Does The Effectiveness of The Government Expenditure Accelerate Economic Growth?

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ABSTRACT
The purpose of this study is criticizing the effectiveness of government expenditure to speed economic growth in Indonesia. Three Stage Least Square (3SLS) is used. This study applied data for 32 provinces in Indonesia for the period of 2012 to 2017 to ascertain the relevance of Solow Swan's Neo Classic Growth Theory in measuring economic growth in developing country in recent time.
The results found that inflation does not influence on economic growth significantly, but there is a negative tendency towards economic growth. The variable of investment influences on growth significantly. The government role as represented by government expenditure has various effect both inflation and investment. The salary expenditure does not affect on inflation rate temporarily, an increase in salary expenditure permanently occurs, it is a possibly of having an effect on inflation. And the health expenditure influences on investment significantly, but the education and infrastructure sector have no effect on investment significantly. These results indicate that is accordance to Solow Swan's neoclassical theory, that the capital of health expenditure can create capital accumulation, which in turn speeds economic growth. Our findings thus conform that Solow Swan's Neo Classical growth theory is still relevant in evaluating the effectiveness of government spending in accelerating economic growth through government spending in developing country such as Indonesia
Keywords: effectiveness, government expenditure, economic growth, 3SLS

1. INTRODUCTION

Economic growth is an essential condition for carrying out economic development and is considered the principal goal of various policies pursued by the government [1]; [2]; [3]. The reason being that, economic growth is crucial in determining the community welfare [1]. Economic growth can reduce unemployment by creating higher level of employment [2] as well as reducing poverty in a country by increasing the income percapita [4]. Furthermore, economic growth results in higher labor productivity which subsequently improving income and lead to higher consumption and investment [5]. In turn, an increase in investment create accumulation of capital, which is the major driver of economic growth acceleration [6].
However, to achieve the increased growth has become a challenge in many countries. Data in [7] showed that since the 1997/1998 economic crisis, then the 2008 financial crisis, achieving economic growth has been a challenge for most countries, including developing countries. Capital inflows have declined, and most of the low economic growth rates have been experienced [8]. The situation resulted in economic pressures in developing countries mostly, including Indonesia, where the data showed that in the era before the crisis (1997-1998), economic growth experienced a fairly high growth with an average of 6.8%, but after that economic growth has decreased with growth rate of 5.04 or always below 6% [9]. This fact showed that after the 1988 crisis, economic growth was unable to exceed the era of pre-crisis.

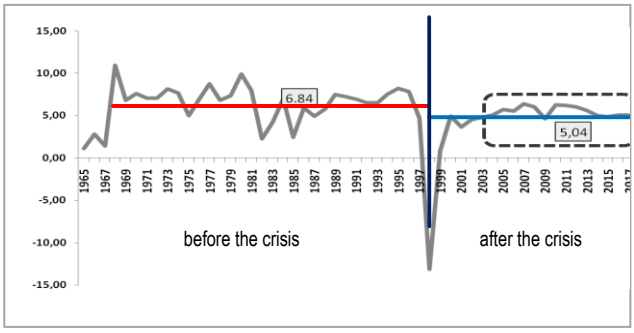

Figure 1.1 Development of Indonesia's Growth

Source: IMF, processed 2019

Figure 1.1 showed economic growth in the pre-crisis period was at 6.84%, while the post-crisis economic growth was at 5.04% [9]. If we refer to the trend of the budget development has been increasing continuously every year. For example in the 2010-2017 the government expenditure there was an average increase of 21 % annually (Figure 1.2).

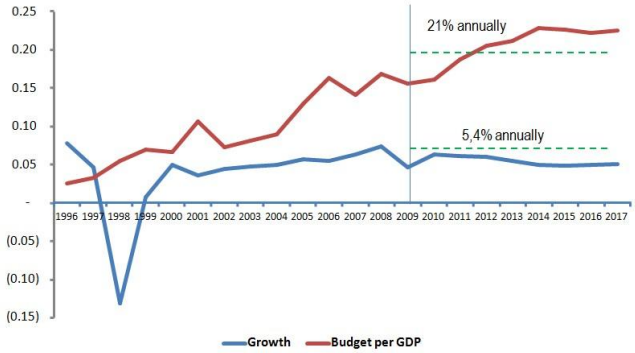

Figure 1.2 Development of Indonesia's Budget and Growth

Source: IMF, processed (2019)

This condition illustrated that there has been the ineffectiveness in utilizing its expenditure. This showed that the increasing in expenditure has not been yet translated into meaningful growth, because for 10 years, the economic growth has continued to decline, even data showed that Indonesia's ranking is still among countries lower middle income countries in the world.

Based on the cases above, this study decided to investigate and analyze the effectiveness of the expenditure in accelerating economic growth in Indonesia. To measure the government effectiveness in this study is by using two kind budgets, they are capital expenditure and salary expenditure

Capital expenditures are intended to improve their abilities and encourage the regional economy. Thus, capital expenditures implemented by governments will have a multiplier effect to drive economic activities. Therefore, the higher the capital expenditure ratio from the GRDP, it is hoped that the better effect will be on economic growth. Conversely, the lower the number, the less influence it has on economic growth

Salary expenditure is intended to increase income per capita of the community, or increase purchasing power, this increasing encourages consumption. If the income increases not for consumption but for saving, then it can also become an investment. This increase in investment can accelerate the accumulation of the capital which then encourages economic growth, and vice versa. An increase in people's income is not for saving but for consumption, then this condition cannot create capital accumulation be increased, can even inhibit capital accumulation, which in turn cannot encourage or even decrease economic growth

By doing so, we try to apply the theory of an extended the theory of neoclassical growth, spirited by the model of Solow Swan growth [10];[11]. The reason being that, this theory has a construct that the growth of economic is a series of activities that originates in humans, accumulation of capital, the use of newest technology and output. This theory bases its analysis on the components of the production function. The elements that cause economic growth include capital, labor, and technology. Neoclassical growth model stated the economy will reach conditions of constant growth (steady state), it means the conditions when per capita income and other elements of production grow constantly or can be denoted $s.f(k) = (n+\delta).k$, to achieve these conditions, the economy requires a growth rate of investment that can offset the effect of depreciation or cost of funds [12].

In consequence of the previous arguments, this research examines whether government effectiveness through capital expenditure and salary expenditure are able to accelerate economic growth in Indonesia. Specifically, this research examines the influence of inflation on economic growth, the influence of investment on growth and the influence of government role toward inflation and investment.

This paper is planned as follows: Section two (2) presents literatures review including the theory and previous studies; Section three (3) presents method; Section four (4) presents results and interpretations; Section five (5) presents the conclusion.

2. LITERATURE

2.1.The Based Theory

In the growth literature, the government plays important role in enhancing economic performance. Basically, the theoretical underpinning for this study is exogenous theory, spirited by the model of Solow growth [13], [11]. Solow discusses that the shift in the production function determined by an increase (or decrease) in savings, population growth and technological progress that has a temporal effect. After a shift towards balanced growth, the economy returns to a steady-state growth path. The Solow model proposition disputes that only technological progress will proceed to produce a level of economic growth for long-term consumption and income per capita. Thus, technological advances in the neoclassical model are the only source for long-term sustainable growth [14].

2.2.The inflation on economic growth

Inflation is a measure that describes the dynamics of the price development goods and services commonly consumed by the community. The price development goods and service price has a direct impact on the level of purchasing power and the cost of living of the people, changes in the value of assets and liabilities and the value of business contracts / transactions. Inflation is also an indicator of movement between demand supply in the real market, is also closely related to changes in interest rates, economic productivity, the exchange rate against foreign currencies. Therefore, the public, business people, banks and the government are very interested in changes of inflation. The higher of the inflation, the lower of money value and the lower purchasing power so that it can hamper economic growth. Therefore, stable

inflation is a prior condition for realizing prosperity in every country, for developed and developing countries.
From several empirical studies show that the inflation rate has a positive, negative and also neutral on economic growth [15]. As [16] in his research shows inflation reduces growth through reducing investment and the level of productivity growth, in other words inflation influences on economic growth negatively. Furthermore, [17], [18] in their findings stated that with a high inflation can reduce the level of savings and thus will reduce economic growth. However, there are some previous researches that inflation influence on economic growth positively, such as [19], [20], [21], [22] which state that inflation is very helpful on economic growth, however, faster economic growth will feed back on inflation. Then, there are some show the rate of inflation has no relationship with economic growth [23], [24]

2.3.The impact of investmnet on economic growth

Investment is a factor that can determine income level of a country in the future and it is for expanding business and new equipments, and it causes the capital stock to be increased. Capital stock is an essential determinant of economic output, because it can change over time, and this can lead to economic growth.
The amount of investment in a country in a given year is equal to the amount of capital formation. So the formation of gross domestic capital is the overall investment both by the private and government sector. Investment forms a large part of GDP can be classified in two broad categories, namely domestic investment and foreign investment (FDI) [25]
Investment affects on economic growth and reflects the pattern of development of a country. Thus, the higher the investment growth rate of a region, the better it is expected on economic growth. Conversely, the lower the number, the slower economic growth, assuming that the actual level of investment per unit of active labor is higher than the break-even investment (depreciation) and the level of productivity of capital stock per effective labor force is very high so that the amount rises to the position the balance or rate of positive economic growth .
The relation between investment and economic growth is explained by the neoclassical theory Solow Swan in Olsson (2010) states that determinant of economic output growth are labor, capital, and technology. These elements are formulated as a production function, namely Y (t)=f(K(t), L(t),T (t)). Solow's neoclassical theory illustrates the process of accelerating economic growth by assuming a closed economy, without the role of government, saving is a portion of output that is not consumed, capital is homogeneous and at a constant rate, so the addition of capital for investment will be positive if the return of new investment is higher than depreciation.
Some evidence has been done in developed countries namely [26], [27], 2016) explained that investment influences significantly on economic growth in long term. [28], [29], [30], [31] found that investment contribute on economic growth positively. In developing countries proved by [32], [33], [34], [35], [36] found there is a positive effect of physical investment on economic growth.

2.4.The impact of salary expenditure on inflation

In macroeconomic, it is stated that employee expenditure is intended to increase income per capita of the community, or increase purchasing power. Increased purchasing power can encourage economic activity from the demand side. The higher income per capita, the higher the purchasing power, it can stimulate demand that are always provided by production. In general, many people assumed increasing in salary spending causes a tendency to money supply. According to quantity theory, changes in the price level are a result of changes in the money supply. Increasing the money supply in the community will cause the money value to be decreased. Because of the decreased money value, it has the same meaning as an increase in the price level. In theory, an increase in the money supply has a tendency price level high and vice versa.
An increase in salary expenditure is likely to stimulate economic activity. Increased economic activity can also be increased economic transactions. This situation encourages the creation of money supply in the community to be bigger. If the increase in the money supply continues to rise, it can drive the demand increasing sharply. An increase in demand that are not matched by the supply, it causes the price level to rise
Theoretically, explained in his research [37] that inflation is caused by demand and supply pressures. Demand pressure arises from expansive fiscal policy (government spending and tax cuts) or expansive monetary policy (increasing the money supply) or reducing the demand for money. Supply pressures occur because of a reduction in capital, a reduction in demand supply for labor and a reduction in other inputs. In these cases, the price level will rise and will cause inflation. This statement has been proven by [38] found that money supply (M2) influence significantly on inflation, while the fiscal deficit, government spending, and interest rates are determinants of inflation.

2.5.The impact of capital expenditure on investment.

Capital expenditure is a part of government expenditure that is prioritized to protect and improve the quality of life and an effort to fulfill regional obligation, which is realized in improving basic services, namely providing education services, health, service facilities, social facilities and adequate public facilities and develop social security (UU 32/2004). This expenditure is intended to increase the capacity of resources such as construction of road projects, government offices and other facilities. The increase of capacity causes economic activities faster, more efficient and cheaper and later could encourage investment.
Improving the quality of resources in health or healthy people tends become more active and enthusiastic in working and become more productive in their respective disciplines and lead to the creation of investments [39], further

emphasized in [40], [41] that health investments eradicate poverty, increase productivity and increase and sustain economic growth.
Furthermore, [42], [43] state the availability of economic infrastructure as a facilitation of production namely the electricity, roads, and also the facilitation of household consumption such as water, sanitation and electricity, can directly have benefits for the community, which can then encourage effective actors - economic actors, ultimately stimulating investment growth.

3. RESEARCH METHOD

3.1.Data and variables

The data used is secondary data that has panel data form (pooled-data) which is a combination of time series that is a collection of relevant data during the 2012-2017 period and data between places or spaces (cross sections) which is 32 provinces in Indonesia. The data in this study included: economic growth, capital expenditures (namely; in educational, in health, in infrastructure), salary expenditures, investment, inflation, per capita and consumption.
The data was obtained and downloaded from several publications, including SEKI with the web address https://www.bi.go.id/id/statistik/metadata/seki/, Statistics Indonesia with the web address of https://www.bps.go.id/ and Directorate General of Financial Balance of the Financial Ministry of the Republic of Indonesia with the address at http://www.djpk.kemenkeu.go.id/ and several other web site sources that are relevant to this research.

3.2.Method analysis

The analysis in this study is Three Stage Least Square. The 3SLS model is a model that has more than one interrelated equation. In this study, before applying 3SLS, each equation must be tested by using common effect, fixed effect and random effect, and the result of each equation must be in common effect or fixed effect [44]. Then, if the equation found in random effect, it must be tested with the stationery test.

3.3.Model Specification

Going by the theoretical framework, this paper applies the exogenous growth theory by Solow Swan in [45]. The basic Solow model is $\dot{k} = s.f(k) - (n+\delta).k$. This formulation can give meaning in this research, namely that $\dot{k}$ is the output of a country, which is represented by ***economic growth***, (s) which means **saving,** that are government saving and private saving, government saving is represented by capital expenditure or government investment, and private savings that described by income per capita from an increase salary expenditure. Then, $\mathbf{n + \delta}$ is the depreciation rate of the capital-labor ratio and ***n*** can be inflation like cost of fund. So, the econometric model becomes as follows:

$\mathbf{Inf_{it}} = \alpha_{i +} \alpha_1 SE_{it} + \alpha_2 IncP_{it,} + \alpha_2 Cons_{it,} + e_{it}$
$\mathbf{Invest_{it}} = \mu_i + \mu_1 HE_{it} + \mu_2 EdE_{it} + InfE_{it} + inf_{it} e_{it}$
$\mathbf{Growth_{it}} = \beta_i + \beta_1 Inf_{it} + \beta_2 Invest_{it} + \beta_3 BudgetR_{it} + e_{it}$

where:

Inf = *inflation rate, (IHK_t - IHK_{t-1} / IHK_{t-1} x 100%)*
SE = *salary expenditure, (the total of SE / RGDP x 100%)*
IncP = *income per capita, (total of RGDP/sum of population*
ConsP = *private consumption, (the total of Cons/ RGDP x 100%)*
Invest = *the rate of investment, it's calculated by $GFCF_t$-$GFCF_{t-1}$/$GFCF_{t-1}$ x100%*
HE = *health expenditure, (total of HE / RGDP x 100%)*
EdE = *education expenditure, (total of EdE / RGDP x 100%)*
InfE = *infrastructure expenditure, it's calculated by total of InfE / RGDP x 100%*
Growth = *economic growth, it's calculated by $RGDP_t$-$RGDP_{t-1}$/$RGDP_{t-}$ x 100%*
BudgetR = *budget ratio, it's calculated by total of budget / RGDP x 100%*

4. RESULT AND DISCUSSION

4.1.Result of stationery test

Stationary test is the important stages in analyzing panel data to see whether the data used is stationary or non-stationary, where if the data used is not stationary, the derivation process will be carried out until the data are ultimately stationary. The Stationary Test used is LLC
Table 1 Stationary test

Variables	LLC (Levin, Lin & Chu)		Justification
	t-statistic	probability	
Growth	-13.3521	0.0000	stationery
Invest	-12.6757	0.0000	stationery
Inf	-10.5503	0.0000	stationery
SE	-2.67582	0.0000	stationery
IncP	-3.40471	0.0000	stationery
Cons	-15.4418	0.0000	stationery
HE	-7.03348	0.0000	stationery
EdE	-7.88883	0.0000	stationery
InfE	-7.67779	0.0000	stationery
budgetR	-3.58330	0.0000	stationery

Source: proceed, 2019

Based on the results of the unit root test in Table 1, it is found that all of variables used in this research have the score of LLC p-value smaller than alpha (α), In sequence, it is concluded that the data used has been stationary. Then it can be stated that all of variables in the equation model can be performed in the next analysis stage, namely the 3SLS regression stage.

4.2.Result of 3SLS and Discussion

Table 2 Estimation result

Equation	Coef	P>|Z
Inf		
SE	-14.12975	0.461
IncP	.0000891	0.013
ConsP	.010851	0.845
cons	-.8995493	0.815
Invest		
HE	.0001006	0.060
EdE	-.0000482	0.129
InfE	.0000152	0.394
Inf	-.0067084	0.003
cons	.0703763	0.000
Growth		
Inf	-.0003643	0.779
Invest	.6265277	0.007
BudgetR	-.1680461	0.167
cons	.0281738	0.013
Endogenous variables	*Inflasi, Invest, Growth*	
Exogenous variables	*SE, Incp, ConsP, HE, EdE, InfE, BudgetR*	

Resources: result of STATA analysis, (processed, 2019)

Table 2 shows the complete 3SLS estimation. The above results can be used to answer the purposes of this research.

1. *The first is the influence of inflation on growth.*

The results found varied results, namely equation one shows that salary expenditure and consumption variables have no effect on inflation, while per capita income variables influence significantly on inflation. The results of equation one (1) show an increase in salary expenditure does not influence on inflation rate, this is likely in short-term, if an increase in salary expenditure permanently occurs, there is a possibility of having an effect on inflation, the variable income per capita has significant effect on inflation. The higher per capita income of most people can influence the rate of inflation.

The results show that ***inflation*** does not influence on growth significantly, but negative tendency towards economic growth. This implies that the inflation does not influence on economic growth. Some evidences as conducted by [46], [20] which state that the rate of inflation does not influence significantly on economic growth, and also not a causal relationship. Others, like [47] in their analysis found that inflation effects on economic growth varies from country to country and over time

2. *The second is the impact of investment on growth.*

The results found that ***investment*** influences on growth significantly. Theoretically, the greater investment growth of a region means the faster the region's ability to accelerate economic growth. This is in line with the article of [48] has stated that investment is one of the foundations of every economy. Economic activities require machinery, equipment, equipment, roads, lines, electricity networks, airports, water systems, telephones, and other forms of fixed assets. Thus, it is clear that economic growth is highly dependent on the investment or fixed capital available. The newest empirical evidence such as [49]; [28]; [26] stated that countries with deeper and wider investment are pushing for accelerating economic growth. This is accordance with the theory of Solow (1956) postulated that productivity only be explained through direct investment, population growth and technological progress. Technological progress becomes the only factor that affects the long-run growth rate of any economy.

3. *The third is the impact of government role on inflation and investment.*

The government role as represented by government expenditure such as salary expenditure and capital expenditure (included health sector, education sector, and infrastructure sector) have various effect both inflation and investment.

The results show that salary expenditure does not influence on the inflation rate, this is likely to be short-term, if an increase in salary expenditure permanently occurs, there is a possibility of having an effect on inflation. [50] states that inflation is determined by demand and supply pressures. Demand pressure arises from expansive fiscal policy (government spending and tax cuts) or expansive monetary policy (increasing the money supply) or reducing the demand for money. An increase in salary expenditure tends the money supply increased. As expressed by [38] in his research found that money supply influenced significantly on inflation.

Then, the government role that is represented by capital expenditure included the expenditures of health sector, education and infrastructure sector. The results show that the health sector influences significantly on investment, but the education and infrastructure sector do not have any effect on investment.

5. CONCLUSION

This paper estimates a simultaneous-equation model to test the effectiveness in accelerating economic growth for the period of 2012-2017. This study is conducted with the theoretical framework explicitly. Specifically, examines the government effectiveness through two government expenditures, namely, capital expenditure and salary expenditure.

The results indicate that the salary expenditure that is used for increasing purchasing power has not significant effect of inflation, and inflation is not effected on growth. Salary expenditure is intended to increase income or increase purchasing power, this increasing will encourage consumption. If the people's income rises not for consumption but for saving, it can also be an investment. An increase investment can accelerate capital accumulation, which in turn boosts economic growth and vise versa.

Health expenditure has significant and positive effect on investment. This finding indicates there is a relevance of the neoclassical theory. Basically, the government can drive economy through budget spending, namely; capital expenditure likes expenditure in health sector. This expenditure is aimed to increase resource capacity, an increase resource capacity causes production activities more efficient, faster and cheaper, later encourage investment. The creation of investment encourages capital accumulation and then speeds economic growth.

Finally, the results of this study, contributes to the justification of Neo Solow Swan's growth theory, that the thought of neoclassical theory is still relevant in the government effectiveness. The Solow Swan view that was developed by [12] can still be used as an analysis of the government's role in accelerating economic growth through government expenditure in provinces of Indonesia in recent time.

ACKNOWLEDGMENT

The writer would like to thank you for Bank of Indonesia for contributing this research in Research Grant Program Bank Indonesia Institute. Any mistakes are the responsibility of the writer. Disclaimer: the views declared in this research are the authors and do not necessary reflect those of Bank Indonesia.

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