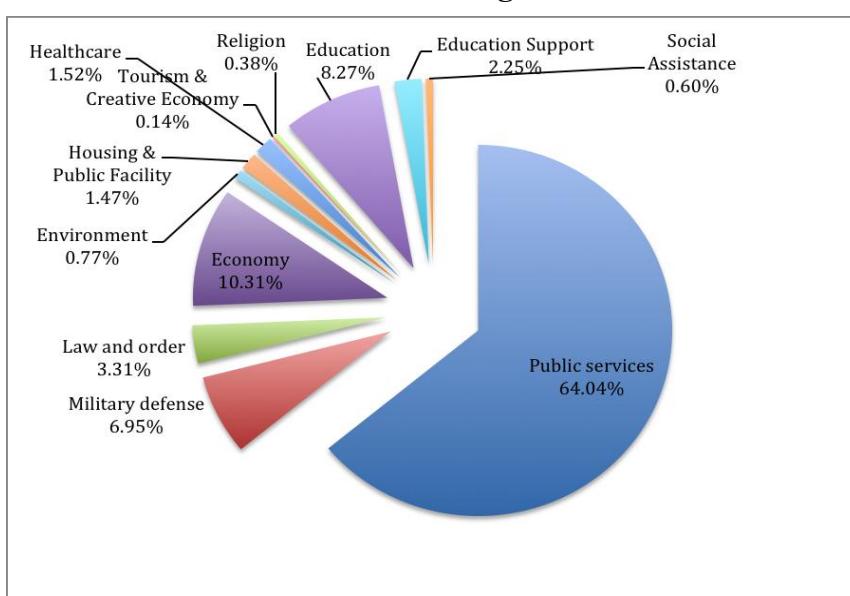
The division of responsibility among the levels of government are the main features of the fiscal decentralization concept. Since the beginning of the decentralization era in Indonesia, in the context of social assistance provision, the local government have been responsible in identifying eligible recipient of

the social assistance, disseminating and monitoring, and provide co-funding from its own local revenue. However, the accountability of social assistance programme implemented by local government is put into question due to lack of regulation that require local government to regularly provide assessment. On the other hand, the central government under the Coordinating Ministry for Social Welfare and National Development Planning Agency have been responsible to formulate comprehensive blueprint and budget allotment of the programme (World Bank, 2012).

In the Indonesian National Budget 2015, the social assistance expenditure is allocated mainly to establish thorough social security system, intensify the minimum service delivery to the deprived and the vulnerable, improve protection for female and empower their capacity in various development sector, and extend protection for children to keep them from violence and abuse (Ministry of Finance of the Republic of Indonesia, 2015). From 2010 to 2014, it is expected that the recipients of Prosperous Family Program will increase from 816 thousands to 3.2 million household. While from 2010 to 2013, the beneficiaries of social services and rehabilitation for children, social services to the disabled, and social services to the elderly, are expected to be expanded from 135 thousand children to 173 thousand; 28 thousand to 47.8 thousand and from 18 thousand to 44.6 thousand (Ministry of Finance of the Republic of Indonesia, 2015).

However, the virtue of the social assistance provision is challenged because from **Figure 3.1**, it can be seen that the social assistance spending accounts for only 0.60 % compared to total spending in other sectors. According to ADB (2011, as cited in Desviandi, 2015), this figure is relatively lower than that in other Southeast Asian countries counterpart such as Thailand and Cambodia with 7.40 % and 4.10 % respectively.

Figure 3.1 Social Assistance and Education Support Spending in the National Budget 2015



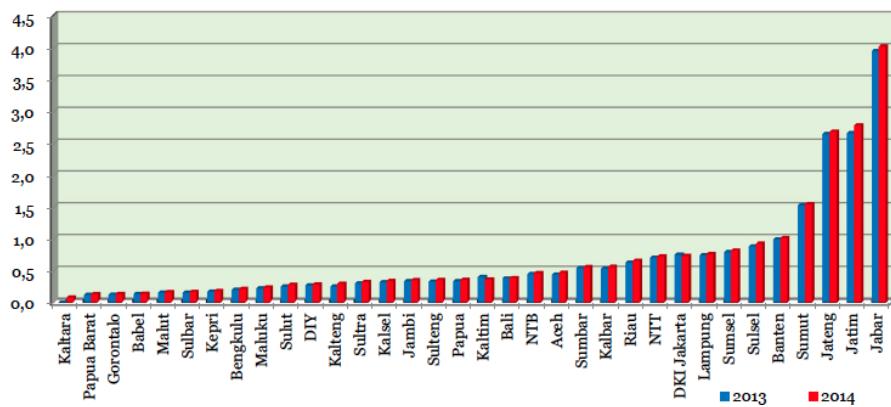
Source: Ministry of Finance of the Republic of Indonesia (2015)

In the case of School Operational Assistance Program (BOS Program), the Minister of Finance channels the fund to the local government Regional General Cash Account in the provincial level after being proposed by Minister of Education and Culture. Afterwards, it will be deployed by this local government to the elementary school and junior high school which are under their responsibility. The amount of this grant is calculated based on the number of students each school and elementary school education unit cost.

In detail, there are four steps taken in the disbursement of the BOS Program. Firstly, state and private primary and secondary schools present student numbers data to the BOS district management team. Secondly, this data is harmonized and concluded by the BOS national team consists of regional, provincial, and central team. Thirdly, the final numbers of student and proposed BOS allotment data is submitted by the BOS central team to the Minister of Education and Culture and Minister of Finance respectively as the base of disbursement to each region. Lastly, Minister of Finance allocate BOS to local government Regional General Cash Account and then further transfers it to schools bank account on a three-month basis (World Bank, 2014).

In the Indonesian National Budget 2015, BOS amounting to Rp. 31,298.3 billion. The targeted beneficiaries in the Senior High School level added up to 9,399,236 students, while the recipients for Islamic-based education schools reaching 6,994,708 students. From **Figure 3.2**, it can be inferred that in 2014, the two provinces which receives the largest BOS allotment are West Java (Jabar) and East Java (Jatim) while two provinces receives the least amount of BOS are West Papua (Papua Barat) and North Kalimantan (Kaltara) (Ministry of Finance of the Republic of Indonesia, 2015).

Figure 3.2 The Allocation of BOS per Province in 2013 and 2014 (trillion Rupiah)



Source: Ministry of Finance of the Republic of Indonesia (2015)

CHAPTER 4

DATA AND METHODOLOGY

4.1 Data

Data in this research are acquired from various sources. To obtain social assistance spending, education support spending (BOS Program) and local government investment, this research employs Local Government Budget (APBD) data from Directorate General of Fiscal Balance Ministry of Finance Indonesia. The data of GRDP and several growth determinants namely share of agriculture sector on GRDP, and human literacy rate are acquired from Statistic Indonesia. The Human Development Index Data is also acquired from this particular source. In addition, the poverty rate and access to infrastructure data are obtained from Indonesia Database for Policy and Economic Research (INDO DAPOER)-World Bank. These data are collected to analyze which type of social spending which affecting economic growth in the context of 33 Indonesian province on 2006-2012. Afterwards, it will be examined whether such social spending can be classified as inclusive growth policy or not. The time period of the study is started from 2006 since the BOS Program has just been started in 2005.

4.2 Variables

Variables scrutinized in this study consists of dependent variables and explanatory variables. The explanatory variables can be clustered into the interest variables and the control variables. There are three models which are going to be estimated in the study, the economic growth regression, poverty rate regression, and Human Development Index regression.

The first model-which explains the variation of economic growth in Indonesian provinces-employs **social assistance spending and education support spending** as the interest variables. These particular variables are set to be the interest variables in order to determine their effect to Indonesian economic growth. In addition, to test the relative impact of the interest variables, control variables are used in this study namely agriculture sector on GRDP, government investment, and human literacy rate.

The second model- which explains the variation of poverty rate-applies the **interaction variables between economic growth and social spending** as the interest variables. These two particular variables are interacted to investigate whether social spending either social assistance spending or education support spending can be considered to be a pro-poor growth instrument or not. Similar to the first model, this second model also employs control variables to test the relative impact of the interaction variable. The control variables employed in this model are the agricultural sector share on GRDP, human literacy rate, and access to infrastructure.

Meanwhile, the third model which explains the Human Development Index, utilizes **economic growth and social spending also as the interaction variable**. It is conducted to analyze whether social spending and education support spending can be deemed as an inclusive growth tools in improving human development. In testing the relative impact of this interaction variable to human development, the control variables namely the human literacy rate and access to sanitation is used in the model.

4.2.1 Dependent Variables

- Economic Growth**

Standard gauge of economic growth in economics is the data on Gross Domestic Product (GDP) which epitomizes the value of goods and services produced in nation's economy. Hence, positive economic growth represents greater economic activity of a country compared to such activity in the previous year. There are three methods to calculate nation's GDP, by way of production, income, and expenditure approach. The first method sums value added of all sectors in the economy, while the second approach entails the income of the production factors in the economy. Lastly, the expenditure method which is associated with the summation of private consumption, investment, government spending and net export in the economy. All of these three techniques shall generate the same amount of GDP. However, the author utilizes real GRDP (Gross Domestic Regional Product) since the unit analysis of the study is at the provincial level. In addition, real GRDP or GRDP at constant prices is used to take out the inflationary effect in seizing the output growth in the economy.

- Poverty**

According to UNDP (2006), poverty can be classified in several dimensions: income deprivation, lack of material, and lack of capability. Whereas according to Statistics Indonesia, poverty is the inability to meet the basic needs. In other words, Statistics Indonesia defines poor people as those whose per capita expenditure on a monthly basis is under the poverty line. In the study, the poverty measurement employed is the absolute poverty using the poverty incidence or poverty headcount index. The poverty incidence can be defined as the ratio of the number of people below the poverty line to the total population. In addition, the poverty line in this research is the World Bank's \$1.25 a day on a PPP (Purchasing Power Parity) basis.

- Human Development Index**

Statistic Indonesia defines Human Development Index (HDI) as a measurement to gauge human development based on several indicators and formulated from three different dimensions: longevity and health, being well informed, and proper life. Health dimension is measured by the life expectancy at birth, while from knowledge dimension, average years of schooling and literacy rate of people aged above 15 years are being used. Meanwhile, proper life dimension is measured by people's purchasing power to satisfy their basic needs and calculated from their average expenditure per capita. HDI is developed by UNDP in order to stress the importance of human development as the primary goal of the development, not only the economic performance as it is measured by economic growth.

4.2.2 Interest Variables as the Explanatory Variables

- **Social Assistance Spending**

Social assistance spending defined as in-kind transfers and in-cash transfers which is allocated by local government to the deprived and vulnerable including: social rehabilitation and protection for children, social empowerment through entrepreneurship training, benefit for senior citizen and the disabled, prosperous family program, assistance to natural and social disaster victims, and assistance for those suffered from economic downturn.

- **Education Support Spending (BOS Program)**

Education support spending is measured by expenditures allocated to School Operational Assistance Program (Bantuan Operasional Sekolah/BOS Program). It is granted from central government to local government in the provincial level to improve access of the citizen to and uplift nine – year compulsory education programme quality. This program covers direct support for school operating costs, and financial assistance for poor students and exclude the personnel expenditure (e.g teacher salary).

- **Economic Growth and Social Spending Interaction**

After knowing which variable between social assistance spending and education support spending that have significant effect to economic growth, one or both of these outlays (depending on the estimation result) which significantly effect economic growth will be interacted with the economic growth itself to determine whether such spending is pro-poor growth and inclusive growth instrument or not.

4.2.3 Control Variables as the Explanatory Variables

For the first model, control variables namely agriculture sector on GRDP, government investment, and human literacy rate are employed to test the relative impact of the interest variables to economic growth. Agriculture sector share to GRDP is expected to have negative sign since its share is on the declining trend. Government investment is presumed to have a negative relationship also due to the inefficient resources allotment by the state. The human capital measured by the human literacy rate is expected to have positive effect since it is an essential component to sustain economic growth.

For the second model, the control variables employed are the agricultural sector share on GRDP, human literacy rate, and access to infrastructure. In the study, the access to infrastructure variable is measured by water facilities represents the percentage of household which has access to clean water. Agriculture sector share on GRDP is expected to have positive effect to poverty rate since Indonesia is still considered to be an agrarian country. Furthermore, low-skilled poor people in Indonesia mostly work in agrarian sector. Thus, intensifying this sector with much more mechanized method could increase productivity which in turn lead to the improvement of peasants income. Human literacy rate is assumed to have negative effect to poverty rate as the more educated people are, the more salary that they earn. Lastly, the water facilities which is presumed to have negative effect to poverty. The more people have better access to clean water, the less spending is allocated to

acquire it. Therefore, household can spend their resources for other expenditures or are able to save more.

For the third model, the control variables utilized are the human literacy rate and access to infrastructure which is measured by access to safe water. The human literacy rate is expected to have positive sign to the Human Development Index since the more literate people are, the more educated and the more capable they are. Lastly, the water facilities which is assumed to have positive effect to the Human Development Index. The more people have better access to safe water, the healthier they are. The relationship between dependent variables and independent variables in these three models are summarized in **Table 4.2**, **Table 4.3**, and **Table 4.4**

Table 4.1 Summary of Statistics

Variable	Observation	Mean	Standard Deviation	Min	Max
LnGrwth	231	30.96	1.29	28.41	33.74
LnPov	231	2.59	0.55	1.25	3.73
HDI	231	70.82	3.24	62.08	77.97
Soc	231	0.02	0.03	0.00	0.36
LnBOS	231	26.04	1.05	23.56	28.7
Agrishare	231	0.24	0.110	0.00	0.54
LnCapex	207	26.82	0.98	24.66	29.8
Hcap	231	92.76	6.03	64.08	99.3
Wtr	231	53.43	14.54	18.1	93.5

Source: Author's estimation (2015)

Table 4.2 Summary of Variables (Economic Growth as the Dependent Variable)

Variable	Proxy For	Definition and Measurement	Expected Sign
LnGrwth	Economic Growth	Logarithm of GRDP	
Soc (lagged variable)	Social Assistance Spending	Social assistance spending to total local government spending ratio (%)	(+)
LnBOS (lagged variable)	Education Support Spending	Logarithm of expenditures allocated to School Operational Assistance Program	(+)
Agrishare	Agriculture Contribution	Agricultural contribution on GRDP (%)	(-)
LnCapex	Government Investment	Logarithm of government spending on capital expenditure	(-)
Hcap	Human Capital	Human literacy rate (%)	(+)

Source: Author's compilation (2015)

Table 4.3 Summary of Variables (Poverty Rate as the Dependent Variable)

Variable	Proxy For	Definition and Measurement	Expected Sign
LnPov	Poverty Rate	Logarithm of Poverty Headcount Ratio	
LnGrowth (lagged variable)	Economic Growth	Growth of GRDP	(-)
LnGrowth* Soc (lagged variable)	Measuring Pro-Poor Growth Instrument	Interaction variable	(-)
LnGrowth* LnBOS (lagged variable)	Measuring Pro-Poor Growth Instrument	Interaction variable	(-)
Agrishare	Agriculture Contribution	Agricultural contribution on GRDP (%)	(-)
Hcap	Human Capital	Human literacy rate (%)	(-)
Wtr	Access to Sanitation	Household access to clean water (%)	(-)

Source: Author's compilation (2015)

Table 4.4 Summary of Variables (HDI as the Dependent Variable)

Variable	Proxy For	Definition and Measurement	Expected Sign
HDI	Human Development	Human Development Index	
LnGrowth (lagged variable)	Economic Growth	Growth of GRDP	(+)
LnGrowth* Soc (lagged variable)	Measuring Inclusive Growth Instrument	Interaction variable	(+)
LnGrowth* LnBOS (lagged variable)	Measuring Inclusive Growth Instrument	Interaction variable	(+)
Hcap	Human Capital	Human literacy rate (%)	(+)
Wtr	Access to Sanitation	Household access to clean water (%)	(+)

Source: Author's compilation (2015)

4.3 Methodology

In order to address the objectives of this research, three empirical models are going to be estimated. Firstly, to analyze the effect of social assistance spending and education support spending to economic growth, the author develops the first model by setting the economic growth as dependent variable and employ social assistance spending and education support spending and other standard growth determinants as the explanatory variables. Thus, to scrutinize how these social outlays effect output growth of 33 Indonesian provinces empirically, the author formulates the model as follows:

$$\text{LnGrwth}_{it} = \alpha + \beta_1 \text{Soc}_{it-1} + \beta_2 \text{LnBOS}_{it-1} + \beta_3 \text{Agrishare}_{it} + \beta_4 \text{LnCapex}_{it} + \beta_5 \text{Hcap}_{it} + \beta_6 \mathbf{D}_{1,i} + \beta_7 \mathbf{D}_{2,i} + \beta_8 (\mathbf{D}_{1,i} * \mathbf{D}_{2,i}) + v_i + \varepsilon_{it} \quad (4.1)$$

where **LnGrwth** represents logarithm of the Gross Regional Domestic Product (GRDP), **Soc** represents social security spending to total local government spending ratio, **LnBOS** represents logarithm of Expenditures allocated to School Operational Assistance Program, **Agrishare** represents agricultural contribution on GRDP, **LnCapex** represents logarithm of Government Spending on Capital, **Hcap** represents human literacy rate, **D_{1,i}**

represents time dummy, $\mathbf{D}_{2,i}$ represents island dummy, $\mathbf{D}_{1,i} * \mathbf{D}_{2,i}$ represents interaction between time dummy and island dummy, i represents province, t represents time, and v represents unobserved factors and province characteristics.

After determining which variable between social assistance spending and education support spending that significantly effect economic growth, one or both of these outlays (depending on the estimation result) which significantly effect economic growth will be interacted with the output growth itself to determine whether such expenditures can be considered as pro-poor growth instrument or not. In so doing, the author develop second model to estimate the economic growth alone and growth and social expenditures interaction variable effect to poverty rate and test the relative impact of these variables by utilizing several control variables. Thus, the empirical model can be formulated as follows:

$$\text{LnPov}_{it} = \theta + \gamma_1 \text{LnGrwth}_{it-1} + \gamma_2 \text{LnGrwth} * \text{Soc}_{it-1} + \gamma_3 \text{LnGrwth} * \text{LnBOS}_{it-1} + \gamma_4 \text{Agrishare}_{it} + \gamma_5 \text{Hcap}_{it} + \gamma_6 \text{Wtr}_{it} + \gamma_7 \mathbf{D}_{1,i} + \gamma_8 \mathbf{D}_{2,i} + \gamma_9 (\mathbf{D}_{1,i} * \mathbf{D}_{2,i}) + v_i + \varepsilon_{it} \quad (4.2)$$

where **LnPov** represents logarithm of poverty headcount ratio, **LnGrwth*Soc** represents interaction variable between economic growth and social assistance spending, **LnGrwth*LnBOS** represents interaction variable between economic growth and education support spending, and **Wtr** represents household access to clean water.

Afterwards, in-line with the relationship between inclusive growth and human development described in **Chapter 2**, the third empirical model is formulated to analyze the effect of interaction variable between economic growth and social expenditures on Human Development Index. Thus, it can be investigated whether such expenditures can be considered as inclusive growth instrument or not. Besides, two control variables, the human literacy rate and access to sanitation will be employed to test the relative impact of the economic growth and social outlay interaction variable, such that:

$$\text{HDI}_{it} = \lambda + \delta_1 \text{LnGrwth}_{it-1} + \delta_2 \text{LnGrwth} * \text{Soc}_{it-1} + \delta_3 \text{LnGrwth} * \text{LnBOS}_{it-1} + \delta_4 \text{Hcap}_{it} + \delta_5 \text{Wtr}_{it} + \delta_6 \mathbf{D}_{1,i} + \delta_7 \mathbf{D}_{2,i} + \delta_8 (\mathbf{D}_{1,i} * \mathbf{D}_{2,i}) + v_i + \varepsilon_{it} \quad (4.3)$$

where **HDI** represents Human Development Index. It is worth noting that **Equation (4.1), (4.2), and (4.3)** employs Fixed Effect Model, lagged variable, and dummy interaction between time dummy and island dummy to take into account the estimation bias which may surface because of several issues as follows:

(1). The existence of individual (province) specific effect

This problem emerges because of individual differences across provinces with respect to economic growth. Ahn et.al (2013) argues that panel data (pooled Ordinary Least Squares) only is not suitable to be implemented in investigating multiple individual which has different characteristic as in the case of 33 Indonesian provinces.

(2). The existence of time invariant effect and individual island characteristic

According to Ahn et.al (2013), panel data entails the single time invariant component which is not applicable to the multiple time variant individual like

in the case of 33 Indonesian provinces. Besides, Hill et.al (2008) stress the different economic attributes of each area in Indonesia. Hence, it is essential to cluster 33 provinces in Indonesia into five main islands namely Sumatera, Java, Kalimantan, Sulawesi, and Papua to precisely seize non-identical economic features of every provinces.

(3). Endogeneity Problem

For **Equation (4.1)** there is a possibility that economic growth could affect social assistance expenditures and education support spending which in turn lead to endogeneity issue. Estimation with the endogeneity problem will produce ambiguous result (Shepherd, 2010). To circumvent such problem, instrument variables that are extremely correlated with social outlays but not correlated with the residual of the model should be used in this study. However, due to the difficulty in determining correct instrument variables, lagged social assistance expenditure and education support spending variables are employed. The other rationale is that the social assistance spending and education support outlay may not have instantaneous effect on economic growth, so their effect should be seized in the following period of time. The social assistance expenditure and education support spending variable are lagged only for one year due to the short length of the data series employed in this study.

Akin to **Equation (4.1)**, endogeneity issue also surfaces on **Equation (4.2)** and **(4.3)** by which there is a probability that poverty level and HDI could predetermine economic growth and social outlays. In addition, economic growth per se and the interaction variable may not have immediate effect in reducing poverty level and improving Human Development Index. Therefore, the economic growth variable and the interaction variable between economic growth and social expenditure will be lagged for one year.

(4). Heteroscedasticity Problem and Collinearity Problem

It is important to note also that to treat the heteroscedasticity problem, this study utilizes robust standard errors by clustering standard error at the provincial level. To identify the existence of collinearity among explanatory variables, this study thus employs the Variance Inflation Factor¹ (see Appendices). No collinearity present among the explanatory variable.

¹ The VIF indicates no existence of collinearity among explanatory variables

CHAPTER 5

RESULTS AND ANALYSIS

5.1 Regression Results

5.1.1 Model 4.1 (Economic Growth as the Dependent Variable)

The formulation of this model aims to analyze the effect of social assistance spending and education support spending (BOS Program) to economic growth in the context of 33 Indonesian provinces from 2006 to 2012. Such model also controls several variables that may affect economic growth namely agriculture sector share to GRDP, government investment, and human literacy rate to test the relative impact of that social spendings to economic growth.

Table 5.1 Estimation Result (Economic Growth as Dependent Variable)

VARIABLES	MODEL		
	OLS (5.1)	FEM (5.2)	REM (5.3)
Soc	-2.643*	0.0565	-0.0478
	(1.094)	(0.106)	(0.0947)
LnBOS	0.714***	0.172***	0.168***
	(0.0378)	(0.0146)	(0.0136)
Agrishare	-4.740***	-3.714***	-4.412***
	(0.385)	(0.446)	(0.371)
LnCapex	0.179***	-0.0110	-0.00104
	(0.0453)	(0.0119)	(0.0115)
Hcap	0.00526	0.00388	0.00417
	(0.00617)	(0.00654)	(0.00477)
_cons	8.285***	27.31***	27.30***
	(1.427)	(0.602)	(0.428)
Time Dummy*Island Dummy	no	yes	no
n	231	231	231
r²	0.845	0.902	0.8554
BIC	329.2	-628.4	n.a

Standard error in parentheses, *p<0.05 **p<0.01 ***p<0.001

Source: Author's estimation (2015)

In so doing, the researcher employs three different estimation method which are the Pooled Ordinary Least Squares, Fixed Effect Model, and Random Effect Model (see **Table 5.1**). These three different estimation methods are employed to see the variation among models. It is interesting to note that in **model (5.1)** and **model (5.2)**, the social assistance expenditure has negative effect to economic growth, whereas education support spending has the positive sign in these three models. From the control variables perspectives, agriculture share to GRDP has negative effect to economic growth in all of the three models. Meanwhile, only **model (5.1)** that produce positive relationship between government investment and output growth. Lastly, all of the model show that the more literate people are, the bigger delta of the output will be.

However, **model (5.1)** and **model (5.3)** do not take into account the existence of time invariant effect of each Indonesian province and individual Indonesian island characteristic. In contrast, **model (5.2)** has interacted time dummy and island dummy so that the issue of time specific and island distinct characteristic has been circumvented. Besides, the problem of heteroscedasticity have been dealt with by clustering standard error in the provincial level. Endogeneity issue is corrected also by employing one year lagged social assistance expenditure and education support spending data.

Furthermore, in assessing the suitability of the statistical model, Neath and Cavanaugh (2004) argue that Bayesian Information Criterion (BIC) is the most appropriate indicator. Since **model (5.2)** has the lowest BIC score, this model is deemed to be the most suitable model in explaining economic growth. Moreover, 90 percent variation of Indonesian provincial economic growth can also be explained by all of the explanatory variables in this model.

In addition, by using Sargan-Hansen test (see **Table 5.2**), it can be confirmed that the P-value is at 0.000 by which it rejects the null hypothesis. The null hypothesis performs by this test is that the Random Effect Model (**model 5.3**) is consistent. Thus, after taking into account all of the model specification issue that may surface and model specification test result, the model that is the most robust among others and will be further analyzed is **model (5.2)**.

Table 5.2 Model 4.1 Specification Test

Test	Chi ²	P-value	Result
Sargan-Hansen	177.216	0.000	FEM (model 5.2)

Source: Author's estimation (2015)

5.1.2 Model 4.2 (Poverty Rate as the Dependent Variable)

The formulation of this model aims to analyze the effect of the education support spending (BOS Program) together with economic growth to poverty rate in the context of 33 Indonesian provinces from 2006 to 2012. The rationale is to determine whether BOS Program can be considered as pro-poor growth policy or not. Such model is using several control variables namely agricultural share to GRDP, human literacy rate, and access to clean water to test the relative impact of that interaction variable poverty rate. **However, it is**

noteworthy that social assistance spending is excluded from the model and the reason behind this exclusion will be described in section 5.2

Table 5.3 Estimation Result (Poverty Rate as Dependent Variable)

VARIABLES	MODEL		
	OLS (5.4)	FEM (5.5)	REM (5.6)
LnGrwth	-0.244** (0.0905)	-0.441*** (0.102)	-0.203* (0.0862)
LnGrwth*LnBOS	0.00340* (0.00161)	-0.00403*** (0.000874)	-0.00461*** (0.000641)
Agrishare	0.283 (0.439)	-1.269 (0.641)	-0.291 (0.716)
Hcap	-0.0307*** (0.00486)	-0.00321 (0.00595)	-0.00734 (0.00734)
Wtr	-0.0110*** (0.00241)	-0.00509* (0.00209)	-0.00690*** (0.00193)
_cons	10.77*** (1.722)	20.34*** (2.847)	13.69*** (2.689)
Time Dummy*Island Dummy	no	yes	no
n	231	231	231
r²	0.426	0.914	0.829
BIC	285.6	-684.7	n.a

Standard error in parentheses, *p<0.05 **p<0.01 ***p<0.001

Source: Author's estimation (2015)

In determining whether education support spending (BOS Program) can be regarded as pro-poor growth policy or not, the author utilizes three different estimation methods which are the Pooled Ordinary Least Squares, Fixed Effect Model, and Random Effect Model (see **Table 5.3**). **Model (5.4), (5.5), and (5.6)** produces negative sign between economic growth alone to poverty rate. It is worth noting that the interaction variable in **Model (5.4)** has positive effect to poverty, while others show negative relationship. Meanwhile, from the control variables standpoint, agriculture share to GRDP has positive sign on the poverty rate only in **model (5.4)**. On the other hand, human literacy rate and access to save water variables have negative relationship with poverty rate in all of the three models.

However, among all of the models, only **model (5.5)** that considered to be robust and this is the only model which will be further investigated. This model has corrected the presence of time-invariant effect and individual island characteristic shock. Furthermore, 90 percent variation of poverty rate in Indonesian provinces can also be explained by all of the explanatory variables in this model.

Model (5.5) also has the smallest value of BIC. This model has also circumvented the problem of heteroscedasticity by clustering standard error in the provincial level. Endogeneity issue is corrected also by employing one year lagged interaction variables. Moreover, Sargan-Hansen test in **Table 5.4** indicates that null hypothesis saying the consistency of Random Effect Model is rejected (P-value is at 0.000). Thus, **model (5.5)** which employs Fixed Effect Model is more favourable than **model (5.6)** which employs Random Effect Model.

Table 5.4 Model 4.2 Specification Test

Test	Chi ²	P-value	Result
Sargan-Hansen	97.544	0.000	FEM (model 5.5)

Source: Author's estimation (2015)

5.1.3 Model 4.3 (Human Development Index as the Dependent Variable)

The formulation of this model aims to analyze the effect of the education support spending (BOS Program) together with economic growth to the Human Development Index in the context of 33 Indonesian provinces from 2006 to 2012. To explain further, it is developed to investigate whether BOS Program can be categorized as inclusive growth instrument or not. In testing the relative impact of the interaction variable, several control variables namely human literacy rate, and access to save water are being employed. **However, it is worth noting that social assistance spending is excluded from the model and the reason behind this exclusion will be described in section 5.3.**

Table 5.5 Estimation Result (HDI as Dependent Variable)

VARIABLE	MODEL		
	OLS (5.7)	FEM (5.8)	REM (5.9)
LnGrwth	1.410*** (0.302)	2.601* (1.068)	0.376 (0.396)
LnGrwth*LnBOS	-0.0176** (0.00609)	0.0320*** (0.00715)	0.0350*** (0.00678)
Hcap	0.304*** (0.0212)	0.0401 (0.0747)	0.154 (0.0994)
Wtr	0.0677*** (0.00957)	0.0197 (0.0148)	0.0430*** (0.0111)
_cons	9.535 (5.097)	-40.01 (29.27)	14.39 (13.38)
Time Dummy*Island Dummy	no	yes	no
n	231	231	231
r²	0.679	0.896	0.797
BIC	962.9	258.2	n.a

Standard error in parentheses, *p<0.05 **p<0.01 ***p<0.001

Source: Author's estimation (2015)

In scrutinizing whether education support spending (BOS Program) can be regarded as an inclusive growth instrument or not, the author utilizes three different estimation methods which are the Pooled Ordinary Least Squares, Fixed Effect Model, and Random Effect Model (see **Table 5.5**). From the table, it can be seen that in **model (5.7)**, **(5.8)**, and **(5.9)**, economic growth has positive relationship with the Human Development Index. Meanwhile, only **model (5.7)** which shows that the interaction variable has negative relationship with the Human Development Index. In addition, all of these three model exhibit positive relationship between human literacy rate and water sanitation.

Notwithstanding the results of these three model, the only model that is going to be analyzed and regarded to be robust is **model (5.8)**. This model has offset the effect of time-invariant and individual island characteristic. 89 percent variation of the Indonesian Human Development Index can also be explained by all of the explanatory variables in this model. This model also has the lowest value of BIC. In the context of heteroscedasticity problem, this issue have also been neutralized by clustering standard error at the provincial level. Furthermore, Sargan-Hansen test in **Table 5.6** suggests that **model (5.8)** is consistent. P-value is at 0.000 so that the null hypothesis is rejected.

Table 5.6 Model 4.3 Specification Test

Test	Chi ²	P-value	Result
Sargan-Hansen	80.423	0.000	FEM (model 5.8)

Source: Author's estimation (2015)

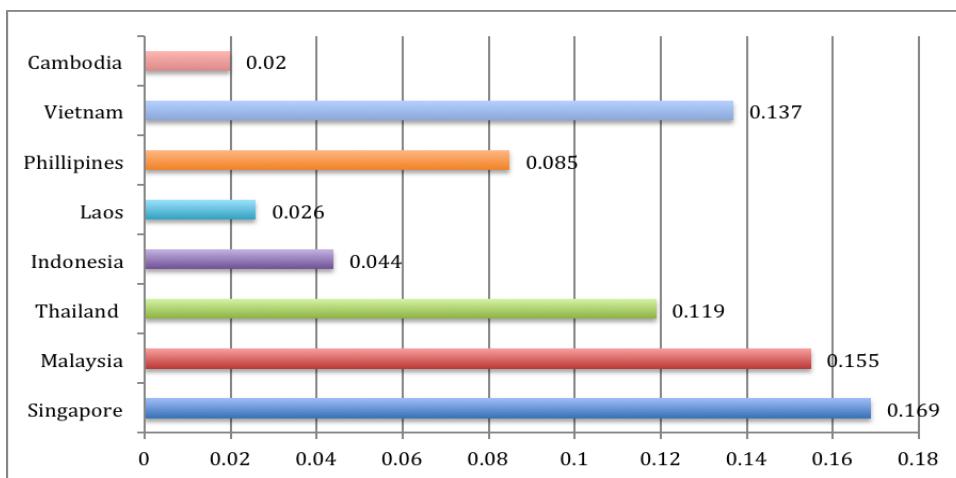
5.2 Analysis

5.2.1 Model 5.2 (Economic Growth as Dependent Variable)

- **Social Assistance Spending effect to Economic Growth**

The estimation results shows that social assistance spending in Indonesian provinces on 2006-2012 does not significantly effect economic growth. This finding might be explained by several justification. Firstly, the coverage of social assistance spending may be inadequate to cover all of the eligible beneficiaries in Indonesia. Determining the adequacy of social protection scope can be done by looking at the Social Protection Index developed by ADB. **Figure 5.1** shows that compared to other countries in South East Asia, Indonesian Social Protection Index ranks the third lowest after Laos and Cambodia with 0.044. In other words, the total social protection expenditures allocation accounts for only 4.4 percent per capita expenditure relative to poverty line or only 1.1 percent of Indonesian GDP per capita. Indonesian SPI even lower than other two lower middle income South East Asian Countries; Vietnam and the Phillipines with 0.137 and 0.085 respectively (Handayani, 2014).

Figure 5.1 Social Protection Index in South East Asian Countries in 2009

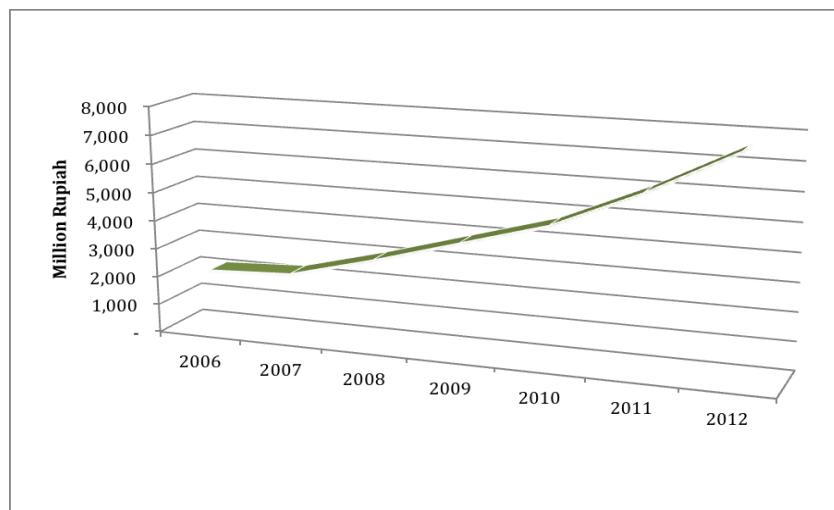


Source: Handayani (2014)

Secondly, despite the increasing trend of social assistance expenditure as it is depicted in **Figure 5.2**, it may be the case that its allotment is not properly targeted and is lack of transparency and accountability. National Development Planning Agency (2014) argues that there is exclusion error and inclusion error in the identification of social assistance program eligible beneficiaries due to the outdated database. With respect to the transparency and accountability

issue, World Bank (2012) finds that there is no stringent regulation that obligate Indonesian local government in the level of province and regency/municipality to conduct regular comprehensive assessment covering the input, result, and outcome of the social assistance program. They also argue that social assistance program in developing countries are often prone to be the subject of political interest. Therefore, it can be concluded that in the context of Indonesian provinces, limited coverage of social assistance fueled with poor targeting and transparency and accountability issue could possibly lead to the failure of social assistance spending in affecting economic growth through the social cohesion and political stability channel.

Figure 5.2 Social Assistance Spending 2006-2012



Source: Ministry of Finance of the Republic of Indonesia

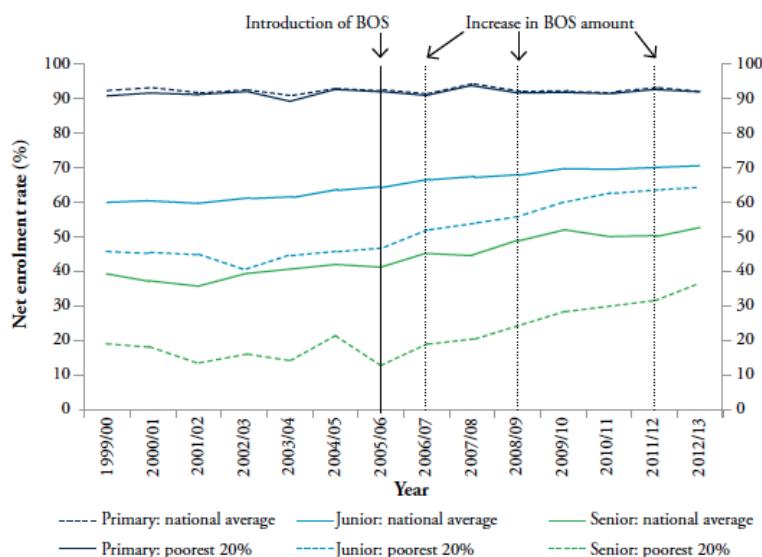
- **Education Support Spending (BOS Program) effect to Economic Growth**

After controlling for the agricultural share to GRDP, government investment, and human literacy rate, the estimation result indicates that education support spending significantly increases economic growth under 0.01 percent significance level. One percent increase in education support spending (BOS Program) ramps up the output growth by 0.172 percent. This positive significant nexus confirms the theory stating that education spending could sustain economic growth through human capital accumulation. This finding is in line with Mankiw, Romer, and Weil (1992) theory stating that human capital formation will underpin the growth rate through the productivity improvement. Study conducted by Easterly and Rebelo (1993, as cited in Glomm and Ravikumar, 1997), Godspeed (2000), Kneller, et. Al (2000), Aghion et. al (2009), and (Kaganovich and Zilcha 1999) also validate this author's finding.

Peeling the onion little bit more, World Bank (2014) report indicates that the commencement of BOS Program in 2005 corresponded to the sky-rocketing trend of the poorest quintile in junior high school participation rate from 2005 to 2013 by 26 percent (**Figure 5.3**). From the figure, it can be seen that before the commencement of BOS Program, there were no tendency of the gap to be shrinking between poorest 20 percent and the national average in the junior

high school participation rate. However, it is clear that after the inception of such program, the gap were getting smaller. This report also conduct regression analysis and shows that after controlling for other variables which can affect school enrollment rate, there is 5 percent increase of the 20 percent poorest people in the junior high school enrollment rate after the initiation of BOS Program. To sum up, the positive significant nexus between education support spending (BOS Program) and economic growth is arguably due to the human capital accumulation by way of the increase in the secondary junior high school enrollment of the 20 percent poorest.

Figure 5.3 BOS Program and School Enrollment Rate



Source: World Bank (2014)

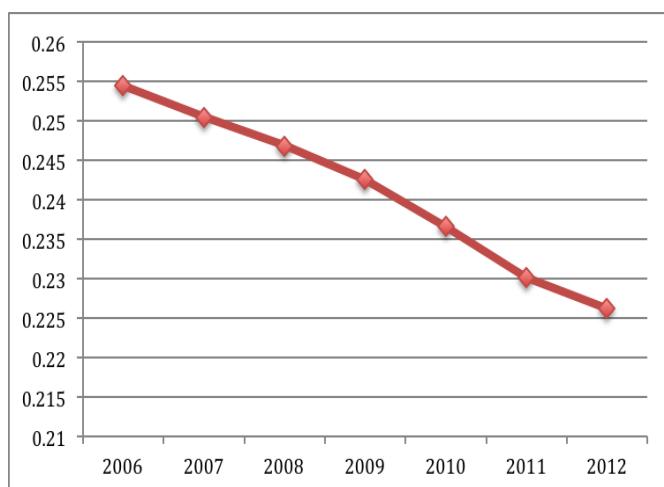
- **Agriculture Share to GRDP, Government Investment, and Human Literacy Rate effect to Economic Growth.**

The estimation results indicates that amongst all of the control variables, only agriculture sector portion on GRDP which have significant effect to economic growth. Under 0.1 percent significant level, 1 percent increase in agriculture sector contribution to GRDP dwarfs growth rate by 3.71 percent. This negative relationship can arguably be explained by the structural transformation takes place in Indonesian economy. **Figure 5.4** shows that from 2006-2012, the contribution of this sector to Indonesian provincial GRDP is on the declining trend, from 0.255 percentage point to about 0.225 percentage point. In 2014, agriculture sector value added to GDP in Indonesia accounts for only 13.7 percent while service and industry sectors account for 43.3 percent and 42.9 percent (World Bank).

The other control variable which are the government investment and the human literacy rate do not have significant effect to economic growth. It is possibly due to the short period of the data series employed in the study. Theoretically, the longer the time period of the data series, the higher the

degree of freedom so that more precise estimation result could be obtained. For the government investment variable, the insignificance may be explained by its lower level relative to the level of private investment. In the case of the human capital, its insignificance in explaining growth could possibly due to the delayed effect of this variable in significantly boosting economic growth. Before being able to actively engage in the job creation, people need time to be employed in the labor market after graduated. Nevertheless, despite statistically insignificant, government investment and human literacy rate negative and positive sign to economic growth in this estimation result confirm the theory.

Figure 5.4 Declining Pattern of Agriculture Sector Contribution to Provincial GRDP (%)



Source: Statistic Indonesia

5.2.2 Model 5.5 (Poverty Rate as Dependent Variable)

Section 5.1 describes the possible explanation of the inability of social assistance spending in statistically explaining Indonesian provincial economic growth from 2006 to 2012. Besides the inadequacy in its coverage, this social assistance funding allocation may be poorly targeted and lack of transparency and accountability. Therefore, with respect to this finding, the author excludes this variable in **model 5.5**. Thus, the only social outlay which will be analyzed whether or not it can be classified as pro-poor growth instrument is the education support spending (BOS Program).

- **Economic Growth effect to Poverty Rate**

In this study, estimation result shows that without BOS Program, economic growth alone has been instrumental in trimming down poverty rate. Under the 0.1 percent significance level, one percent increase in economic growth is able to push down poverty incidence by 0.441 percent. In other words, the Indonesian growth elasticity to poverty rate from 2006 to 2012 can be categorized as pro-poor growth. This findings is in accordance with Ravallion and Chen (2001) and Dollar and Kraay (2002) studies stating that, in order to

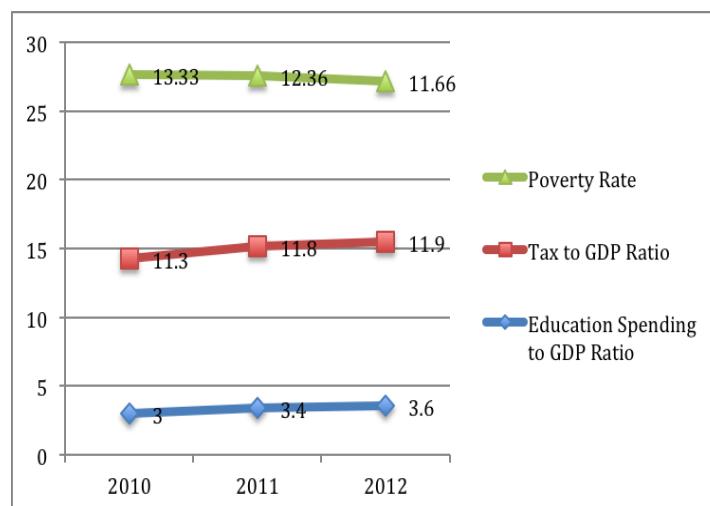
have pro-poor growth, there should be a negative relationship between economic growth and poverty rate.

- **Economic Growth together with Education Support Spending (BOS Program) effect to Poverty Rate**

The estimation results shows that under 0.1 percent significance level, together with economic growth, one percent increase in education support spending (BOS Program) can lower poverty incidence by 0.437 percent². **Therefore, according to this result, the education support spending (BOS Program) can be categorized as a pro-poor growth instrument.** In this case, the effect of economic growth augmented with BOS Program effect in reducing poverty rate can possibly be explained by this reasoning. As the Indonesian economy grew, Indonesian tax revenue were increasing which in turn led to the increase in education expenditure allocated by the government including increase in the allotment for BOS Program (**Figure 5.5**). This process reflects the redistribution of growth benefit to the society by way of the provision of public services in the form of BOS Program.

Study from World Bank (2014) shows that after the commencement of BOS Program, household yearly education expenses whose children studying in the elementary and junior high school dropped by 6 percent. Closer inspection indicates that this reduction in the household education expenditures were fairly higher in the poorest quintile. This education expense reduction in the poorest 20 percent household may led to the increase in their propensity to save and may also improve their purchasing power in acquiring goods and services. Thus it may lift them up from the deprivation.

Figure 5.5 Indonesian Poverty Rate, Tax to GDP Ratio, and Education Spending to GDP Ratio (%)



Source: Statistic Indonesia, Ministry of Finance of the Republic of Indonesia, The World Bank.

² this value is obtained from $0.441 + (-0.004*1)$ in **model (5.5)**

- **Human Literacy Rate and Access to Sanitation effect to Poverty Rate**

The estimation result shows that under five percents significance level, 10 percent increase in household access to safe water can push down poverty incidence by 0.05 percent. It is arguably that when more safe water access are reaching to every household including the poor, the poor household will reap the benefit by lowering their expense in acquiring safe water. Hence, it will possibly lead to increase in their propensity to save and conceivably their purchasing power to satisfy their basic needs. This in turn could possibly lead to the reduction of the poverty incidence. Surprisingly, the human literacy rate does not significantly effect the poverty incidence in Indonesia. The possible explanation is that, it takes time for the human literacy rate in order to significantly reduce the poverty rate. To explain further, having been graduated from school, people are not able to obtain an occupation in the labor market straight away. However, despite statistically insignificant, human literacy rate negative sign to poverty rate in this estimation result confirms the theory.

5.2.3 Model 5.8 (Human Development Index as Dependent Variable)

In **model 5.8**, the only social spending which will be analyzed whether or not it can be classified as inclusive growth instrument is the education support spending (BOS Program). As already explained in **section 5.2**, the allocation of the social assistance spending may not be properly targeted and lack of transparency and accountability. Therefore, this particular variable will be excluded in **model 5.8**.

- **Economic Growth effect to Human Development Index**

The regression result indicates that without BOS Program, economic growth alone is imperative in ramping up Indonesian provincial Human Development Index. Under 5 percent significance level, one percent increase in economic growth is able to increase the Human Development Index by 2.601 percent. Hence due to its ability in improving the level of human development, economic growth in Indonesia is considered to be inclusive. According to Statistics Indonesia, in the time period investigated in this study, Indonesian Human Development Index had improved, from 70.1 in 2006 to 73.29 in 2012.

- **Economic Growth together with Education Support Spending (BOS Program) effect to Human Development Index**

The regression result shows that together with economic growth, one percent increase in education support spending (BOS Program) can improve Human Development Index by 2.633 percent³. **Therefore, according to this result, the education support spending (BOS Program) can be categorized as an inclusive growth instrument.** The possible explanation from this finding is arguably in accordance with that in **model 5.5**. Firstly, Rising economic growth which lead to increase in tax to GDP ratio is translated into higher

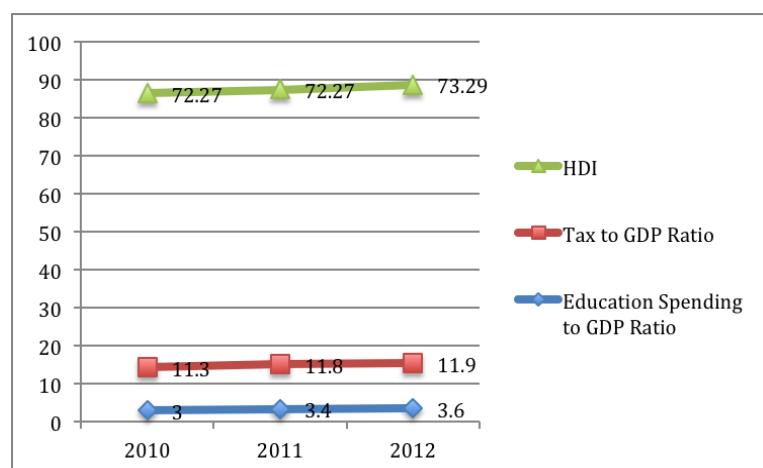
³ this value is obtained from $2.601 + (0.032*1)$ in **model (5.8)**

education spending incorporating higher education support spending (BOS Program). This process reflects the effort of the government in redistributing the fruit of growth to the society by providing public services in education sector (**Figure 5.6**).

To explain further, by looking at the World Bank (2014) report, it can be inferred that in the aftermath of BOS Program initiation, annual family education expenditures whose kid studying in the elementary and junior high school were lowered by 6 percent. Surprisingly, the magnitude of the reduction were moderately larger in the poorest 20 percent family. Such reduction in turn could possibly helping them improving their propensity to save while also strengthening their purchasing power enabling them obtain commodities to nourish their well-being.

Hence, this result acknowledges Ranis and Stewart (2002) finding, proclaiming that inclusive growth mirrored in the redistribution of income have greater impact to the human development of the deprived. He further emphasizes that this resources allotment will have greater magnitude to the human development of the poor household since insufficiency is the most widespread amongst the poor. They further argues that the redistribution of income in the form of basic education services have greater impact in the human development of the developing nations compared to that in the advanced countries.

Figure 5.6 HDI, Tax to GDP Ratio, and Education Spending to GDP Ratio (%)



Source: Statistic Indonesia, Ministry of Finance of the Republic of Indonesia, The World Bank.

- **Human Literacy Rate and Access to Sanitation effect to Human Development Index**

It is interesting to note that the estimation result indicates the insignificance of human literacy rate and access to clean water in explaining the Human Development Index. For the human literacy rate variable, it may be the case that this variable do not have immediate effect to Human Development Index. It is plausibly due to the transition from schooling and achieving employment

opportunities in the labor market. Thus, in this transition period, people may not have access to the resources enabling them to improve their state of living.

Putting the context into the insignificance effect of access to safe water variable to Human Development Index, possible explanation is due to the existence of other factors which is better in explaining the HDI. To explain further, this index composed of three different components: longevity and health, being well informed and proper life, by which the health component is determined from the life expectancy at birth. OECD explains that besides sanitation, nutrition and housing are two essential variables for the life expectancy at birth specifically in the developing countries. Therefore, it may be the case that without other variables, clean water alone is unable in explaining the Human Development Index.

CHAPTER 6

CONCLUSION

This paper investigates the relationship between social expenditures and economic growth within the context of 33 Indonesian provinces on 2006 – 2012 by controlling several growth determinants. In the study, the social expenditures is divided into the social assistance spending and education support spending (School Operational Assistance/BOS Program). After knowing which variable significantly explain the economic growth, this paper then tries to identify whether such social spending can be categorized as the pro-poor growth and inclusive growth instrument in relation to its efficacy in the poverty alleviation and human development improvement.

In doing so, the author develop three models and conduct regression analysis through the Pooled OLS, Fixed Effect Model, and Random Effect Model. From the perspective of model appropriateness, model specification test suggests that the Fixed Effect Model is the model that is robust among the other two and is employed to address the objective of this study. In addition, this model has circumvented several issue which may lead to the estimation bias.

The first model estimation result shows that social assistance spending has no significant effect to economic growth whereas education support spending (BOS Program) have a positive significant effect to growth. One percent increase in the BOS program spurs economic growth by 0.172 percent. Closer inspection suggests that there may exists misallocation of resources in terms of social assistance spending possibly due to lack of transparency and accountability worsened by the absence of local government regular monitoring. In contrast, BOS Program efficacy in ramping up economic growth through the human capital channel is arguably because of its capacity in increasing junior high school enrollment rate of the poorest quintile.

Turning into the second model estimation result, it shows that together with the economic growth, one percent increase in BOS Program is able to trim down poverty incidence by 0.437 percent. From the theoretical standpoint, this negative nexus gives grounds for the author to categorize education support spending (BOS Program) as a pro-poor growth instrument. Deeper investigation indicates that by redistributing the fruit of growth in the provision of BOS program to the society, the poor families could reap the benefit through the reduction in their education expenses. Such reduction may increase their saving propensity and may improve their purchasing power to acquire goods and services which in turn rescuing them from deprivation.

Lastly, the last model shows that, augmented with the economic growth, one percent increase in BOS program lifts Human Development Index by 2.633 percent. Thus, vindicated by this result together with the theoretical consideration, the author categorizes education support spending (BOS Program) as an inclusive growth instrument. To explain further, the redistribution of the benefit of growth by way of BOS program provisioning

could contributed to the reduction of the poor families education spending. Therefore, it may be the case that such reduction improved their propensity to save while also strengthened their purchasing power, enabling them acquire access to commodities that can nourish their well-being.

References

Abhijeet, C (2010) 'Does Government Expenditure on Education Promote Economic Growth? An Econometric Analysis' *MPRA Paper No. 25480*.

Aghion, P., L. Boustan, C. Hoxby and J. Vandenbussche (2009) 'The Causal Impact of Education on Economic Growth: Evidence from the United States, Brooking Papers on Economic Activity'.

Alesina, A. and R. Perotti (1996) 'Income Distribution, Political Instability, and Investment', *European Economic Review* 40(6): 1203-1228.

Anand.R, M. Saurabh, J.P. Shanaka (2012) 'Inclusive Growth: Measurement and Determinants' IMF Working Paper. WP/13/135.

Ahn, SC, Young LH & Schmidt, P 2013, 'Panel data models with multiple time-varying individual effects', *Journal of Econometrics*, vol. 174, no. 1, pp 1-14.

Barro, R. (1997) *Determinants of Economic Growth: A Cross-Country Empirical Study* / Robert J. Barro. Cambridge, Mass. [etc.]: The MIT Press.

Barro, R.J. and X. Sala-i-Martin (2004) *Economic Growth*. McGraw-Hill.

Bellettini, G. and C.B. Ceroni (2000) 'Social Security Expenditure and Economic Growth: An Empirical Assessment', *Research in Economics* 54(3): 249-275.

Blau, J. (1989) 'Theories of the Welfare State', *Social Service Review* 63(1): 26-38.

Coulombe, S. (2006) 'Literacy and Growth', *Topics in Macroeconomics* 6(2).

Damerau, T.M (2011) 'Social Protection A Necessary Condition for Economic Growth? A Guidance for Governance Decisions Under Theoretical Uncertainty', Master Thesis. Maastricht: Graduate School of Governance Maastricht University.

Dollar, D and A. Kraay (2002) 'Growth is Good for the Poor', *Journal of Economic Growth* 7(3): 195-225. Accessed 21 February 2015.

Desviandi, A (2014) 'Social Security Spending and Income Inequality in Indonesia', Master Thesis. Canberra: Australian National University.

de Mello, L. and M. A. Dutz (eds.) (2012), Promoting Inclusive Growth: Challenges and Policies, OECD Publishing.

Easterlin, R.A. (1967) 'Effects of Population Growth on the Economic Development of Developing Countries', *Annals of the American Academy of Political and Social Science* 369(1): 98-108.

Elekdag, S (2012) 'Social Spending in Korea: Can it Foster Sustainable and Inclusive Growth?' IMF Working Paper WP/12/250.

Foa, R (2011) 'The Economic Rationale of Social Cohesion The Cross Country Evidences'. Paper Presented for the International Conference on Social Cohesion and Development, January 20-21, 2011.

Feldstein, M (1996) 'Social Security and Saving: New Time Series Evidence', *National Tax Journal* 49(2):151-164.

Folsters, S and Henrekson, M 1999, 'Growth effect of government expenditure and taxation in rich countries', *Euro Economic Review*, Vol 45, pp.1501-1520.

Godspeed, T.J. (2011) 'Education, Spending, Inequality and Economic Growth: Evidence from US States

Glomm, G. and B. Ravikumar (1997) 'Productive Government Expenditures and Long-Run Growth', *Journal of Economic Dynamics and Control* 21(1): 183-204.

Handayani, S.W (2014) 'Measuring Social Protection Expenditures in South East Asia: Estimates Using the Social Protection Index' ADB Sustainable Development Working Paper Series No.32. Asian Development Bank.

Herrendorf, B., R. Rogerson and A. Valentinyi (2013) *Growth and Structural Transformation*. Vol. no. 9370. London: Centre for Economic Policy Research.
Henrekson, M (1993) 'Wagner's Law – A Spurious Relationship', *Public Finances* 48(2): 406-415.

Hill, H, Resosudarmo, R & Vidyattama, Y 2008, "Indonesia's changing economic geography", *Bulletin of Indonesian Economic Studies*, vol. 44, no. 3, pp 407-435.

Kakwani, N. and E.M. Pernia (2000) 'What is Pro-Poor Growth?', *Asian Development Review* 18(1):1-16.

Kaganovich, M. and I. Zilcha (1999) 'Education, Social Security, and Growth', *Journal of Public Economics* 71(2): 289-309.

Kaur, I. and N. - Singh '- The Oxford Handbook of the Economics of the Pacific Rim'. - OUP USA.

Khan, M.S. and A.R. Kemal (1996) 'Government Investment and Economic Growth in the Developing World [with Comments]', *The Pakistan Development Review* 35(4), Papers and Proceedings PART I Twelfth Annual General Meeting of the Pakistan Society of Development Economists Islamabad, December 14-16, 1996): 419-439.

Kneller, R., M.F. Bleaney and N. Gemmell (1999) 'Fiscal Policy and Growth: Evidence from OECD Countries', *Journal of Public Economics* 74(2): 171-190.

Lee, C.C and C.P Chang (2006) 'Social Security Expenditures and Economic Growth A Heterogeneous Panel Application', *Journal of Economic Studies* 33(6): 478-496.

Lindert, P. (1996) 'Does Social Spending Deter Economic Growth?', *Challenge* 39(3): 17-23

Mankiw, N.G., D. Romer and D.N. Weil (1992) 'A Contribution to the Empirics of Economic Growth', *The Quarterly Journal of Economics* 107(2): 407-437

Mers, RT (eds.) .2012) 'Redistribution for Growth? Income Inequality and Economic Recovery' Briefing Paper Special Issue.

McKinley, T (2010) 'Inclusive Growth Criteria and Indicators: An Inclusive Growth Index for Diagnosis of Country Progress'. Asian Development Bank

Ministry of Finance (2014) 'Nota Keuangan'. Ministry of Finance of the Republic of Indonesia.

Ministry of Finance (2015) 'Financial Note'. Ministry of Finance of the Republic of Indonesia.

National Development and Planning Agency of the Republic of Indonesia (2014) 'Perlindungan Nasional di Indonesia: Tantangan dan Arah ke Depan'. National Development and Planning Agency of the Republic of Indonesia

Mitchell, D.J (2005) 'The Impact of Government Spending on Economic Growth' *Executive Summary Backgrounder The Heritage Foundation No. 1831*: 1-18.

Neath, A.A. and J.E. Cavanaugh (2012) 'The Bayesian Information Criterion: Background, Derivation, and Applications', *Wiley Interdisciplinary Reviews: Computational Statistics* 4(2): 199-203.

Ranieri, R and R.A. Ramos (2013) 'Inclusive Growth Building up a Concept', International Policy Centre for Economic Growth Working Paper number 104. IPC-IG.

Ranis, G. and S. Frances (2002) 'Economic Growth and Human Development in Latin America', Cepal Review 78.

Ravallion, M and Chen, S. 2001. *Measuring Pro-Poor Growth*. Development Research Group. World Bank.

Ravallion, M. (2004) 'Pro-Poor Growth: A Primer', *World Bank Policy Research Working Paper No.3242*

Shepherd, B 2010, 'Dealing with reverse causality', ARTNet capacity Building Workshop.

Spicker, P. (2000) *The Welfare State: A General Theory / Paul Spicker*. London [etc.]: SAGE.

UNDP (2006) 'What is Poverty? Concepts and Measures' Poverty in Focus. United Nations Development Programme.

UNDP (2014) 'Accelerating Inclusive Growth for Sustainable Human Development in Ethiopia'. National Human Development Report 2014 Ethiopia. United Nations Development Programme.

UNDP (2015) Accessed 15 August 2015 < http://www.oecd-ilibrary.org/sites/health_glance-2011-en/01/01/index.html?itemId=%2Fcontent%2Fchapter%2Fhealth_glance-2011-4-en&containerItemId=%2Fcontent%2Fserial%2F19991312&accessItemIds=%2Fcontent%2Fbook%2Fhealth_glance-2011-en&mimeType=text%2Fhtml>

World Bank (2012) 'History and Evolution of Social Assistance in Indonesia'. Social Assistance Program and Public Expenditure Review 8. The World Bank.

World Bank (2014) 'Assessing the Role of the School Operational Grant Program (BOS) in Improving Education Outcomes in Indonesia'. The World Bank.

'World Bank' Poverty & Equity Data Bank and PovcalNet Accesed 12 May 2015 <<http://povertydata.worldbank.org/poverty/home/>>

'World Bank' (2015) Accessed 11 August 2015 < <http://www.worldbank.org/en/topic/poverty/overview>>

'World Bank' Accessed 11 August 2015 <http://data.worldbank.org/indicator/NV.AGR.TOTL.ZS>

Zhang, J and J, Zhang (2004) 'How Does Social Security Affect Economic Growth? Evidence From Cross-Country Data', *Journal of Population Economics* 17(3): 473-500.

Appendices

Estimation Result Model 5.1

Source	SS	df	MS	Number of obs = 207			
Model	277.775101	5	55.5550202	F(5, 201) =	219.23		
Residual	50.9361625	201	.253413744	Prob > F =	0.0000		
Total	328.711264	206	1.59568575	R-squared =	0.8450		
				Adj R-squared =	0.8412		
				Root MSE =	.5034		
LnGwth	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]		
Soc	-2.642767	1.094022	-2.42	0.017	-4.799999	-.4855351	
LnBOS	.7135807	.0377889	18.88	0.000	.6390672	.7880942	
Agrishare	-4.740099	.3852409	-12.30	0.000	-5.499731	-3.980467	
LnCapex	.1789612	.0453114	3.95	0.000	.0896145	.2683078	
Hcap	.0052553	.0061663	0.85	0.395	-.0069036	.0174142	
_cons	8.285451	1.427292	5.81	0.000	5.471064	11.09984	

Estimation Result Model 5.2

Fixed-effects (within) regression
 Group variable: id
 Number of obs = 207
 Number of groups = 33
 R-sq: within = 0.9022
 between = 0.7409
 overall = 0.7225
 Obs per group: min = 5
 avg = 6.3
 max = 7
 F(18,32) = .
 corr(u_i, Xb) = 0.6587 Prob > F = .
 (Std. Err. adjusted for 33 clusters in Province)

LnGrwth	Robust					
	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Soc	.0564917	.1059069	0.53	0.597	-.1592337	.2722171
LnBOS	.1717211	.0145557	11.80	0.000	.1420722	.2013701
Agrishare	-3.713881	.4459177	-8.33	0.000	-4.622185	-2.805576
LnCapex	-.0109635	.0118692	-0.92	0.363	-.0351402	.0132132
Hcap	.0038765	.0065406	0.59	0.558	-.0094462	.0171993
yis						
2006	-.0206515	.0213329	-0.97	0.340	-.0641051	.0228021
2007	-.1196551	.0233018	-5.14	0.000	-.1671194	-.0721908
2008	-.0581809	.0128153	-4.54	0.000	-.0842848	-.032077
2009	0	(omitted)				
2010	-.053203	.0117444	-4.53	0.000	-.0771255	-.0292805

Estimation Result Model 5.2 (cont.)

2011	.0136911	.0216452	0.63	0.532	-.0303986	.0577808
2012	.0628438	.0237483	2.65	0.013	.0144701	.1112174
4012	0 (omitted)					
4014	-.0885424	.017052	-5.19	0.000	-.1232761	-.0538088
4016	-.0561375	.0371169	-1.51	0.140	-.1317423	.0194672
4018	-.0244441	.046672	-0.52	0.604	-.1195088	.0706268
4020	-.0773731	.0475036	-1.63	0.113	-.1741348	.0193887
4022	-.0359044	.0511433	-0.70	0.488	-.1400798	.0682711
4024	.0041263	.0539302	0.08	0.939	-.1057258	.1139784
6018	-.0534911	.0221028	-2.42	0.021	-.098513	-.0084692
6024	-.0466523	.015221	-3.07	0.004	-.0776564	-.0156482
6027	-.0184457	.0140895	-1.31	0.200	-.0471452	.0102538
6030	-.0673848	.0113214	-5.95	0.000	-.0904457	-.0443238
6033	0 (omitted)					
6036	.0452497	.0081608	5.54	0.000	.0286266	.0618727
8024	.0214804	.0221242	0.97	0.339	-.0235852	.0665459
8028	-.1002137	.03364	-2.98	0.005	-.1687362	-.0316912
8032	-.0532386	.0225275	-2.36	0.024	-.0991257	-.0073515
8036	0 (omitted)					
8040	-.0408679	.0238678	-1.71	0.097	-.0894849	.0077491
8044	-.0053336	.0376795	-0.14	0.888	-.0820843	.0714172
8048	.0125754	.0571716	0.22	0.827	-.1038794	.1290302
_cons	27.30566	.6023372	45.33	0.000	26.07874	28.53258
sigma_u	.9238824					
sigma_e	.0500848					

Estimation Result Model 5.3

Random-effects GLS regression
 Group variable: **id**
 Number of obs = **207**
 Number of groups = **33**
 R-sq: within = **0.8554**
 between = **0.7036**
 overall = **0.6925**
 Obs per group: min = **5**
 avg = **6.3**
 max = **7**
 Wald chi2(5) = **467.91**
 corr(u_i, X) = **0** (assumed) Prob > chi2 = **0.0000**

(Std. Err. adjusted for 33 clusters in Province)

LnGrwth	Robust				
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Soc	-.0478128	.0946693	-0.51	0.614	-.2333612 .1377356
LnBOS	.1675925	.0136344	12.29	0.000	.1408696 .1943155
Agrishare	-4.412089	.3713456	-11.88	0.000	-5.139913 -3.684265
LnCapex	-.0010409	.0114629	-0.09	0.928	-.0235077 .0214259
Hcap	.0041745	.0047748	0.87	0.382	-.005184 .013533
_cons	27.30067	.4284586	63.72	0.000	26.4609 28.14043
sigma_u	.38354809				
sigma_e	.05636504				
rho	.97886021 (fraction of variance due to u_i)				

Estimation Result Model 5.4

Source	SS	df	MS	Number of obs =	231
Model	30.040767	5	6.00815339	F(5, 225) =	33.44
Residual	40.4263406	225	.179672625	Prob > F =	0.0000
Total	70.4671075	230	.306378728	R-squared =	0.4263
				Adj R-squared =	0.4136
				Root MSE =	.42388

LnPov	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
LnGrwthl	-.2443312	.0905267	-2.70	0.007	-.4227199 -.0659425
LnGrwthlLnBOS	.0034043	.0016133	2.11	0.036	.0002252 .0065835
Agrishare	.2829225	.4392425	0.64	0.520	-.5826327 1.148478
Hcap	-.0307083	.0048631	-6.31	0.000	-.0402914 -.0211251
Wtr	-.010993	.0024058	-4.57	0.000	-.0157338 -.0062522
_cons	10.7652	1.721809	6.25	0.000	7.372261 14.15813

Estimation Result Model 5.5

Fixed-effects (within) regression	Number of obs	=	231		
Group variable: id	Number of groups	=	33		
R-sq: within = 0.9137	Obs per group: min =	7			
between = 0.1240	avg =	7.0			
overall = 0.1457	max =	7			
	F(18,32)	=	.		
corr(u_i, Xb) = -0.7409	Prob > F	=	.		
(Std. Err. adjusted for 33 clusters in Province)					
LnPov	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
LnGrwthl	-.4413994	.1019528	-4.33	0.000	-.6490704 -.2337284
LnGrwthlLnBOS	-.0040287	.0008739	-4.61	0.000	-.0058089 -.0022486
Agrishare	-1.26905	.6409894	-1.98	0.056	-2.574703 .0366023
Hcap	-.0032149	.0059535	-0.54	0.593	-.0153417 .0089119
Wtr	-.0050862	.0020897	-2.43	0.021	-.0093429 -.0008295
yis					
2006	-.0229661	.0486938	-0.47	0.640	-.1221521 .0762199
2007	.0581183	.0406345	1.43	0.162	-.0246515 .1408881
2008	.0403768	.0297494	1.36	0.184	-.0202207 .1009743
2009	-.0164913	.0323594	-0.51	0.614	-.0824052 .0494225
2010	.0196871	.0265439	0.74	0.464	-.034381 .0737552

Estimation Result Model 5.5 (cont)

2010	.0196871	.0265439	0.74	0.464	-.034381	.0737552
2011	-.0084522	.0160288	-0.53	0.602	-.0411019	.0241974
2012	0 (omitted)					
4012	.1928312	.0317154	6.08	0.000	.128229	.2574333
4014	.171369	.0382434	4.48	0.000	.0934697	.2492683
4016	.0870056	.0232181	3.75	0.001	.0397118	.1342993
4018	-.0821311	.0278871	-2.95	0.006	-.1389352	-.0253271
4020	-.0048463	.0274291	-0.18	0.861	-.0607176	.051025
4022	-.0149853	.017622	-0.85	0.401	-.05088	.0209095
4024	0 (omitted)					
6018	.0727884	.0281091	2.59	0.014	.0155319	.1300448
6021	.1445684	.0231273	6.25	0.000	.0974597	.1916772
6024	.0986101	.0221658	4.45	0.000	.0534597	.1437604
6027	.1680213	.0145517	11.55	0.000	.1383804	.1976622
6030	.1657385	.0116364	14.24	0.000	.142036	.1894411
6033	0 (omitted)					
6036	-.0254859	.0078037	-3.27	0.003	-.0413815	-.0095903
8024	0 (omitted)					
8028	.0487426	.0274899	1.77	0.086	-.0072524	.1047376
8032	.0014091	.0293582	0.05	0.962	-.0583915	.0612098
8036	-.0047299	.0343574	-0.14	0.891	-.0747136	.0652538
8040	.0774826	.0370136	2.09	0.044	.0020883	.1528769
8044	-.0248342	.048484	-0.51	0.612	-.1235928	.0739245
8048	-.0184455	.0597495	-0.31	0.760	-.1401513	.1032603
_cons	20.33872	2.847291	7.14	0.000	14.53897	26.13846

Estimation Result Model 5.6

Random-effects GLS regression
 Group variable: **id**
 Number of obs = **231**
 Number of groups = **33**
 R-sq: within = **0.8292** Obs per group: min = **7**
 between = **0.1616** avg = **7.0**
 overall = **0.1881** max = **7**
 Wald chi2(5) = **414.81**
 corr(u_i, X) = **0** (assumed) Prob > chi2 = **0.0000**

(Std. Err. adjusted for 33 clusters in Province)

LnPov	Robust					
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
LnGrwthl	-.2028819	.0862032	-2.35	0.019	-.371837	-.0339268
LnGrwthlLnBOS	-.0046089	.0006407	-7.19	0.000	-.0058647	-.0033532
Agrishare	-.2910849	.7160873	-0.41	0.684	-1.69459	1.11242
Hcap	-.0073438	.0073399	-1.00	0.317	-.0217297	.0070421
Wtr	-.006897	.0019341	-3.57	0.000	-.0106878	-.0031062
_cons	13.69344	2.688846	5.09	0.000	8.423399	18.96348
sigma_u	.43419813					
sigma_e	.06426192					
rho	.97856511 (fraction of variance due to u_i)					

Estimation Result Model 5.7

Source	SS	df	MS	Number of obs	=	231
Model	1642.73936	4	410.68484	F(4, 226)	=	119.50
Residual	776.69287	226	3.43669412	Prob > F	=	0.0000
Total	2419.43223	230	10.5192706	R-squared	=	0.6790
				Adj R-squared	=	0.6733
				Root MSE	=	1.8538

HDI	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
LnGrwthl	1.410272	.3018883	4.67	0.000	.8153963	2.005148
LnGrwthlLnBOS	-.0175531	.0060934	-2.88	0.004	-.0295602	-.0055461
Hcap	.3043481	.0211572	14.39	0.000	.2626575	.3460387
Wtr	.0677479	.0095652	7.08	0.000	.0488995	.0865964
_cons	9.535031	5.09675	1.87	0.063	-.5081976	19.57826

Estimation Result Model 5.8

Fixed-effects (within) regression
 Group variable: **id**

R-sq: within = **0.8958** Obs per group: min = **7**
 between = **0.1751** avg = **7.0**
 overall = **0.1998** max = **7**

corr(u_i, Xb) = -0.8067 **F(17,32) = .**
Prob > F = .

(Std. Err. adjusted for 33 clusters in Province)

HDI	Robust					
	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
LnGrwthl	2.601098	1.068375	2.43	0.021	.42489	4.777306
LnGrwthlLnBOS	.0320164	.0071466	4.48	0.000	.0174593	.0465735
Hcap	.0400642	.0747396	0.54	0.596	-.1121754	.1923037
Wtr	.0197266	.0148126	1.33	0.192	-.0104456	.0498988
yis						
2006	-.1670629	.4091356	-0.41	0.686	-1.000445	.666319
2007	-.7398215	.3571724	-2.07	0.046	-1.467358	-.0122852
2008	-.5682885	.2474791	-2.30	0.028	-1.072387	-.0641901
2009	-.4418745	.2891691	-1.53	0.136	-1.030893	.1471438
2010	-.5361408	.2000598	-2.68	0.012	-.9436492	-.1286324
2011	-.2634874	.1545589	-1.70	0.098	-.5783137	.0513388

Estimation Result Model 5.8 (cont)

2012	0 (omitted)					
4012	-.3256869	.4571495	-0.71	0.481	-1.25687	.6054962
4014	-.7835859	.3705576	-2.11	0.042	-1.538387	-.0287847
4016	-.687659	.2776153	-2.48	0.019	-1.253143	-.1221753
4018	-.3238207	.1925976	-1.68	0.102	-.7161291	.0684877
4020	-.5019413	.1918187	-2.62	0.013	-.8926632	-.1112194
4022	-.2419794	.1013761	-2.39	0.023	-.4484758	-.0354829
4024	0 (omitted)					
6018	-.2114169	.231768	-0.91	0.368	-.6835129	.2606792
6021	-.597342	.1984374	-3.01	0.005	-1.001546	-.1931382
6024	-2.141737	.1247597	-17.17	0.000	-2.395865	-1.88761
6027	-.096309	.1412552	-0.68	0.500	-.3840364	.1914184
6030	-.2243728	.1078205	-2.08	0.046	-.443996	-.0047496
6033	0 (omitted)					
6036	.1885888	.0664218	2.84	0.008	.0532919	.3238856
8024	0 (omitted)					
8028	-.0001562	.2367078	-0.00	0.999	-.4823142	.4820017
8032	.3682382	.3238105	1.14	0.264	-.2913422	1.027819
8036	.6742051	.3847952	1.75	0.089	-.109597	1.458007
8040	-.2314812	.5713108	-0.41	0.688	-1.395203	.9322408
8044	.7168218	.3819859	1.88	0.070	-.0612581	1.494902
8048	.6843251	.4716037	1.45	0.156	-.2763003	1.64495
_cons	-40.00931	29.26703	-1.37	0.181	-99.6243	19.60569
sigma_u	4.9393181					
sigma_e	.40374978					

Estimation Result Model 5.9

Random-effects GLS regression
 Group variable: **id**
 Number of obs = **231**
 Number of groups = **33**
 R-sq: within = **0.7965** Obs per group: min = **7**
 between = **0.3293** avg = **7.0**
 overall = **0.3639** max = **7**
 Wald chi2(4) = **499.88**
 corr(u_i, X) = **0** (assumed) Prob > chi2 = **0.0000**

(Std. Err. adjusted for 33 clusters in Province)

HDI	Robust					
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
LnGrwthl	.3758031	.396369	0.95	0.343	-.4010658	1.152672
LnGrwthlLnBOS	.0350372	.0067762	5.17	0.000	.0217561	.0483183
Hcap	.154092	.0993784	1.55	0.121	-.040686	.34887
Wtr	.0429588	.0111383	3.86	0.000	.021128	.0647895
_cons	14.38547	13.38081	1.08	0.282	-11.84045	40.61138
sigma_u	1.7058096					
sigma_e	.44730793					
rho	.93566151 (fraction of variance due to u_i)					

Model 4.1 Specification Test

```
Test of overidentifying restrictions: fixed vs random effects
Cross-section time-series model: xtreg re robust cluster(Province)
Sargan-Hansen statistic 177.216 Chi-sq(5) P-value = 0.0000
```

Model 4.2 Specification Test

```
Test of overidentifying restrictions: fixed vs random effects
Cross-section time-series model: xtreg re robust cluster(Province)
Sargan-Hansen statistic 97.544 Chi-sq(5) P-value = 0.0000
```

Model 4.3 Specification Test

```
Test of overidentifying restrictions: fixed vs random effects
Cross-section time-series model: xtreg re robust cluster(Province)
Sargan-Hansen statistic 80.423 Chi-sq(4) P-value = 0.0000
```

Collinearity Test (Variance Inflation Factor)

```
vif
```

Variable	VIF	1/VIF
LnCapex	1.60	0.623281
Agrishare	1.44	0.695460
LnBOS	1.26	0.795178
Hcap	1.05	0.948889
Soc	1.01	0.988691
Mean VIF	1.27	

```
. vif
```

Variable	VIF	1/VIF
LnGrwthl	17.67	0.056591
LnGrwthlLn~S	13.28	0.075306
Agrishare	2.99	0.334777
Wtr	1.57	0.638000
Hcap	1.10	0.909525
Mean VIF	7.32	

. vif

Variable	VIF	1/VIF
LnGrwthl	10.27	0.097334
LnGrwthlLn~S	9.90	0.100976
Wtr	1.30	0.771993
Hcap	1.09	0.919163
Mean VIF		5.64