RELATIONSHIP BETWEEN GOVERNMENT

EXPENDITURE AND POVERTY RATE IN INDONESIA

Comparison of Budget Classifications
Before and After Budget Management Reform in 2004

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ABSTRACT

This study attempts to find the relationship between government expenditure and poverty rate in Indonesia, by examining effects of the budget expenditure groups before and after budget reform in 2004. Furthermore it aims to determine which government expenditure allocations that have a significant influence on poverty reduction. However, this study failed to compare the relationship of sectoral (functional)-based government expenditures and poverty rate before and after budget management reform due to lack of series of data.

The significant increases in the amount of expenditures by the Indonesian government have not been followed with a significant decrease in poverty rate after budget reform. An examination is needed to resolve a reliable budget allocation, based on the previous studies which concluded that the government should emphasize on budget allocation rather than budget size. The allocation of budget is a key instrument for the government to promote economic development and to reduce absolute poverty.

The literature review identified a negative relationship between government expenditures and poverty in some developing countries. In addition, the studies about specific relationship between sectoral expenditures (i.e. education, health, tourism) and poverty revealed similar results.

This study employed *Ordinary Least Square* regression to analyze the relationship. The data collection involved the use of both quantitative and qualitative research methodology. Before running the regression, data testing (stationer and unusual data) was conducted. To obtain a good-fit estimation, some tests were carried out to

ensure statistical assumptions, such as linearity of variables, residuals to be normally distributed, no correlation among independent variables, the disturbances to be constant, and no omitted variable problem.

The structure of analysis was organized in the following ways: (1) general relationship, (2) relationship prior to budget reform, (3) relationship post budget reform, and (4) relationship post budget reclassification. The one-sided (left-side) hypothesis testing was performed to test the hypothesis statement about those four types of relationships.

This research found that the government expenditure in overall did not have a negative relationship with poverty rate; this result was opposite to the previous studies on the similar field. Prior to budget reform, out of 8 sectors, the government expenditure in education and in industry sectors had significant negative relationships with poverty rate. Post budget reform, none of expenditure functions had a negative relationship with poverty rate. Post reclassification, out of 9 functions, the government expenditure in general service and in order and security functions showed significant negative relationships with poverty rate.

Furthermore, the expenditure in education was the only expenditure which had a stable negative relationship with poverty rate. The study also indicated that population growth and economic growth were the control variables which had a robust negative relationship with poverty rate because their relationship was always significant. The poverty rate in 2011 is predicted at either 14.59% (general relationship estimations) or 16.77%   (post reclassification estimations).

In the final section, the paper recommends to the Indonesian government to give more attention to expenditure in general service, order and security, and education to reduce

poverty rate. In addition this study also suggests that family planning programs may be promoted again to support poverty alleviation besides maintaining a high economic growth.

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CHAPTER I

INTRODUCTION

1.1   Background

Poverty is a critical issue and a persistent problem in Indonesia. Poverty still exists and seems difficult to be eradicated although the Indonesian government has increased its budget every year to solve the problem. According to Indonesia Central Bureau of Statistics (2007), out of 224 million people, 34.9 million people (16.7%) live under the poverty line. The number of poor people is bigger when it is measured with the World Bank's poverty standard. According to the World Bank (2007), around 59% of Indonesian people live with an income under $2 a day.

Statistically, the majority of poor people live in rural areas. The data of the National Team on Poverty Reduction Acceleration (2009) shows that in the last decade, in average, more than 60% of poor people lived in rural areas and highly depended upon the agricultural sector. Most of them are either doing agriculture in a small land size or doing a job as off-farm labor.

As declared in the Middle National Development Plan (2010), one of the development goals is creating welfare for Indonesian people. To achieve the goal, every year the government has allocated expenditures to finance development activities and programs. Those activities and programs are primarily aimed at increasing people's welfare and to reduce absolute poverty.

Starting from 1970, the amount of budget to finance government activities and programs has increased significantly. According to the Government Financial Note,

government budget in 2009 increased more than 1,500 times compared with the budget in 1970. In the beginning of 1970's, the Indonesian government only financed its activities around Rp334 billion, but in the end of 2000's the total budget was not less than Rp699,684 billion. The sharp increase happened in 2008 when Rupiah depreciated against US$ and inflation reached 80%, the worst in the last 3 decades. However, this situation indicated a net increase in the government's role and an opportunity for social development programs.

The expenditures, afterward, were allocated into sectors or functions which reflected government priorities to achieve its goal. In regard with poverty reduction, the Indonesian government has different experiences in allocating budgets to finance activities and programs to lift up poor people from below poverty line. Before the year 2000, most of the budgets were allocated in the 20 sectors which reflect the development sector, such as agriculture, trading & industry, education, health, local development, etc. A very small number of budgets were allocated to specific poverty alleviation programs. The policy emphasized economic growth as a primary engine to boost economics. It was expected that by giving priority to economic growth, poverty would automatically be reduced due to trickle-down effect of economic development.

Since 2005 government has implemented budget management reforms to encourage efficiency and effectiveness on budget utilization. The reform includes three budget laws that cover the overall financial management aspects, such as budget arrangement, budget implementation, and budget accountability. This reform was expected to contribute to Indonesia's poverty alleviation program in form of functional budget allocation. According to Budget Law (2009) the government

budgets are allocated into 11 functions, as the following: general service, defense, public security, economics, environmental, housing & public facility, health, tourism & culture, religion, education, and social security. In addition, the government also provided larger budget allocation for targeted poverty reduction programs compared with previous periods, such as rice for poor (raskin), cash transfer (BLT), National Program on Self Community Empowerment (PNPM Mandiri), etc.

The Indonesian government has had different development priorities before and after budget reform. Prior to budget reform, in term of amount of budget allocated, the government gave higher priority to trading & national business and finance, local development, irrigation, and education sectors. According to Budget Law (1998), expenditures in trading and business, local development, education, and agriculture sectors enjoyed Rp132 trillion (59%), Rp21 trillion (10%), Rp10 trillion (4.6%), and Rp7 trillion (3%) respectively. In term of budget per capita, those sector-based budget allocations still are robust. In regard with specific poverty alleviation programs, according to Alatas (1998) the government only allocated, for instance, less than Rp400 billion for Left Behind Village program in 1996.

The budget reform in 2004 changed the budget allocation system. The new system followed a function-based approach rather than a sector-based approach in allocating the budget. As a consequence, the budget seemed to be allocated in development support functions. According to Law of Budget (2009), the government gave higher priority to general service, education, and economic functions by allocating to those sectors a budget of Rp472 trillion (68%), Rp87 trillion (13%), and Rp64 trillion (9%) respectively. In term of targeted poverty

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reduction program, according to Royat (2009) the government allocated no less than Rp5 trillion for Community Empowerment program in 2007. The number of budget was more than 12 times compared with a similar program (Left Behind Village program) in 1996.

Post budget reform, the Indonesian government gave more attention to supporting functions. The government allocated more budget to general service function (68%) rather than the other functions, such as education, health, economic, and public facility. Although the government, in the same time, provided a bigger budget on targeted poverty program, the decreasing trend of the poverty rate started to slow down. According to Indonesia Central Bureau of Statistics, between 2000 and 2009 the Indonesian government only succeeded to reduce poverty for less than 5% point, from 19.15% to 14.3%.

On the contrary, in the previous period, the structure of budget focused on development sectors. It was shown from higher allocation to sectors such as national business and finance, local development, irrigation, and education. This allocation was alleged to support the Indonesian government in reducing the poverty rate significantly. According to Tulung (2008) the poverty rate could be reduced from 40% to 11.3% or about 30% point in 20 years between 1976 and 1996. According to Wilhem and Fiestas (2005), allocation of government budget is a key instrument for government to promote economic development and reduce absolute poverty by analyzing 9 "Operationalizing Pro-Poor Growth" (OPPG) countries during 1980s and 1990s period. Another study by Balisacan in Indonesia (2002) also reveals the importance of allocation of government expenditure as well as geographic attributes and local institutions on poverty reduction by utilizing sub

national level data. In addition, by utilizing 43 developing countries panel data, Fan and Rao (2003) investigated the impact of sector level of government expenditure on GDP and poverty reduction. They found the mix impacts of sector level of expenditure on poverty reduction.

The studies on the importance of the allocation role of government expenditure show, no matter what the size of budget is, it is the appropriate allocation that matters. Regarding the poor achievement of poverty reduction after the implementation of the budget reform, it is interesting to study what would be a reasonable and appropriate budget allocation to reduce poverty rate by comparing the relationships between allocation of government expenditure before and after budget reform in 2004 with the level of poverty.

1.2   Research Problem

By considering poverty trends after budget reform in 2004 and the significant increase in the government's budget expenditure, this research focused on the following problems:

a. The sharp increase in the amount of Indonesia government spending is not followed with a significant decrease in poverty rate after budget reform. The data reveals that poverty rate decreases more slowly after budget reform was implemented.

b. What is a reasonable allocation of government expenditure to support poverty alleviation? The seriousness of government to alleviate poverty rate is reflected from how well the expenditure is allocated in order to support poverty reduction goal. Studies show that no matter what the size of budget is, it is the appropriate

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allocation that matters. Balisacan (2002), Fan and Rao (2003), Wilhem and Fiestas (2005) explained that allocation of government budget is a key instrument for government to promote economic development and reduce absolute poverty. The other research carried out by Barro (1990) suggests that it is not a matter of total size of government spending but the composition of the spending that would have differential effects on growth and poverty reduction. Regardless of other important determinant factors on poverty reduction in Indonesia, a reasonable budget allocation should be considered in order to support the poverty alleviation goal. Since it is possible to compare the allocation prior and after budget reform through budget reclassification process, the government can learn what sector may succeed to reduce poverty rate significantly by monitoring the previous budget allocation system.

1.3   Research Objective

The study focused on an examination of the relationship between the Indonesian government expenditure and poverty considering previous research in this area. This research had the objectives to:

1. examine the relationship between government expenditure and poverty reduction in Indonesia,

2. compare the relationship of classification of government expenditure and poverty reduction in Indonesia before and after financial management reform, and

3. determine which government expenditure allocations influence poverty reduction significantly.

1.4   Research Scope

This research is focused on hypothesis testing about the relationship between government expenditure and poverty rate in Indonesia. It has employed time series regression analysis to determine the relationship between government expenditure (sector and function) and poverty rate. As result of regression analysis, the study shows (1) the relationships between government expenditure (prior to and post budget reform) and poverty, and (2) which sectors/functions have significant relationship.

This study carried out statistical examinations to ensure the data was valid and the model was reliable. Therefore, data diagnostics (stationer and unusual data) and good-fit model specification test (normality test, linearity test, multi multicollinearity test, autocorrelation test, and heteroscedasticity test) were established.

In order to improve our understanding, this study has also defined variables included in the analysis. The government expenditure variable was defined as the growth of annual budget spent including allocation in the major sectors and functions. The allocation sector was regarded as a proxy of government's priority in alleviating poverty problem. However, this study did not employ an analysis on government expenditure either on targeted poverty programs (cash transfer, rice for poor, Community Empowerment program, Left Behind Village program, Presidential Instruction, etc) or indirect programs, subsidy for instance. It also did not highlight government policy on poverty reduction such as National Strategy on Poverty Alleviation. However, this study kept providing some information about those expenditures in order to support analysis.

The term "poverty" was limited as the absolute poverty rate issued by Central Bureau Statistics. The poverty rate is obtained by measuring minimum basic need components per capita consumption. Thus, this study did not utilize poverty measurement in broader concepts, such as human development, accessibility, capability, etc.

The study contained some limitation since the determinants of poverty reduction were not completely included, such as human development index, trade openness, number of public facilities, etc. In addition, this study used a different proxy compare with previous studies in term of government expenditure. Furthermore the study employs government expenditure as an indirect variable which influences poverty reduction. It means that it is difficult to ensure that the amount of sector-based budget allocated have an effect on poverty reduction since the analysis employed was a relationship analysis rather than causality analysis. Thus, I recommend other researchers to do further investigation about that relationship.

However, regardless of the limitations, this paper emphasizes the relationship between government expenditure and poverty rate, especially to acquire a picture about the relationship of those variables prior to and post budget reform.

The analysis consisted of:

a. Relationship between total government budget and poverty rate.

b. Relationship between sector-based government budget and poverty rate (prior to budget reform).

c. Relationship between function-based government budget and poverty rate (post budget reform).

d. Relationship between function-based government budget and poverty rate (post

budget reclassification).

1.5   Conceptual Framework

To understand how the government spending affects poverty reduction, Figure 1.1

explains a flowchart relationship of those variables.

Figure 1-1:
The Conceptual Framework of Relationship between
Government Spending and Poverty Reduction
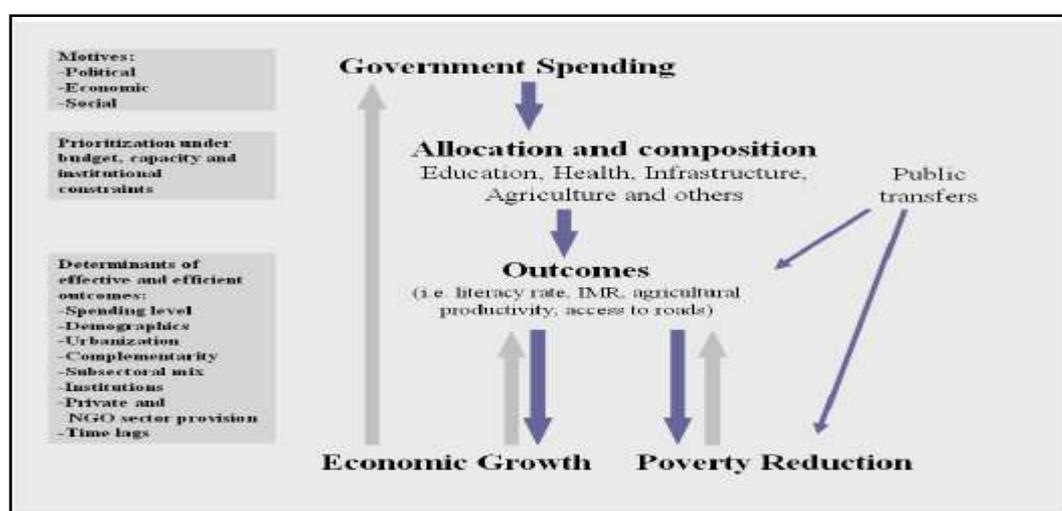
Source: Wilhem and Fiestas(2005)

Government spending is driven by the objective to positively affect growth and/or

poverty reduction as a result of improved provision of social services, public goods

spending in agriculture, and infrastructure access. It clearly shows that government

spending has an indirect relationship with poverty reduction. To achieve its effect in

poverty reduction, as listed in the left table (determinants of effective and efficient

outcomes), the government spending works through spending level (budget

allocation) that result in outcomes, such as literacy rate, Infant Mortality Rate, agricultural productivity, and access to road. Afterward, the outcomes could have direct effects in the same and opposite directions with poverty reduction (see figure 1-1).

CHAPTER 2

LITERATURE REVIEW

This chapter will review the definition of important terms and the existing researches on government spending and poverty. Those parts are presented in sequence (1) Poverty, (2) Government Expenditure, and   (3) Prior Research.

2.1   Poverty

The concept of poverty is very diverse, ranging from mere incompetence to meet basic consumption needs and improve the situation, the lack of business opportunities, up to a broader sense that includes social and moral aspects.

Indonesian official dictionary (KBBI) gives meaning of poverty as "a situation of either all or partially of individuals in a community who can only meet their needs in food, clothes, and house that are very essential to continue their minimum lives standard".

Ravallion (2001) suggests that the dimensions of poverty include political, social, cultural and psychological, economic, and accesses to assets. Dimensions are interrelated and mutually locking / limiting. Poverty is hunger, having no place to live, and when there is pain, a lack of the funds to have treatment. Poor people generally cannot read because they are not able to attend school, do not have a job, are afraid to face the future, or for loss of children due to illness. Poverty is powerlessness, marginalized and not having a sense of freedom.

The famous definition about poverty was made by Sen, cited in World Bank Institutes

(1987), who argues that "well-being comes from a capability to function in society".

Thus poverty arises when people lack key capabilities, and thus have inadequate income or education, or poor health, or insecurity, or low self-confidence, or a sense of powerlessness, or the absence of rights such as freedom of speech.

Poverty is also a political issue because it relates to the allocation or distribution of resources, and reflects the impact of past and present policy choices (Meth, 2006). The ways in which politicians, citizens and experts use the concept of poverty have very divergent and diverse roots in social, political and philosophical discourses.

Similar with a personal-based definition, we also obtained other definitions issued by popular international and local organizations, such as World Bank, Asian Development Bank, and National Planning Board. The first definition was come from World Bank (2000) which stated poverty as a pronounced deprivation in well-being.

Asian Development Bank (2006) defines poverty into three categories: (1) human poverty, which is a lack of essential human capabilities, notably literacy and nutrition (2) income poverty, which is a lack of sufficient income to meet minimum consumption needs (3) absolute poverty, which is a degree of poverty below the minimal calorific requirement plus essential nonfood components. However, Asian Development Bank also emphasizes that it is now increasingly realized that poverty is a multidimensional concept and should encompass all important human requirements. Poverty is caused because some sections of the

society have so little income that they cannot satisfy their minimum basic needs as defined by the poverty line. But lack of income is not the only kind of deprivation people may suffer. Indeed, people can still suffer acute deprivation in many aspects of life even if they possess adequate incomes. Thus, recent thinking on poverty argues that poverty should be viewed in terms of an inadequate standard of living, which is more general than a lack of income. Living standards are influenced by the degree to which households have access to suitable public goods. Therefore, one aspect of non-income poverty has to do with a population's access to basic services. A second dimension includes social deprivations: the inability to fully participate in communities and, perhaps, in religious life. Other aspects relate to physical deprivations, such as those caused by disability, disease, and under-nutrition, or vulnerability to a catastrophic loss.

A local government institution, National Planning Board (2002), defines poverty as a situation or condition experienced by a person or group of people who are not able to organize her life up to a level which is considered humane. Furthermore National Planning Board (2004 in Susanto, 2005) defines poverty as a condition where a person or group of persons, not able to fulfill their basic rights to preserve and develop life of dignity. These rights include the fulfillment of basic community food needs, health, education, employment, housing, clean water, land, natural resources and environment, safety of treatment or threats of violence and the right to participate in the life social and politic, both for women and men.

World Bank defines people whose life is supported by under $1 a day as poor. The local government institution, Indonesia Central Bureau of Statistics (2008) also defines its own poverty as inability of people to fulfill their basic needs both food and non-food which are measured from expenditure side. While minimum of food consumption is determined as 2,100 kcal per capita per day, non-food consumption is based on expenditure combination of 51 basic commodities.

Sometimes the definition will be expressed in terms of a 'poverty line' by reference to the income required to avoid poverty (however conceptualized): this is sometimes referred to as an *indirect* definition of poverty (Ringen, 1988). Poverty may also be defined using a set of poverty indicators, which would comprise a *direct* definition of poverty (and in some instances, the set of poverty indicators are then combined to create an index). Therefore, it is possible to choose whether poverty is to be defined *indirectly* in terms of number of Rands, or *directly,* using a set of indicators. There are strengths and weaknesses with both approaches to defining poverty and the following two chapters contain examples of both approaches.

Sumodiningrat (1999) classifies the understanding of poverty into the four classes, namely absolute poverty, relative poverty, poverty, cultural, chronic poverty and temporary poverty.

a. Absolute poverty, exists when a person's level of income is below the poverty line or his income is insufficient to meet minimum living needs (Basic needs), including food, clothing, health, housing and education necessary to live and work.

b. Relative poverty, exists if a person has income above the poverty line, but relatively lower than the income of the surrounding community. Relative poverty is closely related to the development problems that are structural; the gap due to development policy which has not reached entire community.

c. Cultural poverty refers to the attitude of a person or society caused by cultural factors when they do not want to try to improve the standard of living despite the efforts of outsiders to help them.

d. Chronic poverty, is caused by several things, namely:

- socio-cultural conditions that promote attitudes and habits of life that are not productive

- limited resources and isolation (critical areas, natural resources and remote areas), and

- low educational level and degree of health care, limited employment opportunities and the powerlessness of the community in participating in a market economy.

e. Temporary poverty, is the result of:

- changes in economic cycles from normal conditions to economic crisis,

- changes which are seasonal, such as encountered in the case of poverty fishing and agricultural crops, and

- natural disasters or the effects of a particular policy which causes a decreased

level of prosperity of a society.

Poverty Line

According to the Dervish and Nurmanaf (2001), theoretically the poverty line can be calculated by using three approaches: production approach, income and expenditure. The poverty line is determined based on production levels, for example, rice production per capita, only to describe the activities of production regardless of subsistence. Calculation of poverty line with assessed household income approach will result in the best estimate. However, this method is not easy to do because of difficulties to obtain accurate household income data. To overcome these difficulties, the poverty line is determined by an expenditure approach used as a proxy or an estimate of household income.

Based on the poverty line used, a different number of poor population may be calculated in a region. Generally, the poverty line in urban areas is higher than in rural areas according to differences in materials price index of basic needs of society in both regions. Poverty line also changes from year to year, corrected according to the price level developments basic needs (Sumedi and Supadi, 2004).

Central Bureau Statistic's poverty line is expressed as the number of dollars issued or expended to meet the consumption needs which is equivalent to 2100 calories per capita plus the fulfillment of other needs in minimum such as clothing, housing, health, education, transport and fuel. The use of caloric needs expenditure approach as a basis for determining the poverty line, was earlier introduced by Sayogyo 1977. This concept is considered more closely to the conditions of life of real community because spending beyond basic needs food is also taken into account

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(Yusdja et al., 2003).

Indicators commonly used to measure poverty in empirical studies are as follows (Yudhoyono and Harniati, 2004; Nanga, 2006; and Foster et al., 1984):

1. Incidence of poverty

   This indicator describes the percentage of population living in families with per capita consumption expenditure below the line poverty. Index is called the poverty headcount index, which is a rough measure of poverty because it only adds up how many poor people exist in the economy and then makes the percentage to the total population. With this measure, every poor person has equal weight, with no differences between the population of the poorest and the richest people among the people poor.

2. Depth of poverty

   This indicator illustrates the depth of poverty in an area that is measured by the poverty gap index. This index estimates distance or difference in average incomes of the poor from the line poverty, expressed as a proportion of the poverty line. The weakness of this index is to ignore or not pay attention to the distribution of income among the poor.

3. Severity of poverty

   This indicator shows the severity of poverty in a region, which is the average of quadratic poverty gap (squared poverty gaps). This indicator in addition to taking into account the distance separating the poor from the poverty line also looks at the inequality of income among these poor people. This index is also often named as the severity index poverty (poverty severity index).

2.2   Government Expenditure

A few of researches have defined what government expenditure is. This study only provided two definitions related to government expenditure. Suparmoko (2002) defines government expenditure as an expenditure to finance government's activities which is aimed to gaining overall social welfare by utilizing some resources, product, and money.

According to Budget Indonesia Law (2008), government expenditure is "overall national expenditure which is used to finance central government expenditure and local government expenditure". Furthermore, this spending could be divided into three groups, based on organization, function, and type. Government spending based on function is "overall national expenditure which is used to employ general service function, security function, safety function, economic function, environmental function, house & social facility function, health function, tourism and culture function, religion function, education function, and social safety function".

2.3   Prior Researches

To understand the underlying idea on this research, it is very important to provide the prior researches in the following ways: (1) relationship between government expenditure and poverty (2) relationship between allocation government expenditure and poverty. In the last part of this chapter, I also summarize (matrix) prior researches to provide a more complete picture of the underlying idea about this paper.

2.3.1 Relationship between government expenditure and poverty

Fan et.al (2008) conducted a quantitative research which was aimed to analyze the marginal returns of different types of Thailand government expenditure on agricultural growth and rural poverty reduction. This study utilizes regional level data from 1977 – 1999 from various agencies, especially from Thailand Development Research Institute database. The authors use the double-log functional forms for all equations. Rather than only using single-equation methods (two-stage least square), this study employs both full information likelihood maximum system approach (assuming normal distribution of error terms in each equation) and two-stage least square. Because of the nature of two-stage least square and full information likelihood maximum techniques, the authors perform diagnostic tests on serial correlation and heteroscedasticity. They used Pagan-Hall test for heteroscedasticity and Cumy-Huizinga test for serial correlation. The tests fail to reject the null of homoscedasticity in all equations. Furthermore they find that there is no serial correlation in the error terms. To measure the effect of marginal return of public investment, the authors employ either returns in money (baht) or number of poor brought out from poverty per unit spending in 1999 price. These measures provide useful information for comparing the relative benefits of additional units of

expenditure. In addition it is useful to set future priorities for government expenditure to further increase production and reduce rural poverty. The analysis shows the public investments reduce poverty and increase agricultural production at the same time. However, there are sizable differences in production gains and poverty reductions among various expenditure items and across regions. Agricultural research has the largest return in agricultural productivity. For every baht invested in agricultural research, 6.8 baht is gained. Rural electricity and education investments also have favorable returns (5.11 baht and 4.09 baht, respectively), ranking second and third. Irrigation investment still has a positive and statistically significant return, but its effect is only one-quarter to one-third of the effects from agricultural research, rural education and electricity. Investment in roads has no statistically significant return in agricultural productivity. In terms of poverty reduction effects, government expenditure on rural electricity has the largest marginal return for the country as a whole. For every million baht spent on rural electricity, 272 poor are lifted out from poverty. The poverty reduction effect of agricultural research ranks second. For every million baht invested, 130 poor would be lifted out of poverty. Its impact is approximately 50 percent of that of rural electricity. Education ranks third (77 per million baht), mainly through its agricultural productivity enhancement impact.

Irrigation and roads have similar effects on poverty reduction, and their effects are much smaller than other types of investments (32 and 19 per million baht, respectively). However, the result is supposed to have an effect on future government spending allocation. Since the agricultural research only accounts for 0.1% of total spending comparing with all type spending (roads, electricity, and telecommunication) which account for more than 30%, the Thailand government could reallocate its spending to activities that have greater impact on growth and poverty rate, such as agricultural research.

Ostensen (2007) explains in her study of poverty in Norway that "the addition of public services in the income definition has a great impact on the result of poverty analysis". In addition she asserts that health care affects substantially to income distribution.

According to Krueger (2009), economic growth is believed as a main policy to achieve significant reduction in poverty. However, to emphasize growth effect over poverty reduction, it is important that the poor have access to social and economic services that enable them to become more productive. Furthermore, it also entails concentration on policies that will enable most citizens of society to become more productive (pro growth). Pro-growth policies are undertaken with attention to poverty

alleviation through education, health care, and provision of means for increasing productivity.

Balisacan (2002) reveals that economic growth is not the sole variable for poverty reduction. He conducts correlation analysis research on Indonesia that aims to find an appropriate approach to socioeconomic disparities requires a clear understanding of policy and institutional factors that account for differences in the evolution of growth and poverty in the various districts of Indonesia. Furthermore it also seeks to understand how important government policies and programs are, as well as geographic attributes and local institutions, in directly influencing poverty. He employs such explanatory variables including overall per capita income, relative price incentives, human capital, and access to infrastructure, technology, and finance to find determinants of poverty reduction. His research shows there is a strong positive correlation between district-level average expenditure and average welfare of the poor (the bottom 20 percent of the population based on ranking by per capita expenditure). The education variable shows a mixed direct effect on welfare of poor. The mean years of schooling is insignificant (regression 1), although it is significant if the variable is defined for the poor only (regression 1a). Adult literacy also appears not to have a direct impact on the welfare of the poor (regression 2). However, it exerts a

significant influence on overall growth, suggesting that improvement in human

capital reduces poverty principally via the growth process. Price incentive is said to

have a positive and significant coefficient on welfare of the poor. The technology

access variable is positive and significant, supporting the expectation that it matters to

the incomes of the poor. The study also provides a surprising result which shows that

the finance variable is insignificant. The roads variable does not appear to be

significant, but it has a strong impact on overall growth. This is consistent with the

observation (e.g., Hill 1996) that the public provision of roads has not been designed

as a vehicle for achieving intra district (or province) redistribution but rather as a part

of a development strategy for spurring economic growth. The variable representing

natural wealth is also not significant, although it affects overall growth significantly.

This supports the observation of Tadjoeddin et al. (2001) that there is no strong

correlation between natural resource endowment and community welfare, defined in

terms of human development indicators.

There is an interesting variable which is used by both Fan, Shenggen et al (2004)

and Siregar, Hermanto&Wahyuni, Dwi (2006), when they seek to use population

growth, inflation, and dummy crisis as additional variables when they generate the

model. They believe that population growth, inflation, and crisis would affect

positively to poverty.

2.3.2 Relationship between allocation of government expenditure and poverty

Wilhem and Fiestas (2005) explore in their study that allocation of government budget is a key instrument for government to promote economic development and reduce absolute poverty. By analyzing 9 "Operationalizing Pro-Poor Growth" (OPPG) countries during 1980s and 1990s period, they reveal that government spending as a share of GDP and in per capita terms decline over the analyzed period, for example. In addition trends in sectors are mixed affecting growth and poverty reduction (education, health, infrastructure, and agriculture).

Fan and Rao (2003) explained poverty reduction and growth in their study by exploring three related issues: composition of government spending, determinant of government expenditure, and the impact of government expenditure to growth. They employed cross countries analysis involving 1980 to 1998 data from 43 developing countries across Asia, Africa, and Latin America. Rather than analysing the impact of total government expenditure and overall growth, the authors attempt to analyze the impact at the sector level of government spending and overall GDP. They estimate a production function with national GDP as the dependent variable, and labor, capital

investment, and various government expenditures as independent variables. Results show that the labor and capital coefficients are positive and statistically significant for all regions. For government expenditures on agriculture, coefficients are positive and statistically significant in Africa and Asia. For Latin America, the coefficient is insignificant although positive. For education expenditure, the coefficients are positive and statistically significant only in Asia. This indicates that continued education investment in Asia will contribute greatly to GDP growth. Coefficients for Africa and Latin America are negative.

The coefficient for health expenditures is positive and statistically significant in Africa and Latin America. In Asia, the coefficient is not statistically significant. The coefficient for social security spending in all regions is statistically insignificant. Similar to social security, transportation and communication expenditures did not have a positive and statistically significant impact on economic growth. Defense expenditure had a very strong negative impact on economic growth in Africa and Latin America. Finally, structural adjustment programs increased GDP growth in Asia and Latin America but not in Africa.

Njong (2010) shows that probability of being poor decreases when education level increases. The author conducts the regression model to analyze the relationship

between education level and poverty in Cameroon. The purpose of this study is to evaluate the impact of different levels of schooling on poverty in Cameroon. The inter-relationship between education and poverty can be understood in two ways. Firstly, investment in education increases the skills and productivity of poor households. It enhances the wage level as well as the overall welfare of the population. Secondly, poverty may constitute a major constraint to educational attainment.

Duggal (2007) asserts that how healthcare is financed is critical to healthcare system and poverty within society. He seeks to show this conclusion by capturing what has already happened in India. He found India's healthcare system is mostly privatized. In addition, more than 80% of health expenditure comes out of pocket, while 15% is covered by public finance. He believes that countries which have universal or near universal access to healthcare would have low level of poverty and equity in healthcare because the system decreases the health care cost.

Sumarto et.al (2004) examines the impact of governance practices in Indonesia on poverty reduction. They employ bivariate and multivariate analysis to determine the relationship between the decrease in the number of poor people at district/city level and bureaucratic culture. They reveal that there is a clear indication that good

governance affects districts' performance on poverty reduction. The districts which

have less bureaucratic culture reduced poverty by 3.4% on average, while those

districts with a very conducive one reduced poverty by around 15%.

Justino (2007) believes that there is two-way causality between conflict and poverty.

On the one hand, conflict would positively affect poverty and on the other hand

poverty is one reason why a conflict exists.   By analyzing and comparing studies of

many scholars, he delivers a message that prioritizing investment in education and

health may signal government's commitment to peace by keeping the population

content. Furthermore, increases in equal opportunities in the access of excluded

groups to education may decrease social tensions.

Khan et.al (2009) illustrated in their study the relationship between environment,

population, and poverty as follows:

1. The causal relationship between poverty and environmental works in both

   directions. That is, an increase in poverty may impact negatively on the

   environment and the deterioration in the natural environment leads to increased

   poor people.

2. The linkages between poverty and the environment often work through changes in

   GDP, population, etc. The relations are only partly understood. There is a lack of

understanding of the role of institutions in mediating the linkages.

3. Human development, however, highlights on socio–economic and environmental attributes. For example, better health improves expectation of life, urbanization, per capita income, and demand for ground water. Then forest degradation may take place, solid wastes may increase and so on. The following responses are more important regarding this issue, such as provision of better health care, improved educational facility, income earns opportunities, monitoring pollution and hazardous environmental commissions and effluents, regulating ground and other water resources, and so on.

The last generation of scholarship on the poverty-culture relationship was primarily identified, for better or worse, with the "culture of poverty" model of Lewis (1966) and the report on the Negro Family by Moynihan (1965). Lewis argued that sustained poverty generated a set of cultural attitudes, beliefs, values, and practices, and that this culture of poverty would tend to perpetuate itself over time, even if the structural conditions that originally gave rise to it were to change. Moynihan argued that the black family was caught in a tangle of pathology that resulted from the cumulative effects of slavery and the subsequent structural poverty that characterized the experience of many African Americans.

Jamieson, W et al study (2004) showed some indicators related to pro-poor tourism program with poverty reduction. They show that pro-poor tourism program intervenes with poverty at economic, social, environment, and visitor aspects. Among those aspects, the tourism would affect poor people in economic aspect in the following ways: increase of employment, business creation such as vendor, goods and service production, and improvement of transportation, accommodation, and service facilities.

Winters et al (2004) examines relationship between trade liberalization and poverty. By accumulating and analyzing theories and previous studies related to this issue, they found that the evidence demonstrates no simple general conclusion about the relationship between trade liberalization and poverty although many theories support a strong and positive relationship. However, they conclude that there are many causes for optimism that trade liberalization will contribute positively to poverty reduction, the ultimate outcome depends on many factors, including its starting point, the precise trade reform measures undertaken, who the poor are, and how they sustain themselves.

Table 2.1: The Matrix of Prior Researches General Relationship between
Government Expenditure and Poverty

No	Research Title	Objective	Conclusion
1	Fan, et. Al (2008), Does Alloaction of Public Spending Matter in Poverty Reduction? Evidence from Thailand	To analyze the marginal returns of different types of Thailand government expenditure on agricultural growth and rural poverty reduction	The public investments reduce poverty and increase agricultural production at the same time. However, there are sizable differences in production gains and poverty reductions among various expenditure items and across regions
2	Fan, Marit (2007), The Effect of Local Government Spending on Poverty in Norway	To analyze the impact of local government spending on poverty	The addition of public services in the income definition has a great impact on the result of a poverty analysis
3	Krueger, Anne O (2009), "From Despair To Hope: The Challenge of Promoting Poverty Reduction	To analyze how the economic growth affect poverty	Economic growth is a main policy to reduce poverty by focusing on pro growth policy (education, health care, and provision of means for increasing productivity)
4	Balisacan, Arsenio M., et.al (2002), "Revisiting Growth And Poverty Reduction In Indonesia: What Do Subnational Data Show?"	To find an appropriate approach to socioeconomic disparities requires a clear understanding of policy and institutional factors that account for differences in the evolution of growth and poverty in the various districts of Indonesia.	A strong positive correlation between district-level average expenditure and average welfare of the poor (the bottom 20 percent of the population based on ranking by per capita expenditure). Variables indicate strong correlation to reduce poverty are: education (mix), price incentive, technology access, human capital.
5	Siregar, Hermanto & Wahyuniarti, Dwi. Quoted by Siregar (2006). Impact of Economic Growth on The Reduction of Poor People.	To find relationship between growth and other variables and poverty in Indonesia.	Economic growth was a main factor affected poverty. In addition, population growth, inflation, and crisis are variables which affect positively to poverty.

Table 2.2 The Matrix of Prior Researches

Relationship between Particular Allocations of Government Expenditure and Poverty

No	Research Title	Objective	Conclusion
1	Wilhem, Vera & Fiestas, Ignacio. (2005). Exploring the Link Between Public Spending and Poverty Reduction: Lessons from the 90s	To find relationship between governemnt expenditure and poverty by analyzing 9 OPPG countries.	Allocation of government budget is a key instrument for government to promote economic development and reduce absolute poverty.
2	Fan, Shenggen and Neetha Rao. (2003). Public Spending In Developing Coutries: Trends, Determination, and Impact.	To monitor trends in the levels and composition of government expenditures, and to analyze the relative contribution of various expenditures to production growth and poverty reduction by analyzing 43 developing countries (Asia, Africa, America)	The labor and capital coefficients are positive and statistically significant for all regions. Government expenditures on agriculture, coefficients are positive and statistically significant in Africa and Asia. Education expenditure, the coefficients are positive and statistically significant only in Asia. The coefficient for health expenditures is positive and statistically significant in Africa and Latin America.
3	Njong, Aloysius Mom. (2010).The Effects of Educational Attainment On Poverty Reduction in Cameroon	To evaluate the impact of different levels of schooling on poverty in Cameroon	The probability of being poor decrease when education level increases
4	Duggal, Ravi. (2007). Poverty and Health: Critically of Public Spending	To asserts that how healthcare is financed is critical to healthcare system and poverty within society	Countries which have universal or near universal access to healthcare would have low level of poverty and equity in healthcare because the the system decreases the healthy cost
5	Sumarto, Sudarno, Asep Suryahadi, Alex Arifianto. (2004). Governance and Poverty Reduction: Evidence from Newly Decentralized Indonesia.	To examines the impact of governance practices in Indonesia on poverty reduction by considering Blaxall and Eid's studies in 2000.	There is a clear indication that good governance affects districts' performance on poverty reduction. The districts which have less conducive bureaucratic culture reduced less poverty.
6	Justino, Patricia. (2007). On The Links Between Violent Conflict and Household Poverty: How Much Do We Really Know?	To proposes a conceptual framework about relationship between violent conflict and household poverty	There is two-way causality between conflict and poverty. On the one hand, conflict would positively affect poverty and on the other hand poverty is one reason why a conflict exists.
7	Khan, Himayatullah, Ehsan Inamullah,and Khadija Shams. (2009). Population, Environment, and Poverty in Pakistan: Linkage and Empirical Evidence.	To find how environment, population, and poverty work interlinkage in Pakistan	The causal relationship between poverty and environmental works in both directions. 2. The linkages between poverty and the environment often work through changes in GDP, population, etc.
8	Lewis, Oscar. Quoted by Small, Mario Luis et al. (1966). La Vida: A Puerto Rican Family in the Culture of Poverty – San Juan and New York	To identified culture as a determinant of poverty	A sustained poverty generated a set of cultural attitudes, beliefs, values, and practices, and that this culture of poverty would tend to perpetuate itself over time, even if the structural conditions that originally gave rise to it were to change
9	Jamieson, Walter, Harold Goodwin and Christopher Edmunds. (2004). Contribution of Tourism to Poverty Alleviation. Pro-Poor Tourism and the Challenge of Measuring Impacts	To indicate some indicators relate to pro poor tourism program with poverty reduction	The tourism would affect poor people in economic aspect in the following ways: increase of employment, business creation such as vendor, goods and service production, and improvement of transportation, accommodation, and service facilities
10	Winters, L. Alan, et al (2004). Trade Liberalization and Poverty: The Evidence So Far.	To examine relationship between trade liberalization and poverty	Although no simple general conclusion about the relationship between trade liberalization and poverty, they conclude that there are many causes for optimism that trade liberalization will contribute positively to poverty reduction

CHAPTER 3

RESEARCH METHODOLOGY

This research undertakes a quantitative approach in observing the relationship between government expenditure and poverty rate in Indonesia. Punch (2005) states that quantitative research is typically directed at theory verification and related to numerical data. Besides analyzing numerical data, this study confirms the previous studies on budget allocation in alleviating poverty rate with Indonesian's government expenditure and poverty condition.

3.1 Data Collection

Both quantitative and qualitative secondary data are utilized in this study. According to Panneerselvam (2006) secondary data is data collected from sources which have already been created for the purpose of first-time use and future uses. This study gathers quantitative data in form of poverty rate, amount of budget spent by government (total and sectoral), population, and economic growth. In addition, I also collected data of poverty line, unemployment, inflation, and exchange rate to support the analysis. On the other hand, the qualitative data consists of government regulation, journal, and working paper.

The quantitative data, primarily were used to develop a regression model and to support the sequence analysis. The qualitative data, such as journal and working paper were utilized to generate literature review, analytical framework, model construction and to enhance analysis. In addition, the government regulation and policy were used to provide comprehensive environment where the poverty

alleviation program works in term of government budget allocated.

The data were collected from many sources; the majority of data are from National Planning Board, World Bank, National Team for Poverty Alleviation Acceleration, Central Bureau Statistic, Ministry of Finance, books, publications, and internet. By visiting the official website of those institutions, I collected the data needed for this study. For example, the National Planning Board website is http://www.bappenas.go.id and National Team for Poverty Alleviation Acceleration is http://www.tnp2k.wapresri.go.id. In addition, this research also exploited APU portal's online database to collect data such as from EBSCO Host and JSTOR.

The government expenditures from 1976 to 2009 were accumulated from National Planning Board website. Those data were obtained from annual Budget Law which presents realization of government expenditure (APBN-P). The poverty rates (Head Count Index) with similar period were collected from two sources, World Bank (2006) and National Team for Poverty Alleviation Acceleration website because neither of them provide complete data sets. The remaining data were collected from various resources, including GDP and population from Budget Law, inflation and unemployment from Central Bureau Statistics, and inflation from Central Bank of Indonesia.

To collect qualitative data from journal and working paper, I used keywords such as poverty, government expenditure, spending, allocation, and relationship, when I was searching the internet or APU portal's online database. Specially while using the google search engine, I utilized google book and google scholar in order to narrow searching process. In addition, the keywords also embrace words related to

specific budget sectors, as follows education, health, trading, defense, bureaucracy, decentralization, etc.

3.2 Data Processing

This paper carried out time series regression analysis by utilizing *ordinary least square* method in order to see the relationship between government expenditure and poverty rate in Indonesia. According to Mason (1996) regression analysis is a technique in developing linear equation to make a prediction. The data were processed with statistic processing software Stata version 10.0. The data processing was conducted as the following:

1. Variable Definition

After collecting the secondary data, the subsequent step is determining and defining variables. To estimate regression analysis, there are two major variables utilized in constructing the model, (1) poverty rate and (2) government expenditure. The poverty rate variable constitutes to Head Count Index regarding national poverty line. The government expenditure is defined as an annual growth of realization of government expenditure. The value was derived from a division of net additional budget over budget in previous year.

This study employed growth of budget for the following reasons. The first is that the growth of budget provides a more real picture about what Barro (1990) and Fan and Rao (2003) meant by "it is not a matter of total size but the composition". The growth of expenditure, in my opinion, will eliminate the bias in trend of

government expenditure. Because the trend commonly increases, utilizing the real amount of budget will not provide the real meaning of the increase of expenditure. Therefore, it is better if growth of budget is used to show how the government plans its activity, especially to reduce poverty.

Secondly, the real amount of budget statistically was not stationery. Therefore it was very important to transform it into an appropriate variable. After some trials, it was decided to use growth of budget rather than the real amount of budget as a proxy variable. However, the government budget transformation still remained a research problem since it caused the relationship between expenditure and poverty to become positive.

In term of the cut off to differentiate before and after the budget reform, this study defines 1976 to 1996 data as before the budget reform. The data between 2005 and 2009 constitutes the after reform data. This paper does not use data between 1997 and 2004 since there are many disturbing factors associated with this analysis, such as financial crisis, hyperinflation, and unstable economic condition that might lead the analysis into bias.

2. Data Testing

Before estimating the regression, the data will be tested to make sure that the data is valid and reliable for the next analysis. There are two major tests, unusual data test

and unit root test. The unusual data test is a test to detect whether there is outlier and leverage data. On the other hand a unit root test is a test to detect whether there is non-stationery variable or not.

According to Agresti and Finlay (2007) an **outlier** is an observation with large residual. In other words, it is an observation whose dependent-variable value is unusual given its values on the predictor variables. An outlier may indicate a sample peculiarity or may indicate a data entry error or other problem. On the other hand **leverage** is an observation with an extreme value on a predictor variable, called a point with high leverage. Leverage is a measure of how far an independent variable deviates from its mean. These leverage points can have an effect on the estimate of regression coefficients. To identify the outlier, they suggest giving attention on residuals that exceed +2.5 or -2.5. On the other hand to detect whether there is leverage or not, I determine minimum point by formulating (2k+2)/n where **k** is the number of predictors and **n** is the number of observations.

Ganger and Newbold (1974) suggested that in the presence of non-stationary variables, there might be a spurious regression. A spurious regression usually has a high R^2 and t-statistics that appear to be significant but the results are without any economic meaning. The paper conducts Augmented Dickey Fuller (ADF) unit root test in order to know the characteristic of observed data whether the data is stationer or not.

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Following the unit root test, this study employs degree of integration test if the result of unit root test shows the data was not stationary at level 0. The non-stationary data will be differentiated in the particular level until all of variables are stationary. The variable is stationary at first difference if ADF test value is lower than McKinnon critical value in the first difference.

3.3   Hypothesis

Based on the analytical framework and previous studies, this study defines the hypothesis as the following:

a. Government expenditure has a negative relationship with poverty rate. This hypothesis is derived by considering studies by Wilhem and Fiesta (2005) and Fan et al (2004 and 2008).

b. Relationship in term of allocation of government expenditure

Either sector-based or function-based government expenditure has a negative relationship with poverty rate. The commonly accepted rationale behind the hypothesis is that the purpose of government in spending money is to promote economic and social development, thus finally reduce poverty rate. In addition, it is also supported by previous studies which investigate either relationship or impact of specific sector with poverty rate as the following: Jamieson et al (2004), Fan et al (2004 and 2008), Njong (2010), Duggal (2007), Sumarto et al (2004), Justino (2007), Khan et al (2009), Lewis (1966), and Winters (2004).

In regard with estimated regression analysis, we can define the hypothesis as the

following:

Ho: there is no negative relationship between government expenditure and poverty rate

(Ho: $\beta_n \geq 0$)

Ha: there is a negative relationship between government expenditure (total or sector-based) and poverty rate.

(Ha: $\beta_n < 0$)

3.4   Model Construction

The model is constructed by considering two reasons. Firstly, it follows the conceptual framework. According to Wilhem and Fiestas (2005), the government expenditure has a negative indirect relationship with poverty rate reduction (Figure 1.1). In addition government expenditure works together with other variables (growth, population, inflation, etc) in affecting poverty rate. Secondly, it is inspired from Fan's model (2004 and 2008) which uses derivatives of types of government spending to calculate marginal return in term of poverty reduction. Fan's model is a multistage model where poverty reduction is a function of accumulation of output as an effect of government spending and other related factors.

Related to model specification on government expenditure and poverty reduction, Fan (2008) constructed his model as the following:

$$dP/dRDS = (\partial P/\partial LP)(\partial LP/\partial RDS)$$
$$+ (\partial P/\partial NFE)(\partial NFE/\partial LP)(\partial LP/\partial RDS)$$
$$+ (\partial P/\partial AWAGE)(\partial AWAGE/\partial LP)(\partial LP/\partial RDS)$$
$$+ (\partial P/\partial NAWAGE)(\partial NAWAGE/\partial LP)(\partial LP/\partial RDS)$$
$$+ (\partial P/\partial URBANP)(\partial URBANP/\partial LP)(\partial LP/\partial RDS)$$
$$+ (\partial P/\partial TT)(\partial TT/\partial LP)(\partial LP/\partial RDS);$$

$$dP/dRLITE = (\partial P/\partial LP)(\partial LP/\partial RLITE)$$
$$+ (\partial P/\partial NFE)(\partial NFE/\partial LP)(\partial LP/\partial RLITE)$$
$$+ (\partial P/\partial AWAGE)(\partial AWAGE/\partial LP)(\partial LP/\partial RLITE)$$
$$+ (\partial P/\partial NAWAGE)(\partial NAWAGE/\partial LP)(\partial LP/\partial RLITE)$$
$$+ (\partial P/\partial URBANP)(\partial URBANP/\partial LP)(\partial LP/\partial RLITE)$$
$$+ (\partial P/\partial TT)(\partial TT/\partial LP)(\partial LP/\partial LITE)$$
$$+ (\partial P/\partial NFE)(\partial NFE/\partial RLITE)$$
$$+ (\partial P/\partial AWAGE)(\partial AWAGE/\partial RLITE)$$
$$+ (\partial P/\partial NAWAGE)(\partial NAWAGE/\partial RLITE)$$
$$+ (\partial P/\partial URBANP)(\partial URBANP/\partial RLITE).$$

Those two equations above measured impact of public capital on poverty. The first equation measured impact of public capital in rural development sector on poverty reduction and the latter equation measured impact of public capital in increasing literacy rate on poverty reduction.

However, this research simplifies the model by directly relating poverty rate and government expenditure without considering the outcome of each government expenditure, such as literacy rate, growth of agricultural product, length of road, urbanization, nonfarm economic, and etc. Regardless of other related variables and its indirect relationship, I believe that it is considerable to define poverty rate as a function of government expenditure since the government expenditure has an indirect relationship with poverty rate reduction. In addition, this study still considers other poverty reduction determinants, such as GDP, inflation, unemployment, and population to minimize a bias analysis.

To estimate the relationship between overall government expenditure and poverty

rate, it is necessary to put those variables into a model (regression equation). According to Algifari (2000) a regression equation is a mathematics formula to expose a relationship between one or some known variables and one or some unknown variables. This research develops the equation as the following:

P= f (GOV) …………………………………………………………. (1)

Where:

P: poverty rate

GOV: government expenditure

The first function shows the overall government expenditure in money term related to poverty rate. In this equation, this study will differentiate the data utilized in analysis into three categories: (1) relationship between all time series government expenditure and poverty rate (2) relationship between government expenditure before budget reform and poverty rate, and (3) relationship between government expenditure after budget reform and poverty rate.

In order to obtain the relationship between budget classification of government expenditure and poverty rate, this paper defines the model as the following:

P = f(IND,AGRI,IRR,LB,TRF,TRD,MIN,TOUR,LD,ENV,EDU,CIV,

HEAL,HOU,REL, TECH,LAW,GA,FA,SD)   ………………………… (2)

Where: Industry (IND), agricultural (AGRI), irrigation (IRRI), LB (Labor), trading, finance, business (TRF), transportation (TRD), mining (MIN), local development (LD), environment (ENV), education (EDU), civil & family (CIV), health and social (HEAL), housing (HOU), religion (REL), technology (TECH), law (LAW), government apparatus (GA), foreign affair (FA), and security & defense (SD).

$$P = f(GS,DEF,PS,ECO,ENV,HOU,FACI,HEAL,TOUR,RELI,SOCI)\ldots. (3)$$

Where: general service (GS), defense (DEF), public security (PS), economic (ECO), environment (ENV), housing (HOU), public facility (FACI), health (HEAL), tourism (TOUR), religion (RELI), and social security (SOCI).

The second function explains the relationship between budget sector-based classification before budget reform and poverty rate. Regarding some duplication, 20 sectors will be re-classified into smaller numbers in order to obtain a better analysis.

The third function explains the relationship between budget functional classification after budget reform and poverty rate. In order to obtain a better comparison, the sector-based budgets are reclassified to functional budgets following the rule based on Law of Financial Management Reform.

To produce the best possible estimation, this paper also seeks to develop long term effect and lag effect of variables. Thus, I also add quadratic variables, such as education, religion, technology, and environment to see the long term effect of those variables to poverty rate. In order to obtain the best possible estimate of the effect of indirect investment, such as government expenditure in physical facility, irrigation, and housing, this paper also covers lag for those variables.

After constructing the model, the next step is defining the equation. The most important thing in this step is determining the sign (+ and -) of each independent variable. The sign is determined from previous theory, research, or logical assumption. Since all sector-based or function-based government expenditures are dedicated to support economic development and to reduce poverty reduction, I

determine a negative sign for the coefficient.

The complete equation model for regression analysis can be drawn as the following:

$$P = a - \beta 1GOV + \mu \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

$$P = a - \beta 1IND - \beta 2AGRI - \beta 3IRR(-1) - \beta 4LB - \beta 5TRF - \beta 6TRD - \beta 7MIN -$$

$$\beta 8TOUR - \beta 9LD - \beta 10ENV - \beta 11EDU - \beta 12CIV - \beta 13HEAL - \beta 14HOU(-1)$$

$$- \beta 15REL - \beta 16TECH - \beta 17LAW - \beta 18GA - \beta 19FA - \beta 20SD - \beta 10ENV^2 -$$

$$\beta 11EDU^2 - \beta 15REL^2 - \beta 16TECH^{2 +} \mu \dots\dots\dots\dots\dots\dots\dots\dots\dots. \quad (5)$$

$$P = a - \beta 1GS - \beta 2DEF - \beta 3PS - \beta 4ECO - \beta 5ENV - \beta 6HOU(-1) - \beta 7FACI(-1)$$

$$- \beta 8HEAL - \beta 9TOUR - \beta 10RELI - \beta 11SOCI - \beta 5ENV^2 - \beta 5RELI^{2 +} \mu$$

$$\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (6)$$

3.5 Diagnostic Testing

According to Gujarati (2004) a good model of OLS regression meets some econometrics assumptions, such as linearity of variables, the residuals are normally distributed, there is no multicollinearity among variables, there is no correlation among independent variables, and the disturbances are constant. This test aims to determine whether the model fits to econometrics criteria in order to generate an unbiased linear model. Finally the result will end at a good conclusion and interpretation.

a. Linearity test

When we do linear regression, we assume that the relationship between the response variable and the predictors is linear. This is the assumption of linearity.

According to Agresti and Finlay (2007), if this assumption is violated, the linear regression will try to fit a straight line to data that does not follow a straight line. A linearity problem usually exists when the predictor variable is not normally distributed. Therefore to detect and transform a non-normally variable, Tukey (1977) introduced a subset of the ladder of power for transform variable into a normally distributed variable. The other way also introduced by Hamilton (1992), suggested drawing a graphic "acprplot" to detect nonlinearity. The graph shows the augmented component plus residual against the particular examined variable. When the result departs away from the linear line, it indicates a nonlinearity problem. He also introduced a log transformation to fix the linearity problem.

b. Normality test

One of the assumptions of classical normal linear regression model is that the residual has to be normally distributed. According to Agresti and Finlay (2007), although normality is not required in order to obtain unbiased estimates of the regression coefficients, for valid hypothesis testing, the normality assumption assures that the p-values for the t-tests and F-test will be valid.

This paper uses the Shapiro WilkW test of normality in order to find out whether the residual is normally distributed or not. If the *p value* is statistically not significant, we

do not reject the normality assumption. Therefore the residual of the estimated

regression is normally distributed.

c. Omitted Variable

A model specification error can occur when one or more relevant variables are

omitted from the model or one or more irrelevant variables are included in the

model. If relevant variables are omitted from the model, the common variance

they share with included variables may be wrongly attributed to those variables,

and the error term is inflated. On the other hand, if irrelevant variables are

included in the model, the common variance they share with included variables

may be wrongly attributed to them. Model specification errors can substantially

affect the estimate of regression coefficients.

There are a couple of methods to detect specification errors. The linktest command

performs a model specification link test for single-equation models. The linktest is

based on the idea that if a regression is properly specified, one should not be able to

find any additional independent variables that are significant except by chance. The

linktest creates two new variables, the variable of prediction, *_hat*, and the variable of

squared prediction, *_hatsq*. The model is then re-fit using these two variables as

predictors. The *_hat* should be significant since it is the predicted value. On the other

hand, _hatsq_ should not, because if our model is specified correctly, the squared

predictions should not have much explanatory power. That is we would

not expect _hatsq_ to be a significant predictor if our model is specified correctly. So

we will be looking at the p-value for _hatsq_.

The ovtest command performs another test of regression model specification.

The ovtest command indicates that there are omitted variables. It performs a

regression specification error test (RESET) for omitted variables. The idea

behind ovtest is very similar to linktest. It also creates new variables based on the

predictors and refits the model using those new variables to see if any of them would

be significant.

d. Multicollinearity test

The other assumption of classical normal linear regression model is that there is

no linear relationship among the independent variables. According to Agresti and

Finlay (2007), when there is a perfect linear relationship among the predictors, the

estimates for a regression model cannot be uniquely computed. The primary

concern is that as the degree of multicollinearity increases, the regression model

estimates of the coefficients become unstable and the standard errors for the

coefficients can get wildly inflated.

According to Gujarati (2004), the statistical consequences will arise when multicollinearity problems occur, as the following:

1. Although BLUE, the OLS estimators have large variances and covariances making precise estimation difficult.

2. Because of consequence 1, the confidence intervals tend to be much wider, leading to the acceptance of the "zero null hypothesis" (i.e., the true population coefficient is zero) more readily.

3. Also because of consequence 1, the t ratio of one or more coefficients tends to be statistically insignificant.

4. Although the t ratio of one or more coefficients is statistically insignificant, R^2, the overall measure of goodness of fit, can be very high.

5. The OLS estimators and their standard errors can be sensitive to small changes in the data.

In order to detect the multicollinearity problem, this paper uses Variance Inflation Factor (VIF) as an indicator whether the problem existed or not. As a rule of thumb, a variable whose VIF values are greater than 10 may merit further investigation. Tolerance, defined as 1/VIF, is used by many researchers to check on the degree of multicollinearity. A tolerance value lower than 0.1, is comparable to a VIF of 10. It

means that the variable could be considered as a linear combination of other independent variables.

According to Gujarati (2004) a researcher can try the following rules of thumb to address the problem of multicollinearity, however the success depends on the severity of the multicollinearity problem.

1. A priori information

2. Combining cross-sectional and time series data

3. Dropping a variable(s) and specification bias.

4. Transformation of variables

5. Additional or new data.

6. Reducing multicollinearity in polynomial regressions

7. Employing multivariate statistical techniques such as factor analysis and principal components or techniques such as ridge regression.

e. Auto Correlation test

The time series data of economics is usually threatened by a serial correlation. The consequences of serial correlation is that variance of the parameter is no longer the smallest, so it will make standard error becomes large and the estimation is not BLUE (*Best Linear Unbiased Estimator*) anymore.

This paper utilizes Durbin Watson (DB) to detect autocorrelation problem. The autocorrelation does not exist if the DB is 2, otherwise there is autocorrelation problem. To correct autocorrelation problem, this study employs Prais Winston

regression with specifying the Cochran Orcutt option. According to Stata description, this command is used to correct for first-order serially-correlated residuals by transforming the regression estimator. The Cochran Orcutt option is used to estimate the equation. With this option, the Prais Winston transformation of the first observation is not performed and the first observation is dropped when estimating the transformed equation.

f. Heteroscedasticity test

Another important assumption of the classical linear regression model is that the variance of each disturbance at conditional on the chosen values of the explanatory is some constant number equals.

The consequence of heteroscedasticity is that the variance of parameter is not a minimum, and it leads to inefficiency and the estimated regression is not BLUE anymore. This paper implies Bruce Pagan heteroscedasticity test in order to find out whether the heteroscedasticity is present or not. If an application of *p value* is high, at a chosen level of significance, we accept the null-hypothesis.

3.6   Hypothesis Testing and Interpretation

After model verification, the last steps are to test the hypothesis and to interpret the result of regression model. According to Gujarati (2004), there are two common

hypothesis tests:

(1) *t* test is used to test the significance of regression coefficient. The test aims to understand the effect of each independent variable to dependent variable. This test can be written in the following equation:

H_0: $\beta_1 = \beta_{2,3,n} = 0$

Ha: $\beta_1 \neq 0$; $\beta_{2,3,n}$ are constant.

However since this study employed one-sided tail hypothesis, especially negative direct hypothesis, the construction of hypothesis test can be defined as the following:

Ho: $\beta_1 \geq 0$

Ha: $\beta_1 < 0$, $\beta_{2,3,n}$ are constant.

(**2**) F test is used to test the significance of methodology. The goal of the test is to understand the influence of all independent variables to the dependent variable.

Ho: $\beta_1 = \beta_{2,3,n} = 0$

Ha: $\beta_1 \neq \beta_{2,3,n} \neq 0$

The similar formula with t test is used to define hypothesis in term of negative one-sided ail hypothesis. The construction of hypothesis test can be defined as the following:

Ho: $\beta_{1,2,n} \geq 0$

Ha: $\beta_{1,2,n} < 0$

Before interpreting the regression analysis, we should consider the level of significance in interpreting the developed hypothesis. This paper utilizes significant level 5%. If the *p value* of variables indicates less than 0.05, it means

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we reject Ho and accept Ha.

However to run one-sided t test using Stata, according to MacDonald (2006), we should ensure whether F test (two-sided Wald test) has 1 numerator degree of freedom or not. As long as the F test has 1 numerator degree of freedom, the square root of the *F* statistic is the absolute value of the *t* statistic for the one-sided test. To determine whether this *t* statistic is positive or negative, we need to determine whether the fitted coefficient is positive or negative. To do this, we can use the **sign** function. Then, using the **ttail** function along with the returned results from the **test** command, we can calculate the *p*-values for the one-sided tests.

In a simple way, to determine Ho and calculate the *p value* in one-sided t test, we can simply follow this way:

If the sign of coefficient in regression estimation is (-) negative:

H_0: $\beta_1 <= 0$ *p*-value = 1 − (any *p value* in regression output /2)
H_0: $\beta_1 >= 0$ *p*-value = any *p value* in regression output /2

If the sign of coefficient in regression estimation is (+) positive:

H_0: $\beta_1 <= 0$ *p*-value = any *p value* in regression output /2
H_0: $\beta_1 >= 0$ *p*-value = 1 − (any *p value* in regression output /2)

Besides the significance level, we should consider a strength and direction of relationship. The direction of relationship can be interpreted by identifying the sign (+ or -) either result of correlation test or coefficient of independent variable in regression model. The strength of relationship is determined by measuring the result of correlation test, whether it goes toward 0 or 1. If the result shows going to 1, it means that the correlation between variable is strong, otherwise if result shows going to 0, it means that the correlation between variables is weak.

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Figure 3.1 Flows Chart of Statistical Procedures
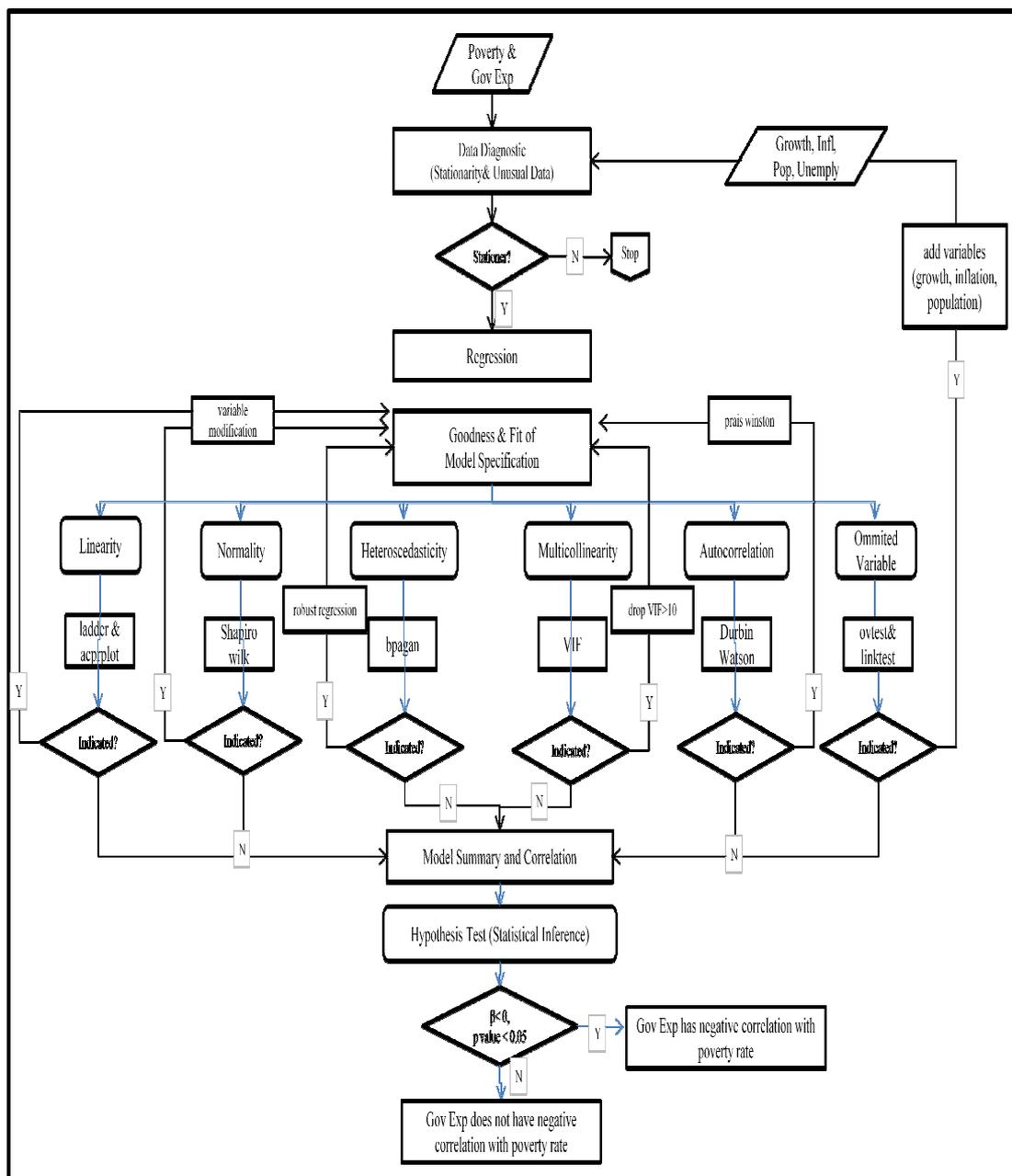
Figure 3.1 shows comprehensive procedures carried out in this study. It was started by data diagnostic and was followed with regression. After doing regression, we carried out goodness fit of model specification which contained statistics classical assumption to ensure the model was free of the statistical problems (linearity, normality, heteroscedasticity, etc). After the model was fixed, we summarized and ran partial correlation test. And the last step was carrying out hypothesis test (statistical inference).

CHAPTER 4
FINDINGS

4.1   Poverty Mapping

For the last three decades Indonesia was not able to escape the high rate of poverty, although the Indonesian government has spent a lot of budgets to overcome poverty issue since New Regime era. Economic crisis, natural disaster, and a sharp increase in fuel price have been alleged as contributing to the high rate of people living under poverty line.

Table 4.1
The Distribution of Poverty in Indonesia (1976 – 2006)

Year	Poverty line *		Number of poverty (million)			Percentage of poverty (%)		
	Urban	Rural	Urban	Rural	Total	Urban	Rural	Total
1976	4.522	2.849	10,00	44,20	54,20	38,79	40,37	40,08
1980	6.831	4.449	9,50	32,80	42,30	29,04	28,42	28,56
1984	13.731	7.706	9,30	25,70	35,00	23,14	21,18	21,64
1987	17.381	10.294	9,70	20,30	30,00	20,14	16,14	17,42
1990	20.614	13.294	9,40	17,80	27,20	16,75	14,33	15,08
1996	38.046	27.415	7,20	15,30	22,50	9,71	12,30	11,34
1998	96.959	72.780	17,60	31,90	49,50	21,90	25,70	24,70
2000	91.632	73.648	12,31	26,43	38,74	14,60	22,38	19,14
2001	100.011	80.382	8,60	29,30	37,10	9,76	24,95	18,41
2002	130.499	96.512	13,32	25,08	38,40	14,46	21,10	18,20
2003	138.803	105.828	12,26	25,08	37,34	13,57	20,23	17,42
2004	143.455	108.725	11,37	24,78	36,20	12,13	20,11	16,66
2005	150.799	117.259	12,40	22,70	35,10	11,37	19,51	15,97
2006	175.324	131.256	14,29	24,76	39,05	13,36	21,90	17,75

Source: Swastika and Suprayitna (2008)

According to Table 4.1 between 1976 and 2006, the people who live under poverty line declined both in number and in percentage. However, when we set apart the period between 1976 and 1996 as "before budget reform", and the period between 2004 and 2006 as "after budget reform", the table shows different movements. Before budget reform, the poverty rate decreased sharply. The number of people

living under poverty line diminished more than a half, from 54 million to 22 million people. As a percentage, it changed 75%, from 40% to 11%. After budget reform, the performance was not as good as before budget reform. Recorded, between 2004 and 2006, number of poor people increased slightly from 36 to 39 million (16% to 17%).

In term of location, the numbers of poor people who live in rural areas were greater both in number and in percentage compares with those living in urban areas. However, the significant decrease also occurred in rural areas. Statistically, in 1976 the number of poor people who lived in rural areas was about 44 million. It was 4 times compared with people who lived in urban areas, who were only 10 million. At the end of 2006, while the rural poor people decreased to 24 million, the urban poor people moved to different direction up to 14 million.

However in term of percentage, urban areas enjoyed more poverty reduction compared with rural areas. In 1976, 38% of people who lived in urban areas were poor. But then it reached 13%, or almost 2/3 of decreased, in 2006. Rural areas still enjoyed a half reduction in poor people between 1976 and 2006, from 40% to 20%.

Prior to budget reform, both urban and rural areas enjoyed a sharp decrease in term of percentage. However, after budget reform both of them had to face an increase in both number and percentage of people who live under poverty line.

According to Hendrayana and Darmawan (1995) and Irawan and Romdiati (2000), the success in reducing poverty was contributed by a massive development of agricultural based and non-agricultural based industries, construction, finance, and services during the era 1970s until 1990s. Although these developments were done

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by using foreign debts, however, they have created a lot of job opportunities. The social, economic, and political stabilities as well as high potential of domestic market have encouraged many domestic and foreign investors to invest in Indonesia.

Table 4-2
The Number of Poverty by Type of Job in Indonesia (2000 – 2004)

Type of job	Number of poverty (000 persons and %)				
	2000	2001	2002	2003	2004
Job-less	3.599,63	2.348,96	3.072,03	3.061,80	3.067,70
(%)	9,26	6,33	8,61	8,20	8,49
Agriculture	20.108,95	23.374,61	20.604,60	22.250,60	21.265,50
(%)	51,73	62,99	57,75	59,59	58,83
Industry	5.380,01	4.401,06	4.470,50	2.147,00	2.024,80
(%)	13,84	11,86	12,53	5,75	5,60
Services	9.784,31	6.983,81	7.571,37	9.876,30	9.788,90
(%)	25,17	18,82	21,22	26,45	27,08
T o t a l	37.256,90	37.108,44	35.680,50	37.339,40	36.146,90
(%)	100	100	100	100	100

Source: CAS, 2003; 2005

As mentioned earlier, the poor who are mostly in rural areas highly depend upon agricultural sector. Most of them are either doing agriculture in a small land size or doing a job as off-farm labor. Their incomes are generally low. The dependency of the poor upon agricultural sector is shown by the high proportion of the poor who work in agricultural sector. During the period of 2000 – 2004, most of the poor (52% in 2000 and 59% in 2004) were working in agricultural sector, as shown in Table 4-2.

The poor working in industrial sector declined from 14% in 2000 to less than 6% in 2004. In absolute numbers, they declined from 5.4 million in 2000 to about 2 million people in 2004. This decline was mainly attributed to two factors according to Swastika and Suprayitna (2008), namely: (1) substantial contraction of industrial sector, so that, its ability to absorb labor also drastically declined; and (2) the quality of human resource declined, due to inability of people to pursue

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higher education and skill training that was needed by the industrial sector. The poor working in services slightly increased from 25% in 2000 to 27% in 2004.

Table 4.2 also shows the presence of transformation in job opportunity for the poor. There was a decrease in industrial sector, while an increase in agricultural sector. It could be that the poor who lost their job in industrial sector moved to agricultural sector. Therefore, agricultural sector has more burdens to absorb the job-less labor from other sectors. In order to improve its capacity to absorb more labor, agricultural development should be given a high priority.

Human Development Index (HDI) is also an indicator of poverty measurement that shows an achievement of human development. HDI is measured in three dimensions, namely: (1) life expectation at birth; (2) level of formal education and literacy; (3) standard of living, represented by expenditure for consumption per capita per month. In contrast, Human Poverty Index (HPI) measures a failure of development in the same time dimension with HDI.

Table 4.3
Human Development Index in Indonesia (1999 – 2004)

Poverty Indicator	1999	2002	2004	Trend
Life expectation (years)	66.20	66.20	67.60	0.42
Literacy rate (%)	88.40	89.55	90.40	0.45
Level of education (years)	6.70	7.10	7.20	1.45
Consumption/capita (Rp 000/year)	578.80	591.20	614.10	1.19
Human Development Index (HDI)	64.30	65.83	68.70	1.33
Source: CAS, 2003.				

Table 4.3 shows that life expectancy slightly increased from 66 years in 1999 to 67.6 years in 2004, or increased by 0.42% per year. Meanwhile, the literacy rate was relatively high; it was 88.4% in 1999 and 90.4% in 2004, or it increased by 0.45% per year. The average level of formal education increased 1.45% per year. Although increased, the level of education of the poor was still low, at the first

grade of Junior High School.

The per capita expenditure for consumption was relatively low. If the rural poverty line in 1999 was Rp891,260/capita, then the consumption was about 65% of rural poverty line, or Rp 578,800/capita. It became worse in 2004. In general, the HDI was 64.3 in 1999, slightly increased to 68.7 in 2004, or it grew by 1.33% per year.

Table 4.4
Human Poverty Index in Indonesia (1998 – 2002)

Poverty Indicators	1998	2002	2004	Trend
People dead before 40 years old (%)	15.20	15.00	11.20	-4.96
Illiteracy rate (%)	11.60	10.50	9.60	-3.10
People not access to clean water (%)	51.90	44.80	23.00	-12.68
People living in >5 km from public health service (%)	21.60	23.10	nda	1.69
Children below 5 years with low nutritional status (%)	30.00	25.80	28.00	-1.14
Human Poverty Index (HPI)	25.20	22.70	18.50	-5.02
Source: CAS, 2003; UNDP, 2005.				

Table 4.4 shows the percentage of people dead before 40 years declined from 15.2% in 1998 to about 11.2% in 2004. It indicates an improvement especially in health care. The illiteracy rate also declined at a rate of 3.1% per year during period of 1998 – 2004, indicating improvement of education. People not having access to clean water and children below 5 years with low nutritional status were also decreasing at rate of 12.68% and 1.14% per year, respectively. In general, the HPI declined by 5.02% per year indicating an improvement in the welfare of the poor during 1998 – 2004.

4.2   The Indonesian Government Budget

Development program to realize a just and prosperous society, as outlined in the Constitution of 1945, has been implemented through long-term development, as stated in Outlines of State Policy (Guidelines), and medium-term program of Five-Year Plan. The programs were further elaborated in the annual operating plan of

the State Budget (APBN). Implementation of these development programs requires substantial development funds, which among others are collected through the state budget revenue and expenditure savings.

To help with its understanding, the government expenditure in this research is limited to Central Government Expenditure. This section will be explained in the following ways:

4.2.1   Government Budget before Budget Management Reform in 2005

This period is signed with budget classification format as dual budget classification format as follows:

a. Fiscal year

   The fiscal year for government budget started on 1 April and ended on 31 March until 2000 when it changed to follow a calendar base starting on 1 January and ends on 31 December.

b. Budget classification

   The budget spending is divided into two categories of routine expenditure and development expenditure. According to Law of Indonesia National Budget, the routine expenditure is allocated to finance a variety of government operational activities and sustainable development, to meet government obligation, and other government activities. Functionally, the budget is allocated into government apparatus financing, operational and maintenance financing, debt financing, and subsidy on strategic basic needs. Furthermore, the routine expenditure is also employed to create more independent development expenditure structure through government saving accumulation.

The development expenditure describes government efforts to realize development targets as planned in the Five Year Development Plan. It means that all development programs and indicator targets are expanded in the development projects both physical and nonphysical and their financing. The expenditure is used primarily to support economic growth and economic equity, and to encourage community economic activity. The expenditure is dedicated to basic facilities development, poverty alleviation, and human resources development. Therefore, the community economic activities, such as trade, investment, and other activities can support job creation and accelerate economic growth. This expenditure is in the form of local development assistance, Presidential Instruction program, etc.

c. Organization classification

This character means that the expenditure is allocated to the government institutions which utilize and are responsible for budget utilization. The numbers of institutions depend on the number of ministry and other national institution which are stipulated and established in the beginning of fiscal year.

During this period, the administration and accountability of government institutions are not attached explicitly in the budget law rather than in the lower level regulation, such as Presidential Decree.

d. Sector allocation

The spending classification experiences several modification during period fiscal year 1969/1970 to 2004. The chronological of sector allocation can be described at Table 4.5

Table 4.5 shows distribution of sector-based government expenditure through the

Six Development Plan. The classification of government expenditure was a reflection of the government policy and strategy in order to aim for its objectives. From time to time, the number of sectors included in the budget has changed. In the first Plan, there were 16 sectors included in the budget. In this period, some government expenditures were joined into a big classification. The expenditure irrigation was included in agricultural sector, and the internal affair expenditure was included in government apparatus sector, for instance.

Table 4.5
Government Expenditure by Sector (Prior to Budget Reform)
5 Yearly Plan I – VI (Pelita I-VI)

No	Sectors	5 Yearly Plan 1st	5 Yearly Plan 2nd	5 Yearly Plan 3rd & 5th	5 Yearly Plan 6th
1	Industry	I	I	I	I
2	Agriculture, Marine, and Forestry	I	I	I	I
3	Irrigation	X	X	X	I
4	Labor	I	I	I	I
5	Trading, Finance, National Economic Development, and Cooperation	X	I	I	I
6	Transportation, meteorology, and geophysical	I	I	I	I
7	Mining and energy	I	I	I	I
8	Tourism, telecommunication, and information	X	I	I	I
9	Local development	I	I	I	I
10	Environment and natural resource	X	X	I	I
11	Education, cultural, youth, and sport	I	I	I	I
12	Civil and Family	X	I	I	I
13	Social welfare, health, and women empowerment	I	I	I	I
14	Housing	I	I	I	I
15	Religion	I	I	I	I
16	Knowledge and Technology	X	I	I	I
17	Law	I	I	I	I
18	Government apparatus	I	I	I	I
19	Internal and foreign affair	X	X	X	I
20	Security and defend	I	I	I	I

Source: Indonesian Budget Law (1970 – 2004)   I: Include X: Exclude

When the problems rose dramatically in the following periods, the government expanded the classification in order to provide particular attention for the special issues. For example, the environment and foreign affairs expenditures were introduced in the third Plans to meet with domestic and international interests. Thus, in the late of Sixth Development Plans, there were 20 sector-based government expenditures included in the budget.

Table 4.6
Summary of Government Expenditures Prior to Budget Reform
(5 Yearly Plans I - IV)

Sectors	5 Yearly Plan 1st	5 Yearly Plan 2nd	5 Yearly Plan 3rd	5 Yearly Plan 4th
Agriculture	219.5	1558.1	4049	6994.1
Industry	16.1	353	2429.1	2705.3
Mining	95.9	640.4	4582.3	8486.7
Transport	212.4	1169.4	4013.1	8185.9
Trade	0	25.5	378.8	1477.5
Labor	3.2	123.6	1649.8	1693.4
Local Dev	189.6	1005	2863.1	4698.6
Religion	3.8	26.8	181.3	207.2
Education	77.4	687.4	3233	5812.8
Health	25.1	215.1	1028.4	1444.9
Housing	37.8	164.2	649.7	1286.9
Law	5.5	30.8	210.4	244.2
Defense	27.6	284.4	2120.4	2523.7
Information	9.9	65.4	220.4	172.7
Technology	0	137.6	568	1296.1
Aparatus	35.5	212.6	964.2	1471.4
Business Dev	121.1	779.9	1750	1512.5
Environment	0	0	862.8	1079.3
Total	**1080.4**	**7479.2**	**31753.8**	**51293.2**

The government's priority also could be seen from the amount of budget spent every year. For example, Table 4.6 which shows a summary of government expenditures by sector through 4 periods of 5 Yearly Development Plans. The Table indicates that the government gave priority on sectors such as agricultural, transportation, and local government. Through 4 periods, those three sectors occupied more than 40% of all budget in average. However, the trend of budget allocated for those sectors

decreased from 57% in the first period to less than 38% in the last period. Starting from the third period, expenditures in education, mining, and industry rose to be more important for the government when the allocation for those sectors also increased.

4.2.2 Government Budget after Budget Management Reform in 2004

Changes in the format of government expenditures get underway in the preparation of the Budget 2005 in accordance with Law No. 17 Year 2003 on State Finance. These changes are applied at its core: (1) applying an integrated budgeting system (unified budget), by integrating the routine budget and development budget previously separated, and (2) reclassifying the details of government expenditures by organization, function and type of expenditure, previously by sector and type of expenditure.

The purpose of changing the format are firstly, to increase transparency and accountability in the management of government expenditures through (a) minimization of duplication of work plans and budgeting in government expenditures, and (b) improve the linkages between output (output) and results (outcomes) by budgeting organization. Secondly, to adjust with a classification that is used internationally.

The format of government expenditure is divided into three classifications:

a. Type of spending

The spending is allocated into 8 types which are: staff, goods, capital, debt installment, subsidize, grant, social assistance, and others.

b. Function of spending

The spending is allocated into 11 functions and 79 sub functions. The main functions are: general service, defense, public security, economic, environmental, housing & public facility, health, tourism &culture, religion, education, and social security.

c. Institution of spending

Basically the allocation is determined based on the real government institutions responsible as budget user. Differing from the previous format, the users of budget are included in the Financial Note and Law of Budget.

Besides those allocations, the regulation also defines local government budget into 8 types of spending which are: staff, goods, travelling, maintenance, capital, profit sharing, unexpected, and others.

According to Law No. 17 Year 2003, the classification of the government expenditure was complied with Classification of the Function of Government (COFOG) which is stipulated by United Nations.

Table 4.7 shows the classification of function-based government expenditure used by the Indonesian government. There are 11 functions adopted by the Indonesian

government by separating religion function independent from culture function.

Table 4.7

Classification of the Function of Government (COFOG)

Functions of Government Expenditure	Description
General public services	Executive and legislative organs, financial and fiscal affairs, external affairs; Foreign economic aid; General services; Basic research; R&D General public services; Public debt transactions; Transfers of a general character between different levels of government.
Defense	Military defense; Civil defense; Foreign military aid; R&D Defense; Defense n.e.c.
Public order and safety	Police services; Fire-protection services; Law courts; Prisons; R&D Public order and safety; Public order and safety n.e.c.
Economic affairs	General economic, commercial and labor affairs; Agriculture, forestry, fishing and hunting; Fuel and energy; Mining, manufacturing and construction; Transport; Communication; Other industries; R&D Economic affairs; Economic affairs n.e.c.
Environmental protection	Waste management; Waste water management; Pollution abatement; Protection of biodiversity and landscape; R&D Environmental protection; Environmental protection n.e.c.
Housing and community amenities	Housing development; Community development; Water supply; Street lighting; R&D Housing and community amenities; Housing and community amenities n.e.c.
Health	Medical products, appliances and equipment; Outpatient services; Hospital services; Public health services; R&D Health; Health n.e.c.
Culture	Recreational and sporting services; Cultural services; Broadcasting and publishing services; R&D Recreation, culture;

Religious	Broadcasting and publishing services; Religious and other community services; R&D religion
Education	Pre-primary and primary education; Secondary education; Post-secondary non-tertiary education; Tertiary education; Education not definable by level; Subsidiary services to education; R&D Education; Education n.e.c.
Social protection	Sickness and disability; Old age; Survivors; Family and children; Unemployment; Housing; Social exclusion n.e.c.; R&D Social protection; Social protection n.e.c.

Table 4.8

Allocation of Function-based Government Expenditure (Post Budget Reform)

Year	2005	2006	2007	2008	2009	2010
General service	255603	283343.1	316139.3	534567.2	472097.2	495319.9
Defense	21562.2	24426.1	30685.9	9158.5	11665.3	20968.2
Order and security	15617.3	23743.1	28315.9	7019.2	13729.6	14926
Economic	23504	38295.6	42222	50484.8	64963.9	57358.8
Environmental	1333.9	2664.5	4952.6	5315.1	6683.8	7889.2
Housing and Public Facility	4216.5	5457.2	9134.6	12448.7	17704.4	20906.6
Health	5836.9	12189.7	16004.5	14038.9	16437.8	18001.8
Tourism and Culture	588.6	905.4	1851.2	1293.7	1415.3	1416.1
Religion	1312.3	1411.2	1884.2	745.7	788.8	913.1
Education	29307.9	45303.9	50843.4	55298	87463.4	84086.5
Social Security	2103.8	2303.3	2650.4	2986.4	3151.8	3456.7
Total	360987	440043.1	504684	693356.2	696101.3	725242.9

Table 4.8 shows that the government has allocated more than 60% for general and

service function. According to COFOG classification, this function includes

administrative expenditure, debt repayment, transfer to local government, basic

research and development, etc. However, we figure out the composition of

administrative expenditure (salary, supplies, etc) and transfer to local government

were very dominant. Those expenditures reached almost 70% of General Service

function. This indicates the government gave priority on supporting function to achieve its goals. During this period, the government intensively implemented two major programs, bureaucracy reform and power decentralization.

However, the government still provided big budget allocation for education function after budget reform. The proportion of this function increased from 8% in 2005 to 12% in 2010. This budget increase was caused by the compulsory law for the government to increase the education budget.

CHAPTER 5

RESULTS

This chapter includes the following parts: (1) data diagnostics (2) unusual and stationer data (3) descriptive analysis (4) regression diagnostics, and (5) relationship between poverty and government expenditure. The last part will be divided into four sections: (a) general relationship (b) relationship by considering classification of expenditure prior to budget reform (c) relationship by considering of the classification of expenditure post budget reform (d) relationship by considering budget reclassification.

5.1   Data Diagnostics

To obtain valid and reliable data for analysis, this study simulated several kinds of data manipulations since many statistical problems existed at the following steps. Therefore, the final data set actually differed from the planned data. At the beginning, this study sought to correlate poverty rate with the actual amount of government expenditure. This resulted in a non-stationary of government expenditure data. In addition linearity and multicollinearity problems existed, especially when I analyzed sector-based government expenditures.

Although I did data transformation and data selection, the stationarity and multicollinearity problems existed. The data transformation was carried out based on Gujarati (2004), which said that data having a linearity problem require to be transformed into other different type of data, such as logging, quadratic, cubic, square root, etc.

The second experiment was conducted by including expenditure transformation either as a percentage of budgets over GDP or a percentage of budgets over GDP per capita. However, after the transformation, non-stationary data and multicollinearity problems were still occurred.

Finally, I used growth of government expenditure as a proxy. It was generated from current expenditure minus the spending last year divided by last year's expenditure. This number, actually, produced stationary data. In addition the growth of government expenditure also overcame the linearity and multicollinearity problems.

After data transformation, there were remaining issues related to model construction: (1) time series limitation, (2) control variable, and (3) lag and quadratic variables. The time series limitation occurred when I carried out budget analysis (after reform). The available series was only 6 years which started from 2005 to 2010.It did not enough to cover 11 predictor variables (the functions of government expenditure). To overcome the problem, I selected the third biggest in total amount of budget as main variables (general service, economic, and education) and accumulated the remaining functions as other. However, this limitation affected the purpose of this research because the comparison between before and after budget reform analysis could not be met.

The second issue was whether control variables were necessary or not to be included in the model. After conducting Ramsey regression tests for omitted variable and test for non-relevant variables (ovtest and linktest), I found that the initial models were not well be constructed. The test showed that there were omitted variables. Therefore, I considered adding economic growth, inflation,

population growth, and unemployment as control variables because in common sense those variables affect poverty. In addition, many studies support the concept that these control variables have high relationship with poverty (Barro (2002), Fan, Shenggen et al (2004) and Siregar, Hermanto&Wahyuni, Dwi (2006)).

The last issue involved the lag variable. The lag variable is necessary to fix autocorrelation problem. The other rationale of usage of this variable was when an independent variable affects a dependent variable not in the same time. For example transportation expenditure should be treated as lag variable because the character of transportation does not directly affect poor people in the same time. It usually affects the following year. On the other hand, the quadratic issue shows that I want to present a long run relationship of particular sector to poverty. For example, education investment could be treated as a quadratic variable to show a long run relationship with poverty. Apart from the lag variable issue, this research preferred to carry out Prais Winston regression by adding Corchrane-Orcutt transformation when it fixed autocorrelation problem.

5.2   Unusual and Stationer Data

All of data included in the model were usual data. From the observation, the test showed that there was no outlier and leverage data in both of general relationship and relationship considering classification of government expenditure. The residuals of general relationship were in a range from -0.731 to 0.005. In addition the residual of relationship after considering budget classification ranged from -1.508 to 1.08. Those ranges are in-between the range suggested by Agresti and Finlay (2007), +2 and -2, which means the data were not contaminated with

outliers. Furthermore, the investigation shows that there is no leverage number greater than the number generated from formula (2k+2/n) for each relationship. It means that there was no leverage data included in the data set.

The unit root test revealed stationer data in the majority of variables. By transforming government expenditure to growth of expenditure, this study obtained stationer data. Before transformation, only three out of 32 government expenditure variables were not stationer. On the contrary, after transformation, it resulted in only 6 remaining non stationer data.

Table 5.1 shows the comparison of data stationarity of government expenditure before and after transformation. The left column, Riil Amount of Budget, represents before transformation, while the right column, Growth of Budget, represented after transformation. Before transformation, only 3 out of 32 of government expenditure variables were stationer. But, after transformation, only 6 remaining non stationer variables were Defense, Order and Safety, Environment, Housing, Religion, and Social Security.

Table 5.1
Summary of Unit Root Test of Government Expenditure

Variables	Critical Value	Riil Amount of Budget				Growth of Budget			
		Z (t)	p value	Lag	Description	Z (t)	p value	Lag	Description
Total Budget	-2.98	3.739	1.000	3	Non Stationer	-9.794	0.000	0	Stationer
Before Budget Reform									
Agriculture	-3.000	-1.121	0.7068	3	Non Stationer	-6.608	0.000	0	Stationer
Industry	-3.000	-0.3091	0.0272	3	Stationer	-5.859	0.000	0	Stationer
Mining	-3.000	0.595	0.9875	3	Non Stationer	-6.195	0.000	0	Stationer
Transportation	-3.000	0.441	0.983	3	Non Stationer	-4.989	0.000	0	Stationer
Trade	-3.000	-1.81	0.3753	3	Non Stationer	-5.52	0.000	0	Stationer
Labor	-3.000	-0.2295	0.1735	3	Non Stationer	-3.511	0.0077	0	Stationer
Local Development	-3.000	5.195	1.000	3	Non Stationer	-2.911	0.0441	0	Stationer
Religion	-3.000	-0.467	0.8983	3	Non Stationer	-3.796	0.0029	0	Stationer
Education	-3.000	-0.442	0.9029	3	Non Stationer	-3.885	0.0021	0	Stationer
Health	-3.000	2.233	0.9989	3	Non Stationer	-3.848	0.0025	0	Stationer
Housing	-3.000	1.038	0.9947	3	Non Stationer	-9.361	0.000	0	Stationer
Law	-3.000	-1.172	0.6857	3	Non Stationer	-4.092	0.001	0	Stationer
Defense	-3.000	-0.546	0.8826	3	Non Stationer	-2.959	0.0389	0	Stationer
Information	-3.000	-0.1805	0.3779	3	Non Stationer	-4.233	0.0006	0	Stationer
Technology	-3.000	-1.665	0.4494	3	Non Stationer	-6.138	0.000	0	Stationer
Aparatus	-3.000	1.032	0.9946	3	Non Stationer	-4.945	0.000	0	Stationer
Business Development	-3.000	-0.738	0.8367	3	Non Stationer	-5.459	0.000	0	Stationer
Natural Resource	-3.000	-1.789	0.3858	3	Non Stationer	-4.137	0.0008	0	Stationer
After Budget Reform									
General Service	-3.000	-0.0894	0.7901	3	Non Stationer	-3.422	0.0102	0	Stationer
Defense	-3.000	-1.551	0.5079	3	Non Stationer	-1.628	0.4685	1	Non Stationer
Order and Safety	-3.000	-1.742	0.4094	3	Non Stationer	-1.262	0.6466	1	Non Stationer
Economic	-3.000	-2.372	0.1497	3	Non Stationer	-3.009	0.0341	0	Stationer
Environment	-3.000	-1.215	0.6669	3	Non Stationer	-1.262	0.6466	1	Non Stationer
Housing	-3.000	1.349	0.9969	3	Non Stationer	-1.262	0.6466	1	Non Stationer
Health	-3.000	-4.395	0.0003	3	Stationer	-4.395	0.0003	3	Stationer
Tourism	-3.000	-3.299	0.0149	3	Stationer	-3.299	0.0149	3	Stationer
Religion	-3.000	-1.296	0.631	3	Non Stationer	-1.262	0.6466	1	Non Stationer
Education	-3.000	-0.717	0.8422	3	Non Stationer	-3.088	0.0275	0	Stationer
Social Security	-3.000	0.216	0.9731	3	Non Stationer	-1.262	0.6466	1	Non Stationer

5.3 Descriptive Analysis

The data structures were very difficult to be analyzed. In order to develop a good model, as explained in the methodology section, there are some requirements to be fulfilled, such as data stationer, outlier& leverage, linearity, free of multicollinearity and heteroscedasticity problems, and etc. The summary below is

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the final data after conducting some attempts to obtain reliable data and model. Being aligned with the explanation at the section 5.4, this study summarizes the data in the following ways:

    a. General Relationship

        This study employed data of poverty rate and growth of total government budget between 1976 and 2010. The growth of total government budget was obtained by subtracting current government expenditure from the last year's number. The result, then, was divided by the last year's number of government expenditure. Because the government expenditure datawas in term of Rupiah, thus, I changed the period of analysis into 1977 – 2010 in order to obtain "growth" of government expenditure.

Table 5.2 shows a summary of poverty rate, growth of total government expenditure, and control variables between 1977 and 2010. All of the variables are positive in average. The average of poverty rate, growth of total expenditure, economic growth, population, inflation, and unemployment (percentage of primary education unemployment as a proxy variable) are 19.6%, 19.2%, 5.8%, 1.62%, 11.01%, and 37.04%, respectively.

Table 5.2
Summary of Poverty, Total government expenditure, and Control variables
(1977-2010)

Variable	Obs	Mean	Std. Dev.	Min	Max
year	33	1993.394	10.09313	1977	2010
povertyrate	33	19.6297	6.09944	11.8	36.7
gbudget	33	0.192079	0.234515	-0.14012	1.19067
growth	33	5.801805	4.005851	-13.1267	9.205558
population~h	33	1.621796	0.353777	1.159832	2.223372
inflation	33	11.01165	9.24816	3.71838	58.38709
unemployem~t	24	37.04583	9.063111	23.2	49.9

Table 5.3

Detail of Poverty, Total Government Expenditure, and Control Variables

(1977-2010)

Year	Poverty	gBudget	gEco	Population Growth	Inflation	Unemployement
1977	36.7	0.156776077	8.636465	2.2233721	11.03654	NA
1978	33.3	0.233719367	9.205558	2.1945233	8.109469	NA
1979	30.95	0.532386342	7.092622	2.1696237	16.26029	NA
1980	28.6	0.431050616	8.724999	2.146001	18.01715	NA
1981	26.9	0.210691961	8.148191	2.1222195	12.24438	NA
1982	25.2	0.031849932	1.104074	2.0930475	9.481448	NA
1983	23.1	0.404011361	8.449908	2.0539489	11.78729	29.9
1984	21.6	-0.037681736	7.172152	2.0027502	10.45552	23.6
1985	20	0.18180926	3.477539	1.9435014	4.729397	23.2
1986	18.9	-0.036280119	5.964516	1.8831911	5.827197	26.6
1987	17.4	0.216333639	5.300003	1.8256754	9.275491	37.4
1988	16.2	0.239806267	6.355679	1.7694295	8.043166	40.4
1989	15.7	0.19478469	9.084714	1.715597	6.417661	36.7
1990	15.1	0.192372845	9.001573	1.6644555	7.812677	33.3
1991	14.4	0.100388627	8.927796	1.6144807	9.410542	29.9
1992	13.7	0.160840247	7.220502	1.5669684	7.531229	25.7
1993	12.52	0.135615096	7.254075	1.5251247	9.682745	26.4
1994	11.8	0.087934748	7.540067	1.4900569	8.520612	26.5
1995	17.6	0.059590132	8.396358	1.4605196	9.433363	35.6
1996	17.47	0.199538728	7.642786	1.4055645	7.970047	37.6
1998	24.23	1.19066998	-13.1267	1.3842082	6.229896	37.4
1999	23.43	-0.029604276	0.79113	1.3688478	58.38709	38.3
2000	19.14	-0.073762376	4.919997	1.3572184	20.48912	44.5
2001	18.41	0.392303581	3.643535	1.3467427	3.71838	46
2002	18.2	-0.140115163	4.499472	1.3342183	11.50386	49.3
2003	17.42	0.143303571	4.780371	1.3179265	11.87876	49.9
2004	16.66	0.171417415	5.030871	1.296325	6.585719	48.4
2005	15.97	0.203288667	5.692575	1.2703164	6.243521	49.4
2006	17.75	0.219001204	5.500952	1.2437196	10.45196	48.7
2007	16.58	0.146896747	6.278135	1.2162154	13.11042	44.4
2008	15.42	0.373842246	6.062472	1.1838192	6.320494	NA
2009	14.1	0.003959148	6.262472	1.1698324	10.09808	NA
2010	13.33	0.041864022	6.424725	1.1598324	6.32111	NA

Table 5.3 presents a steady negative trend of poverty rate. Only in 1995, 1996, 1998, 2002, and 2006 the poverty rate increased. At the budget column, by far, budget growths are positive. The table shows that government expenditure experienced negative growth only in 1984, 1986, 1999, 2000, and 2002.

b. Relationship by considering classification of expenditure (Prior to Budget Reform)

Similar with the general relationship, this part also employed growth of government budget between 1977 and 2010. Because the multicollinearity problem existed, I selected appropriate variables. If the VIF was greater than 10, I dropped the variable. And I accumulated the variable to the "Other" variable. In addition, if the variables were agriculture, industry, education, health, or transportation, I decided to include although the VIF was greater than 10 but less than 15, because they were primary variables.

Table 5.4

Detail of Poverty and Growth of Sector-based Government Expenditure
(Prior to Budget Reform)

Year	Poverty	Agriculture	Industry	Mining	Transportation	Local Development	Education	Health	Defense	Other
1977	36.7	0.0673968	-0.28681	0.023842	-0.172807836	0.318947368	0.55424354	0.481328	-0.05378	0.112739
1978	33.3	0.18468824	0.132374	0.430363	0.164928108	0.097765363	0.19230769	0.112045	1.831261	-0.04354
1979	30.95	0.12858095	1.263659	0.17846	0.127299129	0.220647037	0.43926722	0.793451	1.071518	1.526316
1980	28.6	0.82821724	0.164749	0.345909	0.675611851	0.436569387	0.59020476	0.531601	0.450636	0.345552
1981	26.9	0.0266925	0.275663	0.633439	0.03420884	0.276741294	0.26274578	0.309033	0.179749	0.064807
1982	25.2	-0.02390188	-0.04326	0.407613	0.084985134	0.154895275	-0.03100455	-0.09177	-0.15626	0.061906
1983	23.1	-0.01954677	0.012636	0.97433	0.744348025	0.052579783	0.467719	0.074817	0.103188	0.19049
1984	21.6	0.86121152	0.175473	-0.50093	-0.065065131	0.0562308	0.19271388	0.148188	0.335171	-0.0149
1985	20	-0.33052793	0.596948	0.457785	0.039207449	0.074734446	0.14776604	0.243438	-0.15962	0.164893
1986	18.9	-0.21767033	-0.51714	-0.29699	-0.237755171	0.104718202	-0.16172411	-0.18095	-0.06134	-0.29524
1987	17.4	1.17676143	-0.53818	0.024996	0.41205586	-0.009266163	-0.00303951	-0.30868	-0.07238	0.003481
1988	16.2	-0.16679573	1.081043	0.719808	0.258450175	0.222747796	0.36009485	0.505104	0.079977	0.476199
1989	15.7	0.26976456	-0.10519	-0.31644	0.49515046	0.203973976	-0.0618929	0.385727	0.297477	0.173101
1990	15.1	0.12613448	0.368434	0.322444	0.245276114	0.41499927	0.36180804	0.538412	0.383419	0.129532
1991	14.4	0.17557087	-0.00475	0.314251	0.044639756	0.278887341	0.17799873	0.232121	0.027103	0.169097
1992	13.7	0.19427961	0.047199	0.353022	0.160290507	0.178362455	0.30195705	0.07466	0.176407	0.105282
1993	12.52	-0.08126042	-0.37689	0.035105	0.144229922	0.243964248	0.03724537	0.197033	-0.0471	0.064283
1994	11.8	-0.2717928	1.642556	0.163193	0.222224362	0.203000688	-0.15389565	0.072613	-0.15187	0.266923
1995	17.6	0.65365809	-0.39823	0.098283	-0.108269113	0.249799767	0.08237978	0.725468	0.313734	-0.0366
1996	17.47	-0.25278956	-0.22761	0.069998	0.021031052	0.074082212	-0.00424877	-0.01735	0.044523	-0.11229

Table 5.4 shows the final selected variables of growth of government expenditure by sector (before budget reform) after considering the multicollinearity problem. From 20 sectors, I reduced the variables into 8 sectors and added sector "other" sector which accommodated the remaining sectors. For analysis purposes, this

study limited the series from 1977 to 1996 in order to avoid outlier problem, especially the situation affected by the financial crisis in 1997 and 1998. In addition, that limited period also represents a single policy of government in which the New Regime under Soeharto became the ruler. This is important because between 1999 and 2004 Indonesia was ruled by three different presidents. The three different presidents more and less have different strategies and policies in combating poverty in Indonesia.

Expenditures in agriculture and industry are the most fluctuating expenditures compared with other expenditures. During 20 years, agriculture and industry experienced had negative growth for 8 and 9 times, respectively. On the other hand local development and health enjoyed positive growth at most, 19 and 16 times, respectively.

Table 5.5
Summary of Poverty, Growth of Sector-based Government Expenditure, and control variables (Prior to Budget Reform)

Variable	Obs	Mean	Std. Dev.	Min	Max
year	20	1986.5	5.91608	1977	1996
poverty	20	20.857	7.229635	11.8	36.7
agriculture	20	0.166434	0.412221	-0.33053	1.176761
industry	20	0.163134	0.58857	-0.53818	1.642556
mining	20	0.221924	0.355879	-0.50093	0.97433
lagtranspo~n	19	0.172053	0.262841	-0.23776	0.744348
laglocalde~t	19	0.198963	0.11966	-0.00927	0.436569
education	20	0.187632	0.226458	-0.16172	0.590205
health	20	0.241314	0.2933	-0.30868	0.793451
growth	20	7.234979	2.042396	1.104074	9.205558
population~h	20	1.843503	0.274768	1.405565	2.223372
inflation	20	9.602311	3.195357	4.729397	18.01715

Table 5.5 shows that all expenditure sectors enjoyed positive growth in average. The biggest growth was at health and mining sector, having growth of in average

0.241 and 0.221, respectively. On the other hand, agriculture, industry, and transportation sectors were the sector having the lowest growth in average, 0.166, 0.163, and 0.174, in a row.

The picture of growth indicates a concern and the focus of government in the social and economic development. In other words, those data show that between 1977 and 1996 the government gave more attention to health and mining sectors than other sectors. This situation was different if we only consider the total amount of government expenditure. As explained in the Chapter 4, before budget reform, the government had allocated big money at agriculture, transportation, local development, mining, and education sectors.

To read this situation, we should take into account the character of government budget. Because the budget was annually stipulated, it is more important if we consider growth of budget rather than the total amount of the budget. It means the growth of the budget was simultaneous with the short time government strategy.

Thus, we can say that although the agriculture, transportation and local development sectors have the biggest portion, but the government was not gave a sustain priorities. This is true, when we look the negative trend of agriculture and transportation portion out all budgets. In the beginning of 1970s, both of agriculture and transportation had not less than 40% out of budget, but in the last of 1990s, the portion reached less than 28%.

c. Relationship by classification of expenditure (Post Budget Reform)

The limitation of number of time series has an influence on variable selection for analysis purpose. Thus, between period 2005 and 2010 only 3

functions (general service, economic, and education) were selected because they enjoyed the biggest allocation. The remaining functions were accumulated into the function "other".

Table 5.6 Detail of Poverty and Growth of Function-based Government Expenditure (Post Budget Reform)

Year	Poverty	General service	Economic	Education	Other
2005	15.97	0.38585792	-0.08847	0.795618	0.827678
2006	17.75	0.108527202	0.629323	0.545791	0.390497
2007	16.58	0.115747304	0.102529	0.122274	0.306137
2008	15.42	0.690922957	0.195699	0.087614	-0.44484
2009	14.1	-0.116860892	0.286801	0.581674	0.350348
2010	13.33	0.049190506	-0.11707	-0.03861	0.236123

Table 5.6 shows that all government expenditures grew positively. The biggest growth occurred in 2006 when general service, economic, education, and other expenditures reached growth in 0.108, 0.629, 0.545, and 0.3904, respectively. However, in the same year the poor people growth was also positive, 1.25% that indicated the increase of government budget could not reduce the number of poor people at that year.

Table 5.7 Summary of Poverty and Growth of Function-based Government Expenditure (Post Budget Reform)

Variable	Obs	Mean	Std. Dev.	Min	Max
year	6	2007.5	1.870829	2005	2010
poverty	6	15.525	1.61996	13.33	17.75
generalser~e	6	0.205564	0.287741	-0.11686	0.690923
economic	6	0.168136	0.275327	-0.11707	0.629323
education	6	0.34906	0.335351	-0.03861	0.795618
other	6	0.277657	0.411115	-0.44484	0.827678

Table 5.7 shows that the education function enjoyed the biggest growth in average after budget reform and was followed with other and general service functions, 0.349, 0.277, and 0.205, respectively. Especially for other function, the biggest

contributors were: defense, health, and environmental affairs.

d. Relationship after budget reclassification

Table 5.8 shows a list of government expenditures by function after reclassification. The idea was to re-classify government expenditures by sector (before reform) to fit with the prevailing government expenditure (after reform). To re-classify, I developed guidance as the following:

- Routine budget was regarded as General Service function;

- Economic function consists of budgets: agriculture, industry, mining, labor, trade, local development, and business development;

- Order and security function consists of budgets: law, information, and apparatus;

- Education function consists of budgets: education and technology; and

- Health function consists of budgets: health and social security.

Table 5.8 Summary of Poverty and Growth of Function-based Government Expenditure (Post Reclassification)

Variable	Obs	Mean	Std. Dev.	Min	Max
poverty	33	19.6297	6.09944	11.8	36.7
generalser~e	33	0.212095	0.261984	-0.1471	1.291585
defense	33	0.284204	0.500938	-0.70154	1.831261
orderandse~y	33	0.297478	0.622491	-0.75211	2.523759
lageconomic	32	0.210652	0.616619	-0.42481	3.357138
environmen~r	33	0.19987	0.405118	-0.54142	1.103954
healthands~y	33	0.252691	0.356298	-0.50584	1.297245
tourismand~e	33	0.141083	0.430029	-0.81191	1.251168
religion	33	0.519519	1.367123	-0.94182	6.905422
education	33	0.259086	0.385351	-0.34871	1.648982
growth	33	5.801805	4.005851	-13.1267	9.205558
population~h	33	1.621796	0.353777	1.159832	2.223372
inflation	33	11.01165	9.24816	3.71838	58.38709
unemployem~t	24	37.04583	9.063111	23.2	49.9

Table 5.8 shows that religion and housing functions enjoyed the biggest annual growth in average between 1977 and 2010 after budget reclassification, 0.519 and 0.379, respectively. In the medium performance, there were economic, general service, defense, order & security, health, and education functions, which ranged from 0.212 to 0.297. The lowest annual growth was experienced by tourism, environment, and economic, with 0.141, 0.199, and 0.200 respectively.

Table 5.9 Detail of Poverty and Growth of Function-based Government Expenditure (Post Reclassification)

Year	Poverty	General Service	Defense	Order and security	Economic	Environment Affair	Housing and Public Facility	Health and Social	Tourism and Culture	Religion	Education
1977	36.7	0.295744813	-0.05378	-0.230921705	0.02514538	0	1.944078947	0.481327801	-0.17280784	0.363636	0.55125
1978	33.3	0.285075488	1.831261	-0.019329897	0.17521572	0	-0.37873095	0.112044818	0.16492811	0	0.182514
1979	30.95	0.496314588	1.071518	1.164257556	0.51940989	0	1.10971223	0.793450882	0.12729913	1.533333	0.428961
1980	28.6	0.387652531	0.450636	0.544019429	0.41013021	0.231727575	0.625745951	0.531601124	0.67561185	0.668421	0.578445
1981	26.9	0.251103703	0.179749	0.096342902	0.20269713	0.250168577	-0.127949659	0.309032554	0.03420884	0.274448	0.240332
1982	25.2	0.003499928	-0.15626	0.287661406	0.09811888	0.04368932	-0.093806374	-0.091768827	0.08498513	0.257426	0.012666
1983	23.1	0.466163363	0.103188	0.116155989	0.28857335	-0.001550388	0.465826145	0.074816815	0.74434802	0.062992	0.605171
1984	21.6	-0.079225076	0.335171	-0.325430497	-0.01249231	0.188923395	0.014938886	0.148188016	-0.06506513	0.107407	0.064659
1985	20	0.276475404	-0.15962	0.693673696	0.05762513	0.058772312	0.492417484	0.2434375	0.03920745	0.280936	0.187192
1986	18.9	0.142449027	-0.06134	-0.459807776	-0.25741319	-0.289473684	0.005977286	-0.180949987	-0.23775517	-0.49478	-0.19046
1987	17.4	0.264196199	-0.07238	-0.327537404	0.19364843	0.155092593	0.282234106	-0.308683645	0.41205586	-0.52196	-0.00454
1988	16.2	0.207276565	0.079977	0.234515935	0.22654126	0.127755511	0.115152919	0.505104305	0.25845018	-0.04324	0.711512
1989	15.7	0.162422558	0.297477	0.210910862	0.07661866	1.103953798	0.027633493	0.385726924	0.49515046	0.40678	-0.20917
1990	15.1	0.196665735	0.383419	0.385760257	0.18666972	0.140202703	0.369187222	0.538412428	0.24527611	0.690763	0.415901
1991	14.4	-0.002338511	0.027103	0.156748911	0.27332785	-0.187962963	0.183845245	0.232120625	0.04463976	0.109264	0.092922
1992	13.7	0.15669294	0.176407	0.212045169	0.18179065	-0.108779932	0.313583635	0.074660379	0.16029051	0.48394	0.310799
1993	12.52	0.198911484	-0.0471	0.177846791	0.05350188	0.394831116	-0.182698699	0.197033013	0.14422992	0.186147	0.0142
1994	11.8	0.093797701	-0.15187	0.583055018	0.12375957	0.580994313	0.107935401	0.072613021	0.22222436	-0.06569	-0.1292
1995	17.6	0.144455286	0.313734	-0.023984011	0.1938763	-0.541424925	0.188338926	0.72546786	-0.10826911	1.157552	0.02439
1996	17.47	0.220739566	0.044523	0.057906712	-0.07307743	-0.045546559	0.031062478	-0.017353579	0.02103105	-0.14243	0.063344
1998	24.23	1.291584914	0.590306	0.479298849	3.35713773	1.067868505	3.805888394	1.297245417	-0.79557925	2.34905	1.648982
1999	23.43	0.111360758	0.072778	-0.065934865	-0.42481413	0.195769231	-0.536597094	0.124127846	-0.22260796	0.318344	-0.02418
2000	19.14	0.029336735	-0.17151	-0.472410304	-0.26367912	-0.408920339	-0.723838438	-0.50583513	-0.21054351	-0.94182	-0.34871
2001	18.41	0.356257745	-0.00122	0.346658799	-0.2770133	-0.157990205	0.105204564	0.578858303	0.03325055	2.736986	0.617442
2002	18.2	-0.147099132	1.078695	1.199255121	0.24897261	0.406074968	0.43062201	0.246492795	1.25116838	-0.3695	0.229371
2003	17.42	0.001071237	1.209022	1.314588833	-0.0088812	-0.22154129	0.420436543	0.465873046	-0.81191055	0.610465	0.436237
2004	16.66	0.220438737	0.239027	-0.046266408	0.13021166	0.530801023	0.010781337	0.017714919	0.20403658	0.198556	-0.05457
2005	15.97	0.120575186	1.011062	2.523759025	-0.17907737	0.714965287	1.58474836	0.017073546	0.54164484	6.905422	0.795618
2006	17.75	0.108527202	0.13282	0.520307608	0.62932267	0.997526051	0.294248785	0.825153954	0.5382263	0.075364	0.545791
2007	16.58	0.115747304	0.256275	0.192594901	0.10252875	0.858735222	0.673862054	0.287166218	1.04462116	0.335176	0.122274
2008	15.42	0.690922957	-0.70154	-0.752111005	0.19569892	0.073193878	0.362807348	-0.087355065	-0.30115601	-0.60424	0.087614
2009	14.1	-0.116860892	0.273713	0.956006382	0.28680118	0.257511618	0.422188662	0.150617023	0.09399397	0.057798	0.581674
2010	13.33	0.049190506	0.797485	0.087140193	-0.11706656	0.180346509	0.180870292	0.095402663	0.00056525	0.157581	-0.03861

Table 5.9 shows that the general service function was the most stable function in positive growth compared with other functions. Between 1977 and 2010, it only experienced 4 times in negative growth, 1984, 1991, 2002, and 2009, respectively. The list was followed with housing and health functions which experienced

negative growth in 5 times. However, economic, defense, and order & security functions were the most unstable in positive growth since they experienced negative growth at least 9 times between 1977 and 2010.

5.4 Regression Diagnostic

After the data was confirmed to be stationery and free of unusual data problem, the next step was constructing the model. However, to obtain reliable and valid regression estimations we have to ensure the model is also free of model construction problem by conducting regression diagnostics. This study explained the result of regression diagnostics as the following:

a. Linearity Problem

The linearity problem did not exist when I employed growth of budget as an independent variable. The *p value* of chi square of each independent variable after conducting ladder command shows the biggest number among other possibility transformation. Thus, it means that the variables were normally distributed.

Table 5.10
Alternative Variable Transformation of Total Expenditure, Agriculture and Local Development Expenditure

```
. ladder total

Transformation        formula              chi2(2)        P(chi2)

cubic                 total^3              11.97          0.003
square                total^2              18.40          0.000
identity              total                 1.86          0.394
square root           sqrt(total)              .              .
log                   log(total)               .              .
1/(square root)       1/sqrt(total)            .              .
inverse               1/total              25.00          0.000
1/square              1/(total^2)          48.01          0.000
1/cubic               1/(total^3)          50.53          0.000
```

```
. ladder agriculture

Transformation         formula               chi2(2)      P(chi2)
cubic                  agricu~e^3            23.61        0.000
square                 agricu~e^2            17.57        0.000
identity               agricu~e              5.29         0.071
square root            sqrt(agricu~e)        .            .
log                    log(agricu~e)         .            .
1/(square root)        1/sqrt(agricu~e)      .            .
inverse                1/agricu~e            8.47         0.014
1/square               1/(agricu~e^2)        16.85        0.000
1/cubic                1/(agricu~e^3)        19.68        0.000
```

```
. ladder generalservice

Transformation        formula              chi2(2)     P(chi2)
cubic                 genera~e^3           49.83       0.000
square                genera~e^2           45.83       0.000
identity              genera~e             23.90       0.000
square root           sqrt(genera~e)       .           .
log                   log(genera~e)        .           .
1/(square root)       1/sqrt(genera~e)     .           .
inverse               1/genera~e           35.98       0.000
1/square              1/(genera~e^2)       48.69       0.000
1/cubic               1/(genera~e^3)       50.66       0.000
```

Table 5.10 shows availability of variable transformation for growth of total budget, agriculture and general service. The table shows variable which a representative of each model (general relationship, relationship prior to budget reform, and relationship post budget reclassification). The Stata report showed that the identity of each variable had the biggest *p value* of chi square, 0.394, 0.071, and 0.744 for total, agriculture, and local development expenditure respectively.

    b. Normality Problem

        A normality problem existed in the model. However, I did not fix the problem although it would affect the hypothesis testing because of the limitation on how to fix the normality problem by using Stata.

This study utilized Shapiro Wilk test to detect normality problem in the model. Table 5.11 shows the normality problem only existed in the relationship between poverty and classification of government expenditure by function (after budget reform), the *p value* of which is significant, 0.0496. It might have happened because of insufficient series of data.

Table 5.11- Result of Shapiro Wilk Test on Normality Problem

Type of poverty and expenditure relationship	Prob > Z	Description
General Relationship	0.72504	Normal
Relationship before budget reform	0.86783	Normal
Relationship after budget reform	0.04967	Normality Problem
Relationship after budget reclassification	0.16378	Normal

c. Multicollinearity Problem

The multicollinearity problem existed in all of types of relationships, except for the general relationship. Stata helped me to detect the multicollinearity by running the *vif* command. When the VIF value of a particular variable was greater than 10, I dropped it until all the variables became free of multicollinearity.

Table 5.12
Comparison of VIF value before and after Variable Selections
(Prior to Budget Reform)

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
 information |    366.85    0.002726
    industry |    191.75    0.005215
    aparatus |    169.14    0.005912
naturalres~e |     97.89    0.010215
       labor |     71.85    0.013918
         law |     61.91    0.016152
      mining |     61.48    0.016266
 businessdev |     60.69    0.016478
    religion |     42.18    0.023706
   education |     41.79    0.023932
  technology |     40.67    0.024589
   transport |     35.77    0.027956
 agriculture |     26.49    0.037750
     housing |     21.81    0.045858
      health |     16.11    0.062080
       trade |      8.63    0.115857
    localdev |      8.27    0.120922
     defense |      8.02    0.124675
-------------+----------------------
    Mean VIF |     73.96
```

Before
Variable
Selection

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
      health |      3.75    0.266611
       other |      3.06    0.327079
   education |      2.66    0.375489
localdevel~t |      2.38    0.420544
    industry |      2.34    0.427132
      mining |      2.33    0.428552
 agriculture |      1.89    0.527892
transporta~n |      1.70    0.589473
     defense |      1.29    0.774133
-------------+----------------------
    Mean VIF |      2.38
```

After
Variable
Selection

Table 5.12 shows that there were 12 government sectors were dropped because the VIF of those sectors were greater than 10. However, in this case, rather than completely dropping the variables, I transformed the dropped variable into variable "other". Then, I regressed and found there was no multicollinearity problem.

Table 5.13 VIF value after Variable Selections (Post Budget Reform)

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
       other |      5.53    0.180674
   education |      4.28    0.233630
 generalser~e |      2.18    0.458544
    economic |      2.15    0.465814
-------------+----------------------
    Mean VIF |      3.54
```

Table 5.13 shows that the multicollinearity problem did not exist at relationship between Poverty and Government Expenditure after Budget Reform because the VIF value of each variable was less than 10.

Table 5.14 VIF value after Variable Selections (Post Budget Reclassification)

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
    economic |      7.88    0.126982
   education |      4.32    0.231377
 orderandse~y |      3.89    0.257243
      growth |      3.84    0.260335
 generalser~e |      3.73    0.268212
    religion |      3.19    0.313147
healthands~y |      2.53    0.394719
environmen~r |      2.20    0.453525
tourismand~e |      2.02    0.495623
     defense |      1.66    0.603173
   inflation |      1.37    0.730728
population~h |      1.35    0.738312
-------------+----------------------
    Mean VIF |      3.17
```

Table 5.14 shows that multicollinearity problem did not exist at relationship between Poverty and Government Expenditure after Budget Reclassification because the VIF value of each variable is lower than 10.

    d. Autocorrelation Problem

The models suffered autocorrelation problem. Based on Durbin Watson diagnostic, this study had autocorrelation problem in the majority of models: general relationship, relationship by considering budget sector (before reform), and relationship by considering budget reclassification.

At first, the model showed autocorrelation problem when the Durbin Watson (DW) value was less than 1.5. Therefore, I did some simulation to fix the problem. According to many literatures, I introduced lag variables for both dependent and independent variables to fix the problem. Unfortunately, the lag variables failed to fix the autocorrelation problem. The first different as an alternative also been carried out, but the problem still existed. Finally, the problem could be eliminated when I employed Prais Winston test by selecting option "based on Durbin Watson" and "Corchcrane-Orcutt Transformation".

Table 5.15 shows the DW value of each model was lower than 2 which indicated an autocorrelation problem. Only relationship after budget reform did not suffer from autocorrelation problem because the DW value is 2.25.

Table 5.15 Summary of Durbin Watson Value of the Relationship Model
(Autocorrelation Problem)

Type of poverty and expenditure relationship	DW value	Description
General Relationship	1.70333	Partial autocorrelation
Relationship before budget reform	1.519455	Partial autocorrelation
Relationship after budget reform	2.250249	No autocorrelation
Relationship after budget reclassification	1.55383	Partial autocorrelation

e. Heteroscedasticity Problem

The models suffered heteroscedasticity problem. After doing Bruce Pagan diagnostic, this study found there was no heteroscedasticity problem at all of models: general relationship, relationship by considering budget sector/function, and relationship by considering budget reclassification.

Table 5.16 shows that the heteroscedasticity problem did not exist at all models because the *p value*s of Bruce Pagan analysis were not significant (more than 0.05).

Table 5.16 Summary of Heteroscedasticity Test

Type of poverty and expenditure relationship	P value	Description
General Relationship	0.3256	Homoscedasicity
Relationship before budget reform	0.5986	Homoscedasicity
Relationship after budget reform	0.4151	Homoscedasicity
Relationship after budget reclassification	0.6374	Homoscedasicity

f. Model Misspecification (Omitted Variable)

Table 5.17 Summary of Omitted Variable Test

Type of poverty and expenditure relationship	P value	Description	P value	Description	Additional Variable
General Relationship	0.0023	Omitted problem	0.3632	No omitted variable	Economic Growth, Population Growth, Unemployment, Inflation
Relationship before budget reform	0.0075	Omitted problem	0.6776	No omitted variable	
Relationship after budget reform	0.065	No ommited variable	0.065	No omitted variable	
Relationship after budget reclassification	0.000	Omitted problem	0.8794	No omitted variable	

Table 5.17 shows that after control variables additional (economic growth,

population, inflation, and unemployment), the model had no omitted variable problem because the *p value* was not significant.

5.5 Relationship Between Poverty and Government Expenditure

a. General Relationship

Table 5.18 Correlation of Poverty Rate and Growth of Budget, Economic Growth, Population, Inflation, and Unemployment

```
Partial correlation of povertyrate with

      Variable |     Corr.      Sig.

       gbudget |    0.0054     0.982
        growth |   -0.5597     0.010
  population~h |    0.6930     0.001
     inflation |    0.5091     0.022
 unemployem~t  |    0.5277     0.017
```

Table 5.18 shows the growth of budget has a positive and weak correlation with poverty rate. However, the correlation is not significant since the *p value* of correlation is 0.982. All other control variables have strong correlation with poverty rate. In addition all of them have significant correlation with poverty rate, in which the *p value*s are lower than 0.05. Economic growth has a negative correlation with poverty rate. Otherwise, population, inflation, and unemployment have positive correlation.

Table 5.19 Regression Estimation of Total Budget
(After Autocorrelation Correction)

```
Prais-Winsten AR(1) regression -- iterated estimates

     Source |      SS       df       MS              Number of obs =      24
                                                     F( 5,    18) =    22.45
      Model | 262.078162     5   52.4156324          Prob > F      =   0.0000
   Residual | 42.0302951    18   2.33501639          R-squared     =   0.8618
                                                     Adj R-squared =   0.8234
      Total | 304.108457    23   13.2221068          Root MSE      =   1.5281


  povertyrate |     Coef.   Std. Err.      t     P>|t|     [95% Conf. Interval]

      gbudget |  .3049055    2.06068      0.15   0.884    -4.024423    4.634234
       growth | -.3422261    .1570209    -2.18   0.043    -.6721148   -.0123374
  population~h | 10.02816    3.949926     2.54   0.021     1.729678    18.32665
    inflation |  .0896243    .0339171     2.64   0.017     .0183672    .1608815
 unemployem~t |  .1526609    .0857613     1.78   0.092    -.027517     .3328388
        _cons | -2.080612    7.859206    -0.26   0.794    -18.59219    14.43097

         rho |  .7400045

Durbin-Watson statistic (original)      0.755892
Durbin-Watson statistic (transformed)   1.703303
```

85

Table 5.19 exposes the regression estimation of poverty on growth of total budget and the variable controls. The model is good enough because the R^2 and adjusted R^2 are 0.8618 and 0.8234, respectively. After ensuring free of multicollinearity problem, the high value of R^2 indicates that the variance of estimator (budget, growth, population, inflation, and unemployment) succeeds to explain the variance of poverty rate.

Because the *p value* of F is significant (0.0000), we can write down the regression estimation in the following way:

Poverty = -2.080612 + 0.3049055gBudget – 0.3422261gEco

+ 10.02816gPopul +0.0896243infl + 0.1526609

unemployment(5.1)

b. Relationship by Considering Classification of Expenditure (prior to budget reform)

Table 5.20 Correlation of Poverty Rate and Growth of Budget (Prior to Budget Reform), Economic Growth, Population, and Inflation

Partial correlation of poverty with		
Variable	Corr.	Sig.
agriculture	-0.3114	0.415
industry	-0.4266	0.252
mining	0.1838	0.636
lagtranspo~n	0.0961	0.806
laglocalde~t	-0.1244	0.750
defense	0.6884	0.040
education	-0.2811	0.464
health	0.2184	0.572
growth	-0.3400	0.371
population~h	0.7921	0.011
inflation	0.5995	0.088

Table 5.18 shows that each budget sector has different correlation with poverty rate. Agriculture, industry, local development, and education sectors have negative correlation. On the other hand, mining, transportation, defense, and health sectors have positive correlation. However, all budget sectors have a weak correlation, except defense sector, because the *p value*s are not significant. Between period 1977 and 1996, other control variables (growth, population, and inflation) have similar correlation with the correlation at the longer period (1977 – 2010). However, only population growth sector has strong positive correlation with poverty rate, where the *p value* is significant.

Table 5.21 Regression Estimation Prior to Budget Reform
(After Autocorrelation Correction)

```
Prais-Winsten AR(1) regression -- SSE search estimates

     Source |       SS       df       MS              Number of obs =      19
------------+------------------------------            F( 11,     7) =   28.49
      Model | 2173.04651     11  197.549683            Prob > F      =  0.0001
   Residual | 48.5341914      7  6.93345592            R-squared     =  0.9782
------------+------------------------------            Adj R-squared =  0.9438
      Total | 2221.5807      18   123.42115            Root MSE      =  2.6331
```

poverty	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
agriculture	-.9983332	2.422495	-0.41	0.693	-6.726624	4.729958
industry	-3.84002	1.786328	-2.15	0.069	-8.064015	.3839751
mining	2.226954	3.183289	0.70	0.507	-5.300329	9.754237
lagtranspo~n	1.148262	4.407256	0.26	0.802	-9.273243	11.56977
laglocalde~t	-1.171284	6.973018	-0.17	0.871	-17.65985	15.31728
defense	6.480942	2.718144	2.38	0.049	.0535523	12.90833
education	-10.49464	5.523603	-1.90	0.099	-23.55589	2.566603
health	6.306852	3.603855	1.75	0.124	-2.214911	14.82861
growth	-.8226321	.6591707	-1.25	0.252	-2.381323	.736059
population~h	14.39003	4.420339	3.26	0.014	3.937587	24.84247
inflation	.8054517	.3010964	2.68	0.032	.0934719	1.517432
_cons	-9.006714	10.19071	-0.88	0.406	-33.10392	15.09049
rho	-.8052292					

```
Durbin-Watson statistic (original)     0.915855
Durbin-Watson statistic (transformed)  1.519455
```

Table 5.21 presents the regression estimation of poverty on growth of each budget classification (before budget reform) and the variable controls. The model is good

enough because the R^2 and adjusted R^2 are 0.9782 and 0.9438, respectively. After ensuring free of multicollinearity problem, the high value of R^2 indicates that the variance of estimator (budget, growth, population, inflation, and unemployment) succeeds to explain the variance of poverty rate.

Because the *p value* of F is significant (0.0001), we can write down the regression estimation in the following way:

Poverty = -9.006714 - 0.9983332gAgri – 3.84002gIndus + 2.226954gMine

+ 1.148262gTrans - 1.171284gLocal + 6.4809gDefense

-10.49464gEdu + 6.3068gHeal - 0.8226 gEco + 14.3900Gpopul

+ 0.0896243Infl …………………………………………..

(5.2)

c. Relationship by Considering Classification of Expenditure (post budget reform)

Table 5.22 Correlation of Poverty Rate and Growth of Budget
(Post Budget Reform)

Partial correlation of poverty with		
Variable	Corr.	Sig.
generalser~e	0.9041	0.281
economic	0.9309	0.238
education	-0.7954	0.414
other	0.8875	0.305

Table 5.22 shows that the majority of budget functions have positive correlation with poverty rate. General services, economic, and other have positive correlations but they are not significant because the *p value*s are bigger than 0.05. On the other hand, education function has negative correlation, although the *p value* is also not

significant (0.414).

Table 5.23 Regression Estimation of Post Budget Reform

```
. reg poverty generalservice economic education other

      Source |       SS       df       MS              Number of obs =      6
-------------+------------------------------           F(  4,    1) =    2.08
       Model |  11.715815      4   2.92895375           Prob > F      = 0.4734
    Residual |   1.4055343      1   1.4055343           R-squared     = 0.8929
-------------+------------------------------           Adj R-squared = 0.4644
       Total |  13.1213493      5   2.62426986          Root MSE      = 1.1856

------------------------------------------------------------------------------
     poverty |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
generalser~e |   5.757951   2.721097     2.12   0.281    -28.81687    40.33277
    economic |   7.190307    2.8215      2.55   0.238    -28.66025    43.04087
   education |  -4.293196   3.270938    -1.31   0.414     -45.8544    37.26801
       other |    5.84278   3.034061     1.93   0.305    -32.70862    44.39418
       _cons |   13.00872   1.074787    12.10   0.052    -.6477456    26.66518
------------------------------------------------------------------------------
```

There is a problem in developing a model for regression after budget reform. The most probable reason is the limitation of time series model. It affected the insufficient number of variables included in the model. This is supported while the *p value* of F test is not significant (0.4734). Therefore the model is not good enough although the R^2 is high, 0.8929.

d. Relationship after reclassification

Table 5.24 Correlation of Poverty Rate and Growth of Budget
(Post Reclassification), Economic Growth, Population, and Inflation

```
Partial correlation of poverty with

      Variable |     Corr.       Sig.
---------------+----------------------
  generalser~e |   -0.0521      0.872
       defense |    0.2338      0.464
  orderandse~y |   -0.2826      0.374
   lageconomic |   -0.1341      0.678
  environmen~r |   -0.2736      0.389
  healthands~y |    0.1943      0.545
  tourismand~e |    0.2429      0.447
      religion |    0.2846      0.370
     education |   -0.0904      0.780
        growth |   -0.4971      0.100
  population~h |    0.6533      0.021
     inflation |    0.3515      0.263
  unemployem~t |    0.3917      0.208
```

Table 5.24 shows each budget function has a different correlation with poverty rate. This correlation was obtained after dropping housing expenditure and lagging economic expenditure. Defense, health, tourism, and religion functions have positive correlation. On the other hand, general service, order & security, economic, environment, and education functions have negative correlation. However, all of budget functions have weak correlations because the *p value*s are not significant. Between period 1977 and 1996, other control variables (growth, population, inflation, and unemployment) have similar correlations with the correlations at the previous analysis. However, only population growth sector has strong positive correlation with poverty rate, the *p value* of which is significant.

Table 5.25 Regression Estimation of Post Budget Reclassification (After Autocorrelation Correction)

```
Prais-Winsten AR(1) regression -- SSE search estimates

      Source |       SS      df       MS              Number of obs =      24
-------------+------------------------------          F( 13,    10) =   25.07
       Model | 2845.52533    13  218.886564           Prob > F      =  0.0000
    Residual |  87.3045177   10  8.73045177           R-squared     =  0.9702
-------------+------------------------------          Adj R-squared =  0.9315
       Total | 2932.82985    23  127.514341           Root MSE      =  2.9547


     poverty |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
generalser~e |  -14.51007   8.396038    -1.73   0.115    -33.21761    4.197473
     defense |   4.677321   3.058547     1.53   0.157    -2.137547    11.49219
orderandse~y |  -6.838898    3.30242    -2.07   0.065    -14.19715    .5193517
  lageconomic |  -1.768628   3.152553    -0.56   0.587    -8.792953    5.255696
environmen~r |  -.0114695    2.20815    -0.01   0.996    -4.931534    4.908595
healthands~y |   4.280999   2.420407     1.77   0.107    -1.112005    9.674003
tourismand~e |     .79334   2.403875     0.33   0.748    -4.562827    6.149507
    religion |   2.327872   .8172455     2.85   0.017     .5069361    4.148809
   education |  -1.860743   3.424137    -0.54   0.599    -9.490195    5.768709
      growth |  -1.023793   .3097575    -3.31   0.008    -1.713975     -.33361
population~h |   9.789159   3.080505     3.18   0.010     2.925366    16.65295
   inflation |   .1515663   .1848044     0.82   0.431    -.2602034     .5633361
unemployem~t |      .0439   .1040375     0.42   0.682    -.1879099      .27571
       _cons |   6.513562   9.238879     0.71   0.497    -14.07194    27.09907
-------------+----------------------------------------------------------------
         rho |         -1

Durbin-Watson statistic (original)        0.657317
Durbin-Watson statistic (transformed)     1.553838
```

Table 5.25 shows the regression estimation of poverty on growth of each budget classification (after budget reclassification) and the variable controls. The model is

good enough because the R^2 and adjusted R^2 are 0.9702 and 0.9315, respectively. The high value of R^2 indicates that the variance of estimator (budget, growth, population, inflation, and unemployment) succeeds to explain the variance of poverty rate.

Because the *p value* of F is significant (0.0000), we can write down the regression estimation as the following ways:

Poverty = 6.513562 - 14.51007gGS + 4.677321gDef - 6.8388gOrder

-1.7686gLageco - 0.0114gEnv + 4.2809gHeal+0.7933gTour

$\qquad$ + 2.3278gRelig – 1.8607gEdu - 1.0237 gEco + 9.789gPopul

$\qquad$ + 0.15156infl + 0.0439unemploy ………….. (5.3)

CHAPTER 6

DISCUSSION

This chapter will include the following parts: (1) hypothesis testing and interpretation, (2) prediction of the poverty rate following the budget plan 2011, and finally (3) limitations of the research.

6.1.   Hypothesis Testing & Interpretation

This paper carried out "one-sided left side test" as a hypothesis testing because the hypothesis statement was "there is a negative relationship between government expenditure (totally and sectorally) and poverty rate. According to Gujarati (2004) if we have a strong a priori or theoretical expectation (or expectations based on some previous empirical work), the alternative hypothesis is one-sided or unidirectional rather than two-sided.

To examine hypothesis testing, this study conducted two-sided Wald test to test whether numerator degree in F test is 1 or not. If the numerator is 1, the square root of the *p value* is the *p value* for one-sided test. This study exercised that F test has 1 numerator degree of freedom (Figure 6.1). Thus, I followed to use the square root of F statistic to determine the t statistic in one-sided tail test.

Figure 6.1 Wald Test of growth of expenditure

```
. test gbudget

( 1)  gbudget = 0

      F(  1,    18) =     0.02
           Prob > F =     0.8840
```

In addition, since there are 4 models which have been analyzed in the previous

chapter, the hypothesis testing also will be explained as the following:

a. General Relationship

Recalling the hypothesis in chapter 3, this study formulizes the hypothesis as the following:

Ho: $\beta_1 \geq 0$

Ha: $\beta_1 < 0$

Figure 6.2 One-sided (left side) tail Test of Total Growth of Expenditure

```
. local gbudget=sign(_b[gbudget])

. display "H_0:coef>=0 p-value=" 1-ttail(r(df_r), `gbudget'*sqrt(r(F)))
H_0:coef>=0 p-value=.55799178
```

The other way to determine the *p value* of t test is directly calculating from *p value* at regression estimation. Since the sign of coefficient of growth of budget was positive (+), therefore we calculate the *p value* with this formula (1- (*p value* of regression/2)). The result was 0.558 (1-(0.884/2)).

Since the *p value* was insignificant (0.558), which was greater than 5%, the test failed to reject Ho. Therefore, it means that there is no negative relationship between government expenditure and poverty rate.

If we look at the sign of the coefficient of partial correlation, it was clear if the government expenditure had positive correlation with poverty rate. But, the correlation was not significance. Although it was not significant, but the regression result showed a contradiction with the previous studies which underlies this research.

However, since the *p value* of F test was significant (0.0000) we recall the equation 5.1 in chapter 5 and combine with the *p value* of each variable to obtain the equation as the following:

$$Poverty = -2.080612 + 0.3049055gBudget - 0.3422261gEco$$

$$(0.794) \qquad (0.558) \qquad (0.043)$$

$$+ 10.02816gPopul + 0.0896243infl + 0.1526609unemploy$$

$$(0.021) \qquad (0.017) \qquad (0.092)$$

The interpretations of the equation (assuming other variables constant) are:

- The intercept was -2.080612. It means if other variables have zero value, the poverty rate is -2.08%. In this study, the condition does not make sense since the lowest rate of poverty is 0%.

- The coefficient of growth of budget was +0.3049055. It means that every 1% growth of budget be accompanied by a higher poverty rate of 0.3049%. However this study showed that the *p value* was not significant.

- The coefficient of economic growth was –0.3422261. It means that every 1% economic growth be in line with a lower poverty rate of 0.3422%.

- The coefficient of population growth was + 10.02816. It means that if population growth changes 1%, poverty rate changes by 10.028%.

- The coefficient of inflation was + 0.0896243. It means that every 1% additional inflation rate be in line with poverty rate by 0.0896%.

- The coefficient of unemployment rate was + 0.1526609. It means that every 1% additional primary educated-unemployment rate be accompanied by a higher poverty rate by 0.1526%.

The regression estimation showed two important points. Firstly, the government expenditure had a positive correlation with poverty rate. Although the *p value* was insignificant, I think we should not ignore the result. It seemed that the government expenditure did not work as what it was expected. When many previous studies proved that the government expenditure was negatively correlated with, even negatively affected to (Wilhem and Fiestas, 2005), poverty rate, this study shows the Indonesia government had a different way.

There is a possible explanation about the unexpected relationship between government expenditure and poverty rate. First is the additional budget was not utilized efficiently and effectively. Therefore the big amount of budget was not completely reached the development goals. According to Sumitro (1993), the leak of development budget between periods 1989 – 1993 was about 30%. The World Bank in the Suara Pembaruan newspaper (22 August 1996) also issued a report which stated that the budget leak reached 45%.

The second reason was, my analysis utilized of growth of expenditure rather than real amount of expenditure. Figure 6.3 shows a scattered graph of comparison between relationship of expenditure and poverty rate. The left figure is a graph of relationship between real amount of budget and poverty rate. On the other side was the relationship between growth of budget and poverty rate.

Figure 6.3 Comparison of Relationship between Poverty Rate and expenditure
(real amount of budget and growth of budget)
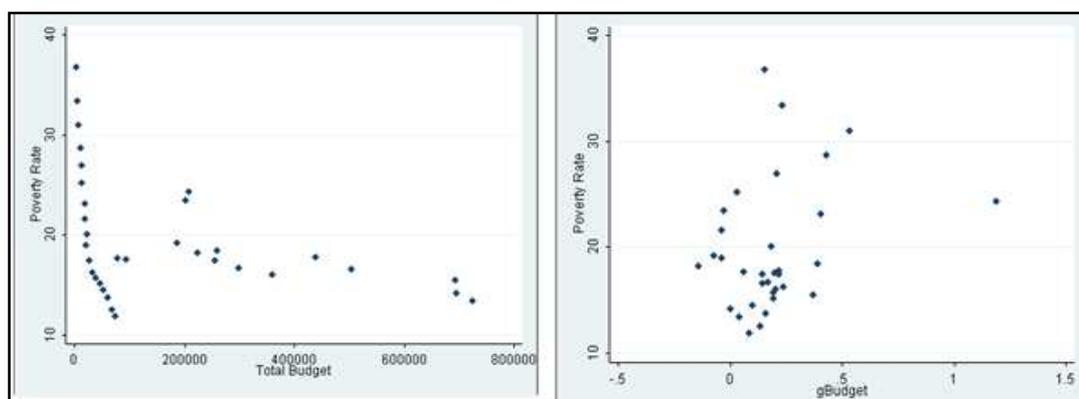
The left figure shows a negative relationship between poverty and total budget. Otherwise, the right figure shows a positive relationship between poverty and growth of budget.

This study employed growth of budget for the following reasons. The first is, the growth of budget gives real picture the seriousness of government in development finance. It was about what Barro (1990) and Fan and Rao (2003) meant with "it is not a matter of total size but the composition is". The growth of expenditure, in my opinion, will eliminate a bias trend of government expenditure. Because the trend commonly increases, utilizing the real amount of budget will not provide the real meaning of the increase of expenditure. Therefore, it is better if growth of budget is used to show how the government plans its activity, especially to reduce poverty.

Secondly, the real amount of budget statistically was not stationer data. Thus, it was very important to transform into appropriate variable. After some trials, it was decided to use growth of budget rather than real amount of budget as a proxy variable.

The second important point of regression estimation is the population growth and the economic growth. The population growth has the biggest positive estimation coefficient (+10.02816)and statistically significant. On the other hand, the economic growth has the biggest negative estimation coefficient (–0.3422261) and statistically significant.

Those two control variables are still relevance to determine poverty in Indonesia. Khan et.al (2009) illustrated how the population affecting poverty. The high growth of population would create high unemployment and increase landlessness. It would be followed with the lower of wages because of high competition within labor work. And it finally would dilute overall economic. In addition, the overpopulation would urge an overstretching of social services (school, health, sanitation, etc) because of limited resources and facilities provided by government. The main issue related with population growth for the Indonesian government is how to keep the population growth in low level. If the government succeeds to reduce the population growth by 0.5%, the poverty rate is expected to be reduced by 5%. It would be a big achievement. Therefore a systematic and persistent effort can be pursued, such as a continuous family planning. According to Siregar (2003), National Family Planning program was successful to solve population growth problem in Indonesia. The program limited a family to have maximum two children. In addition, the study also showed that social perspective on having many children was one of factors to encourage high population growth in Indonesia. Thus, the author recommended educating people intensively in order to change social mindset on that issue.

The economic growth is still an important variable to combat poverty problem

since its coefficient showed negative with significant *p value*. This result was aligned with Krueger (2009) which said that economic growth is believed as a main policy to achieve significant reduction in poverty. However, he emphasized that to bring effect over poverty reduction, it is important that the poor have access to social and economic services that enable them to become more productive.

   b. Relationship before budget reform

Recalling the hypothesis in chapter 3, this study formulizes the hypothesis as the following:

Ho: $\beta_{1,2,3,n} \geq 0$

H_a: $\beta_{1,2,3,n} < 0$

Table 6.1 One-sided (left side) tail Hypothesis Test of Growth of Budget
(Prior to Budget Reform)

Variables	sign of regression coefficient	p value origin	p value one-sided left tail	Description
Agriculture	negative	0.693	0.3465	Ho failed to be rejected
Industry	negative	0.069	0.0345	Ho rejected
Mining	positive	0.507	0.7465	Ho failed to be rejected
Lagtransportation	positive	0.802	0.599	Ho failed to be rejected
Laglocal development	negative	0.871	0.4355	Ho failed to be rejected
Defense	positive	0.049	0.9755	Ho failed to be rejected
Education	negative	0.099	0.0495	Ho rejected
Health	positive	0.124	0.938	Ho failed to be rejected

Table 6.1 shows only industry and education sectors have significant *p value*s to reject Ho. It means that government expenditure in industry and education sectors have negative relationship with poverty rate. On the other hand, the *p value* of other variables (agriculture, mining, transportation, local development, defense, and health) failed to reject Ho. Thus, it means that there is no negative relationship between those government expenditures with poverty rate.

However, since the *p value* of F test was significant (0.0001) we recall the equation 5.2 in chapter 5 and combine with the *p value* of each variable to obtain the equation as the following:

Poverty = -9.006714 - 0.9983332gAgri – 3.84002gIndus + 2.226954gMine

(0.406)   (0.3465)   (0.0345)   (0.7465)

+ 1.148262gTrans - 1.171284gLocal + 6.4809gDefense – 10.49464gEdu

(0.599)   (0.4355)   (0.9755)   (0.0495)

+ 6.3068gHeal - 0.8226gEco + 14.3900Gpopul + 0.0896243Infl

(0.938)   (0.252)   (0.014)   (0.032)

The interpretations of the equation (assuming other variables constant) are:

- The intercept was -9.006714. It means if other variables have zero value, the poverty rate is -9.01%. In this study, the condition did not make sense since the lowest rate of poverty is 0%.

- The coefficient of growth of expenditure in agriculture sector was -0.9983332. It means that every 1% growth of budget be accompanied by a lower poverty rate by 0.99%. However the analysis showed that the *p value* was not significant.

- The coefficient of growth of expenditure in industry sector was –3.84002. It means that if growth of budget changes 1%, the poverty rate changes by -3.84%.

- The coefficient of growth of expenditure in mining sector was + 2.226954. It means that every additional 1% growth of budget be in line with higher poverty rate by 2.23%. However the study showed that the *p value* was not

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significant.

- The coefficient of growth of expenditure in transportation sector in previous year was +1.148262. It means that every 1% growth of budget be accompanied by a higher poverty rate by 1.15%. However the Stata's output showed that the *p value* was not significant.

- The coefficient of growth of expenditure in local development sector in previous year was - 1.171284. It means that every additional 1% growth of budget be in line with lower poverty rate by 1.17%. However the analysis showed that the *p value* was not significant.

- The coefficient of growth of expenditure in defense sector was +6.4809. It means that if growth of budget changes 1%, the poverty rate changes by 6.48%. However the result showed that the *p value* was not significant.

- The coefficient of growth of expenditure in education sector was –10.49464. It means that every 1% growth of budget be accompanied by a lower poverty rate by 10.49%.

- The coefficient of growth of expenditure in health sector was + 6.3068. It means that every 1% growth of budget be in line with higher poverty rate by 6.31%. However the result showed that the *p value* was not significant.

- The coefficient of economic growth was –0.8226. It means that if economic growth changes 1%, the poverty rate changes by -0.82%. However the Stata's output showed that the *p value* was not significant.

- The coefficient of inflation was + 0.0896243. It means that every 1% additional inflation rate be accompanied a higher poverty rate by 0.0896%.

- The coefficient of population growth rate was + 14.3900. It means that every 1% additional population growth be accompanied a higher poverty rate by 14.39%.

The regression estimation showed two important points. Firstly, only expenditure at education and industry sectors had significant negative relationship with poverty rate during period 1976 and 1996 (before budget reform). As discussed in Chapter 5, the government bigger spent expenditures in agriculture, transportation and local development sectors. However, by this study only expenditures in education and industry sectors were significant to reduce poverty. Therefore, the result also ascertains that the allocation matter is important.

Regarding the significance role of expenditures in education and industry sectors, this paper found the rationale of those sectors in poverty alleviation based on the literature review. The role of education to combat with poverty problem has been studied by many researchers. Njong (2010) shows that probability of being poor decrease when education level increases. He also illustrated the inter-relationship between education and poverty. Firstly, investment in education increases the skills and productivity of poor households. It enhances the wage level as well as the overall welfare of the population. Secondly, poverty may constitute a major constraint to educational attainment.

Related to this study, the greater amount of government's investment in education resulted in the easier of access to obtain cheap education. Figure 6.5 shows the government's achievements in education sectors between 1975 and 1990 (before budget reform). It was cleared that between 1978 and 1982, the Indonesian government paid more attention on the quality development. During that period,

teacher trained was reached 421,970 in average much higher compared with 135,681 as overall average. In addition in that period, the procurement for textbook and education tools were very high, almost 3 times compared with overall average.

The achievement in infrastructure, such as school building, additional classroom, and school maintenance, were shown in the lower figure. Between 1973 and 1990, there were more than 141,000 primary school were built. The interesting thing was more than 60% were built between 1978 and 1982.

Figure 6.4 Education Achievements of the Indonesian government
(1975 – 1990)

Activities	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Teacher Trained																
a) Elementary	231200	372600	369161	364522	385157	479524	547467	299393	304068	274500	130480	59980	13760	9078	44520	123020
b) High School	5675	6565	7176	6376	18032	23512	25877	25204	17292	21368	78002	53447	56933	49288	43705	58047
c) University	1088	1505	1015	489	4812	3879	4140	10000	10360	3120	5115	6778	9569			4044
Books & Material																
a) Elementary	43823	60000	58960	105810	41468	68800	45400	56488		16200	20000	7000	15400	2338	2000	6361
b) High School	2407	11048	21400	29441	19946	17913	16500	16100	18004	19225	4586	11018	1928	4261	700	1200
Phyisical Building																
a) Elementary	10000	10000	15000	15000	10000	14000	15000	22600	13140	2200	3200	2773	831	500	185	408
b) High School		125	135	155	162	216	390	1150	878	610	254	120	30	251	66	673
c) University					6	10	11	11	11	11	11	10				

Source: Government Budget (1991/1992)

If we look at the poverty rate movement between 1976 and 1984, we will find an interesting relationship. Between the periods, the poverty rate decreased sharply, from 40% to 21% (almost a half). This situation was alleged that the outputs of expenditure in education, both quality development and infrastructure, were contributed to poverty reduction in Indonesia. This condition also aligns with

framework outlined by Wilhem and Fiesta (2005) that government expenditure works through its output and outcome to reduce poverty.

This study also highlighted government expenditure in industry sector had negative relationship with poverty rate. According to Hendayana and Darmawan (1995), one factor contributed to reduction was the massive development of non agricultural based on industries during the era 1970s until 1990s. Although this development was done by using foreign debt, however, it has created a lot of job and products that might encouraged many domestic and foreign investors to invest in Indonesia.

The Indonesian government set the industry priority plan to development of export industry, stability of domestic industry, and development small industry. Furthermore, an agricultural industry development was also innovated as a linkage with agricultural sector development. An important indicator of an industry improvement was increase of production for export purpose. According to Government Budget (1991), export of industry product in 1989 reached US$11,068 million or 17.9% higher than previous year. Total export in that year was dominated by small industry subsector, which reached sales accumulation to US$1,020.0 million and followed by various industry sub sector of US$7,315.0 million.

Another indicator of the development of the industrial sector is the increasing number of investment. In 1989, the amount of capital invested in this sector was amounted Rp1,771.4 billion and US$4,037.5 million.

The second important issue of regression estimation was the population growth has the biggest positive estimation coefficient (+14.33) and statistically significant.

This result was similar with the general relationship which also showed the population had the biggest positive estimated coefficient.

    c. Relationship after budget reform

Recalling the hypothesis in chapter 3, this study formulizes the hypothesis as the following:

H_o: $\beta_{1,2,3,n} \geq 0$

H_a: $\beta_{1,2,3,n} < 0$

Table 6.2 One-sided (left side) tail Hypothesis Test of Growth of Budget (Post Budget Reform)

Variables	sign of regression coefficient	p value origin	p value one-sided left tail	Description
General service	positive	0.281	0.8595	Ho failed to be rejected
Economic	positive	0.238	0.881	Ho failed to be rejected
Education	negative	0.414	0.207	Ho failed to be rejected
Other	positive	0.305	0.8475	Ho failed to be rejected

Table 6.2 shows that the *p value* of all government expenditures after reform failed to reject Ho. Thus, it means that there is no negative relationship between those government expenditures with poverty rate post budget reform (2005 – 2010). In addition this study also do not support with regression estimation because of the poor of requirement to construct a good model.

Although the model was not good-fit enough to explain the relationship between the government expenditure and poverty reduction, however, we still can see at government expenditure at education function which having negative sign. This

relationship was similar with the relationship of those variables before budget reform.

d. Relationship after budget reclassification

Recalling the hypothesis in chapter 3, this study formulizes the hypothesis as the following:

Ho: $\beta_{1,2,3,n} \geq 0$

Ha: $\beta_{1,2,3,n} < 0$

Table 6.3
One-sided (left side) tail Hypothesis Test of Growth of Budget (Post Budget Reclassification)

Variables	sign of regression coefficient	p value origin	p value one-sided left tail	Description
General service	negative	0.115	0.0575	Ho rejected *
Defense	positive	0.157	0.9215	Ho failed to be rejected
Order and security	negative	0.065	0.0325	Ho rejected
Lageconomic	negative	0.587	0.2935	Ho failed to be rejected
Environment	negative	0.996	0.498	Ho failed to be rejected
Health and sosial protection	positive	0.107	0.9465	Ho failed to be rejected
Tourism	positive	0.748	0.626	Ho failed to be rejected
Religion	positive	0.017	0.9915	Ho failed to be rejected
Education	negative	0.599	0.2995	Ho failed to be rejected

*) 10% level of significance

Table 6.3 shows only order and security function has a significant *p value* to reject Ho. In addition, when we utilized the level of significance to 10%, the *p value* of general service function became significant. It means that government expenditure in both general service and order security functions have negative relationship with poverty rate

On the other hand, the *p value* of other variables (defense, economic, environment, health, tourism, religion, and education) failed to reject Ho. Thus, it means that there is no negative relationship between those government expenditures with poverty rate.

However, since the *p value* of F test was significant (0.0000) we recall the equation 5.3 in chapter 5 and combine with the *p value* of each variable to obtain the equation as the following:

$$Poverty = 6.513562 - 14.51007gGS + 4.677321gDef - 6.8388gOrder$$

$$(0.497) \qquad (0.0575) \qquad (0.9215) \qquad (0.0325)$$

$$- 1.7686gLageco - 0.0114gEnv + 4.2809gHeal + 0.7933gTour$$

$$(0.2935) \qquad (0.498) \qquad (0.9465) \qquad (0.626)$$

$$+ 2.3278gRelig - 1.8607gEdu - 1.0237gEco + 9.789gPopul$$

$$(0.9915) \qquad (0.2995) \qquad (0.008) \qquad (0.010)$$

$$+ 0.15156infl + 0.0439unemploy$$

$$(0.431) \qquad (0.682)$$

The interpretations of the equation (assuming other variables constant) are:

- The intercept was 6.513562. It means if other variables have zero value, the poverty rate is 6.5%. In this study, the condition makes sense since the lowest rate of poverty is 0%.

- The coefficient of growth of expenditure in general services function was -14.51007. It means that every 1% growth of budget will accompany lower poverty rate by 14.51%.

- The coefficient of growth of expenditure in defense function was 4.677321. It means that every 1% growth of budget be accompany higher poverty rate

by 4.677%. However the result showed that the *p value* was not significant.

- The coefficient of growth of expenditure in order and security function was -6.8388. It means that if order and security expenditure growth changes 1%, the poverty rate changes by -6.83%.

- The coefficient of growth of expenditure in economic function in previous year was -1.7686. It means that every 1% growth of economic expenditure in line with lower poverty rate by 1.768%. However the Stata output showed that the *p value* was not significant.

- The coefficient of growth of expenditure in environment function was -0.0114. It means that every 1% environment budget growth will accompany lower poverty rate by 0.011%. However the research showed that the *p value* was not significant.

- The coefficient of growth of expenditure in health function was + 4.2809. It means that if health expenditure growth changes 1%, the poverty rate changes by 4.28%. However the analysis showed that the *p value* was not significant.

- The coefficient of growth of expenditure in tourism function was +0.7933. It means that every 1% growth of tourism budget will accompany higher poverty rate by 0.793%. However the research showed that the *p value* was not significant.

- The coefficient of growth of expenditure in religion function was + 2.3278. It means that every 1% expenditure in religion growth in line with higher poverty rate by 2.32%. However the Stata's output showed that the *p value* was not significant.

- The coefficient of growth of expenditure in education function was – 1.8607. It means that every 1% population growth be accompanied by a higher poverty rate of 1.86%. However the analysis showed that the *p value* was not significant.

- The coefficient of economic growth was - 1.0237. It means that for every 1% higher level of growth there will accompany a poverty rate which is lower by 1.02%.

- The coefficient of inflation was + 0.15156. It means that every 1% additional inflation rate be accompanied higher poverty rate by 0.1515%.

- The coefficient of population growth rate was +9.789. It means that every 1% additional population growth will in line with higher poverty rate by 9.789%.

- The coefficient of unemployment rate was + 0.0439. It means that every 1% change of unemployment rate, the poverty rate changes by 0.044%. However the analysis showed that the *p value* was not significant.

The regression estimation showed three important points. Firstly, only expenditure in general service and order functions had significant negative relationship with poverty rate during period 1976 and 2010 (post budget reclassification). The estimation shows that the government was very concern about good governance implementation. The impact was the better administration and service for public. Sumarto et.al (2004) examines the impact of governance practices in Indonesia on poverty reduction. Their study revealed that there was a clear indication that good governance affects districts' performance on poverty reduction. The districts which

have less conducive bureaucratic culture reduced poverty by 3.4% on average, while those districts with a very conducive one reduced poverty by around 15%.

One of bureaucracy reformation program goal is to eradicate corruption in government institution. By eradicating it, the quality of government service was expected increase. Furthermore the degree of budget spending will effectively and efficiently be utilized. According to Gupta et.al (1998) corruption increases income inequality and poverty through lower economic growth; biased tax systems favoring the rich and well-connected; poor targeting of social programs; use of wealth by the well-to-do to lobby government for favorable policies that perpetuate inequality asset ownership; lower social spending unequal access to education; and a higher risk in investment decisions of the poor.

According to Setiawan (2010),the problem of corruption, making Indonesia become the most corrupt country in the world. Research result by Transparency International in 1999, resulted the index was 1.7 put Indonesia in order of 97 out of 99. However, when the government run bureaucracy reform, it was successfully increased the index. By 2009 the index reached 2.8. This position, however, still put Indonesia under ASEAN's countries such as Singapore, Malaysia, Brunei Darussalam, and Thailand.

Before budget reform, this expenditure was dedicated to increase civil servant welfare. Therefore, most of allocation was absorbed to civil servant salary. Table 6.4 shows the proportion of salary over routine budget between 1970 and 1990. Between those periods, it was clearly if salary along with subsidy was more than 50% in average of routine budget.

Table 6.4 Proportion of Salary over Routine Budget (1970 – 1990)

Year	Salary	%	Subsidi	%	Total	Routine Budget	%
-1,0	-2,0	(3)=(2):(6)	-4,0	(5)=(4):(6)	(6)=(2)+(4)	-7,0	(8)=(6):(7)
PELITA I							
196/170	103,8	70,2	44,1	29,8	147,9	216,5	68,3
1970/71	131,4	70,0	56,2	30,0	187,6	288,2	65,1
1971/72	163,4	71,0	66,8	29,0	230,2	349,1	65,9
1972/73	200,4	70,5	83,9	29,5	284,3	438,1	64,9
1973/74	268,9	71,2	108,6	28,8	377,5	713,3	52,9
PELITA II							
1974/75	420,1	67,5	201,9	32,5	622,0	1.016,1	61,2
1975/76	593,9	67,7	284,5	32,4	878,4	1.332,6	65,9
1976/77	636,6	67,0	313,0	33,0	949,6	1.629,8	58,3
1977/78	893,2	65,1	478,4	34,9	1.371,6	2.148,9	63,8
1978/79	1.001,6	65,7	522,3	34,3	1.523,9	2.743,7	55,5
PELITA III							
1979/80	1.419,9	67,9	669,9	32,1	2.089,8	4.061,8	51,5
1980/81	2.023,3	67,5	976,1	32,5	2.999,4	5.800,0	51,7
1981/82	2.277,1	65,3	1.209,1	34,7	3.486,2	6.977,6	50,0
1982/83	2.418,1	64,8	1.315,4	35,2	3.733,5	6.996,3	53,4
1983/84	2.757,0	64,1	1.547,0	35,9	4.304,0	8.411,8	51,2
PELITA IV							
1984/85	3.046,8	64,5	1.680,1	35,5	4.726,9	9.429,0	50,1
1985/86	4.018,3	64,1	2.247,6	35,9	6.265,9	11.951,5	52,4
1986/87	4.310,6	64,1	2.410,2	35,9	6.720,8	13.559,3	49,6
1987/88	4.616,9	64,0	2.592,3	36,0	7.209,2	17.481,5	41,2
1988/89	4.998,2	64,3	2.778,6	35,7	7.776,8	20.739,0	37,5
PEL ITA V							
1989/90 1)	6.201.5	65,0	3.338,1	35,0	9.539,6	24.331,1	39,2
1990/91	6.909,3	63,6	3.954,0	36,4	10.863,3	26.648,1	40,8

Source: Budget Plan (1992)
Note: Pelita is abbreviation of 5 Yearly Development Plan

After budget reform, the Indonesian government gave more attention to bureaucracy reformation program. It was proved when the Ministry of State Aparatus's officers initiated to sign Integrity Charter as a proof of their integrity to conduct the job properly. It then followed with a mandatory to sign an Integrity Charter at goods and service government procurement based on letter of Ministry of State Aparatus No. SE/06/M.PAN/4/2006 about Implementation of Integrity Charter. Beside the integrity charter, the Indonesian government step by step implemented higher remuneration at the selected institutions. By 2010, there are 6 institutions which have already received a new system, Ministry of Finance, Ministry of State Aparatus, Corruption Eradication Commission, Supreme Court, Police, and Army.

The second issue of regression estimation was expenditure in order functions had significant negative relationship. This is related to the conflict and internal security that had to be maintained by policemen. This function is very important because Indonesia is a big country with big population. Furthermore Indonesia comprises into hundreds of tribe, culture, religion, and islands that potentially stimulate conflict horizontal and interest. Before budget reform, the function was less prominent than defense function. This was caused under Soeharto regime, the political and government controls were centralistic. In addition there was a limited freedom to express own thinking. However, after political reformation in 1998, this security function started prominent. It was signed when Indonesia decided to implement decentralization, direct general election, and to acknowledge freedom of expression. The impact was many horizontal conflicts and separatism because the some 'free riders" who utilize whatever opportunity to reach their own goals. In this situation, the role of policemen to prevent stabilization and security was very important.

The relationship between conflict and poverty was well studied by Justino (2007). He believes that there is two-way causality between conflict and poverty. On the one hand, conflict would positively affect poverty and on the other hand poverty is one reason why a conflict exists.   By analyzing and comparing studies of many scholars, he delivers a message that prioritizing investment in education and health may signal government's commitment to peace by keeping the population content. Furthermore, increases in equal opportunities in the access of excluded groups to education may decrease social tensions.

The second important issue of regression estimation was the population growth

has the biggest positive estimation coefficient (+9.789) and statistically significant. On the other hand, the economic growth has the biggest negative estimation coefficient (–1.02) and statistically significant. These results were similar with the general relationship and before budget reform relationship.

The similarity in the relationship between population growth and economic growth and poverty rate in the 3 types of relationships shows that those 2 variables are robust related to poverty rate. Moreover, those variables are also appropriate to be considered since the values of their coefficients were quite big.

The third important issue of regression estimation was the education function had negative estimation coefficient (-1.8) although the *p value* was not statistically significant. However, this information was important because if we compare with the government sector before budget reform, the result was quite similar. The similarity relationship between education and poverty rate in the 2 types of relationship shows the education variable, can be said, robust related to poverty rate.

6.2.   Poverty Rate Prediction by Utilization of Budget Planning 2011

By utilizing some indicators in the Budget Planning 2011, I will show the estimation of poverty rate in 2011. However, I used the 2010 unemployment rate (percentage of unemployment with primary education) and population growth, 44.4% and 1.15% respectively, because there was no data of those variables for 2011.

According to Budget Planning 2011, there are some macro economic assumptions as the following: economic growth (6.3%) and inflation rate (5.3%). In addition

we have to calculate the budget growth by comparing the government expenditure

planning in 2010 with the previous year. The result is shown at Table 6.5.

Table 6.5 Budget Plan 2011 and Its Growth

Budget Functions	2010	2011	Growth
General Service	495319.9	525430.6	0.06079
Defense	20968.2	45168.7	1.154152
Order and safety	14926	19746.9	0.322987
Economic	57358.8	95647.4	0.667528
Environmental	7889.2	11090.6	0.405795
Housing and Public Facility	20906.6	23381.8	0.118393
Health & Social Protect	21458.5	17258.6	-0.19572
Tourism and Culture	1416.1	2274.1	0.605889
Religion	913.1	1639.6	0.795641
Education	84086.5	81988.6	-0.02495
Total	**725242.9**	**823626.9**	**0.135657**

General Relationship

$$Poverty = -2.080612 + 0.3049055gBudget – 0.3422261gEco$$

$$+ 10.02816gPopul + 0.0896243infl + 0.1526609unemploy$$

$$= -2.080612 + 0.3049055(0.135657) – 0.3422261(6.3)$$

$$+ 10.02816(1.15) + 0.0896243(5.3) + 0.1526609(44.4)$$

$$= 14.59\%$$

Regarding this estimation, the poverty rate will be estimated at 14.59% or increase

1.29% point compare with poverty rate in 2010.

Relationship by government expenditure functions

$$Poverty = 6.513562 - 14.51007gGS + 4.677321gDef - 6.8388gOrder$$

$$- 1.7686gLageco - 0.0114gEnv + 4.2809gHeal + 0.7933gTour$$

$$+ 2.3278gRelig – 1.8607gEdu- 1.0237gEco + 9.789gPopul$$

$$+ 0.15156infl + 0.0439unemploy$$

$$= 6.513562 - 14.51007(0.06) + 4.677321(1.15) - 6.8388(0.32)$$

$$- \quad 1.7686(0.66)- \quad 0.0114(0.405) \quad + \quad 4.2809(-0.195) \quad +$$

$$0.7933(0.605)$$

$$+ 2.3278(0.795) - 1.8607(-0.024) - 1.0237(6.3) + 9.789(1.15)$$

$$+ 0.15156(5.3) + 0.0439(44.4)$$

$$= 16.77\%$$

Regarding this estimation, the poverty rate will be estimated at 16.77% or increase 3.47% point compare with poverty rate in 2010.

6.3.   Limitation of research

The research revealed some different results from many theories and previous studies. These differences from big stream of more professional researchers may lead one into some questions whether the paper has been conducted properly or not. Therefore, I seek to list some possibilities which might cause the differences and limitation of this study, such as:

- Directly regress the relationship between government expenditure and the poverty rate

  The previous studies investigated the relationship between poverty and government expenditure by utilizing intermediary factors to develop the model. The intermediary factors included output and outcome of government expenditure which directly affected to poverty rate. However, this research directly related the government expenditure and poverty rate.

- Limitation to explain the causal relationship between government expenditure and poverty rate

Although the conceptual framework describes that the government expenditure has a negative causal relationship with poverty rate, this study did not cover the causality analysis. The result limited at relationship analysis. Thus, this study cannot conclude if the government expenditure affect to poverty rate.

- This paper utilized different proxy variables to explain government expenditure

An inappropriate proxy variable will lead the analysis into bias from the objective of research. Since the usage of growth of expenditure as a proxy variable was a new trial, therefore it needs a further investigation to ensure the correct proxy variable.

- Data limitation

The problem existed when it conducted post budget reform regression. The limitation of series of data had an implication the variable included in the model also limited. Thus, the model developed was not the good-fit model.

- Mistakes in budget allocation, omission, and accumulation

This study simulated some budget allocation, omission, and accumulation to determine the best model. However, these simulations affect on some budget omission. In addition, this study also conducted reclassification from sector based allocation to function based allocation that more or less affect on the accuracy of budget allocation.

- Lack of analysis on efficiency and effectiveness of government expenditure utilization

According to Wilhem and Fiesta (2005), the efficiency and effectiveness of

budget utilization is an important factor to pursue the government's goal set up whether will be achieved or not. Therefore to provide a comprehensive analysis, the analysis of this determinant is much recommended.

- External factors, such as government policy and budget mechanism

The budget can be seen as a "toy" whether can be used in either bad or good purpose. Therefore, the role of government as a provider and community as a recipient is very vital. Lack of analysis in those two factors also will lead the analysis into bias.

CHAPTER 7

CONCLUSIONS

This chapter will include the following parts: (1) conclusion and (2) recommendations.

7.1   Conclusion

Based on the findings and discussion in the previous chapters, this study concludes 8 important points, as the following:

1. While using expenditure growth as a proxy variable, the government expenditure overall did not have a negative relationship with poverty rate. The study showed an opposite result with the previous study. There is a possibility that the opposite result came because government expenditure growth was studied rather than the real amount of government expenditure.

2. This study failed to compare the relationship between government expenditure and poverty at the time before and after budget reform. It was due to lack of data when doing analysis of relationship after budget reform.

3. Prior to budget reform, out of 8 sectors, the government expenditure in education and industry sectors had a significant negative relationship with poverty rate. With the Indonesian government spending 1% more than previous year in the education and industry, it will be accompanied with lower poverty rate by 10.49% and 3.84% respectively.

4. Following the budget reform, none of expenditure functions had a negative relationship with poverty rate. There is a possibility that the result came

because of a lack of data series to generate a good fit estimation.

5. Following a reclassification of expenditure sectors, out of 9 functions, the government expenditure in general service and order and security functions showed a significant negative relationship with poverty rate. When the Indonesian government spends 1% more than previous year in the general service and order and security expenditure, it will be accompanied with lower poverty rate by 14.51% and 6.83% respectively.

6. The expenditure in education was the only expenditure which had a stable negative relationship with poverty rate. The estimation coefficient of education expenditure at relationship prior budget reform, post budget reform and post budget reclassification, were as the following: -10.49464, -4.2931, and -1.8607 respectively.

7. The population growth and economic growth were the control variables which had a robust negative relationship with poverty rate because their relationship was always significant. In term of general relationship and relationship post budget reclassification, when population grows by 1%, it is accompanied with higher poverty rate by 10.02% and 9.78% respectively. On the other hand, the additional economic growth by 1% will be accompanied with lower poverty rate by 0.34% and 1.02% respectively

8. By utilizing some macro assumption indicators in the Budget Plan 2011, the estimation for poverty rate in 2011 considering both the general relationship and relationship post reclassification are 14.59% and 16.77%, respectively.

However, there are some research limitations which affected the reliability of the above conclusions such as: using growth of budget as a proxy, limitation of data

series, lack of output and outcome analysis, and lack of analysis on how budget mechanism may affect the poverty rate.

7.2 Recommendations

This study provides recommendations as the following:

1. The Indonesian government should consider investment in education sector as a persistent effort to reduce poverty since it had a stable negative relationship with poverty rate. The government can employ both education quality improvement and infrastructure development. By learning from what the government did between 1978 and 1984, the opportunity to overcome the poverty problem in the future is more.

2. In the near future, the government should continue the bureaucracy reformation program. The General Service expenditure was proven to support implementation of good governance in Indonesia. The effect of good governance is reducing corruption and finally bringing impact to poverty eradication.

3. Horizontal conflict and fighting crime problem solving should become the Indonesian government's priority. After the decentralization and democracy system were implemented in 2000, the temporary euphoria of misleading the new system was very high. This issue is important because the victims of the horizontal conflict are usually the poor. The government expenditure in Order and Security is still relevant in the near future.

4. To achieve a low poverty rate, it is very necessary for the government to achieve a population growth under 1%. Since this target is manageable and has

a big impact on poverty rate compared with other variables, it is very proper to consider this factor as the way to reduce poverty. Therefore, the government should re-promote family planning program through educational or policies to support restriction of number of children.

It is hoped that this research will be followed with further investigations to overcome research limitations. For example, research can be performed by panel data analysis rather than time series analysis by utilizing sub national data (province). The other alternative way is expanding the factors affecting the relationship between government expenditure and poverty reduction, such as effectiveness, efficiency, poverty alleviation policy, organization, budget mechanism, etc.

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