

Fuel and Gas Subsidy Budget Reallocation on Infrastructure Development Budget towards Indonesian Economic Growth and Macroeconomic Indicators

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Abstract: The government of the Republic of Indonesia has one policy which always gets the main attention from the government itself, researchers, politicians, as well as societies. The policy is the providing of fuel and gas subsidies. This policy aims to reduce the price of fuel and gas, which in turn has an impact on increasing the purchasing power of the people. This increase in purchasing power is expected to stimulate economic sector activities and subsequently be able to increase the country's economic growth. In 2015, based on the Presidential Regulation of the Republic of Indonesia Number 191 of 2014, the government imposed a reduction in the budget for fuel and gas subsidies. The budget is then allocated to other sectors, one of which is the infrastructure development budget. This is done by the government because infrastructure development is seen as more productive, which in the end will also be able to increase the country's economic growth.

This paper aims to analyze the impact of the fiscal policy on the reallocation of the fuel and gas subsidy budget to the infrastructure budget to national economic growth along with macroeconomic variables such as: (i) the level of public consumption; (ii) the level of investment; (iii) level of government expenditure; (iv) the level of import; (v) the level of export; (vi) level of government revenue; (vii) level of employment; and (viii) the level of real Gross Domestic Product. The data used in this paper are 2010 Input-Output data as well as infrastructure development data for year 2012 until year 2016. The method uses in this paper is quantitative descriptive and uses the WAYANG model of Computable General Equilibrium (CGE) method and comparative-static simulation in processing data.

The results of this paper show the influence of fiscal policy implementation can be seen as follows: (i) the level of public consumption does not change in the short term but increases in the long term; (ii) there is an increase in investment in the short and long term; (iii) a decrease in government spending in the short and long term; (iv) a decline in imports in the short and long term; (v) a decline in exports in the short and long term; (vi) there is a decrease in government revenues from taxes in the short and long term; (vii) there is a decline in short-term and long-term employment absorption; (viii) there is an increase in real GDP in the short term by 0.225% and in the long term by 0.281%.

The policy implications show that the implementation of fiscal policies in general can increase national economic growth, even though shows a decline in several macroeconomic variables. These finding can be an input for policy makers to prepare the other policies which can support more effective and able to increase some of these macroeconomic variables.

Keywords: Fiscal Policy, Economic Growth, Budget Subsidize, Fuel and Gas, Input Output Analysis, Computing General Equilibrium

Introduction

One of the factors that determines the success of economic development is sustainable economic growth which is reflected in growth per capita income (see: Ravallion, 2016; Smith & Todaro, 2015). The role of the government in making policies that can encourage the transformation from stagnant into growth circumstances is one of the most essential factors in order to achieve a good economic development. The contextual of the emergence of government policy in intervening into the economy was triggered by some factors, including market failure in which the sale and purchase transaction of a product both goods and services that influences the livings of many people, cannot be absolutely handed over to the market mechanism because of the financial inability of the consumer to buy the product required. Low purchasing power is one of the problems that can hamper economic growth, where the products produced cannot be absorbed by some people with inadequate real income.

Fossil Fuel (BBM) is a commodity product that is traded with fluctuating prices. An increase in fuel prices can result in an increase in production costs (cost push inflation) which causes the prices of goods and service products to increase. This case will trigger resulting in a decrease in people's purchasing power which can reduce public consumption rate. Furthermore, a decreasing in people's purchasing power can slow-down the national economic growth. To keep maintain people's purchasing power from decreasing, the government intervenes through fiscal policies which is transmitted through the management of the State/Government Budget (APBN). Based upon this condition, in order to maintain people's purchasing power, the government through its fiscal policy provided fuel and gas subsidies amounting to 240 trillion *IDR* in 2014. However, considering some factors such as: (i) the development of national demand for fuel; (ii) in the framework of providing subsidies more targeted to certain user consumers; and (iii) in order to improve the efficiency of using in the APBN, it is necessary to reorganize policies regarding the supply, distribution, retail sale prices and consumers of certain types of fuel users. The Regulation of The President of the Republic of Indonesia Number 191/2014 then in 2015, the government through its fiscal policy reducing the fuel and gas subsidy budget to 64.7 trillion *IDR*. Furthermore, the subsidy budget is allocated to the infrastructure development budget which is considered more productive and can create a multiplier effect.

In many studies regarding to the effect of the reduction in the fuel subsidy budget on economic growth, there is still an unexplored research space related to national economic growth. Furthermore, there is a gap happened between the current research and previous research, as follows: (i). Aboleinen et al, 2009; Fan et al., 2007; Mc. Donald, 2005; Lin & Ouwyang, 2014 (in Das & Ganguly, 2016: 346) which concluded that the elimination in fuel subsidies had a negative effect on Gross Domestic Product; (ii). Bleany et al, 2001 (in Chude & Chude, 2013: 66), which provided the conclusion that productive government spending will increase economic growth; (iii). Das & Ganguly, 2016 concerning the Indian government's policy of reducing the amount of fuel subsidies by utilizing a significant reduction in world oil prices where the policy provides concessions to the government to shift to more productive budgets. The results of the policy showed a decrease in Gross Domestic Product of 0.6% due to the policy.

Based upon the condition has mentioned previously, this study aims to determine the impact of the reallocation of fuel and gas subsidies into infrastructure spending on: (i) the level of public consumption; (ii) the level of investment activities; (iii) the level of government spending; (iv) the level of export activities; (v) the level of import activities; (vi) the level of open unemployment rate; (vii) the level of government revenue in the tax sector; (viii) the rate of economic growth, in Indonesia.

Theoretical Background

Theory of National Income and Economic Growth

The magnitude of a country's Gross Domestic Product (GDP) is determined by the factors are as follow: the number of inputs which are referred to as factors of production. The ability to convert inputs into outputs is referred to as products and services notated as a production function $Y = F(K, L)$, which means that the amount of output (Y) is determined by the amount of capital (K) such as capital goods and labor (L). Increasing in the amount of capital and labor, will followed by increasing in the amount of output produced by a country. When measured by the value of money, the amount of output produced is identical to the total national income (Mankiw, 2010). Furthermore the components involved in producing national output or GDP consist of Public Consumption (C), Investment (I), Government Expenditures (G), Exports (X) and M (imports), the production function is notated as follows: $Y = C + I + G + (X - M)$. When one or more of these components change whether there is an increase or decrease, it will affect the number or value of each component as well as the amount of output (Y), so that the balance of output will change as well.

Mankiw (2010) stated that economic growth can also be noticed from the increase in people's standard of living from time to time. This can occur because the level of income increases, hence it can encourage people to

consume goods and services with a greater amount than before. Furthermore, Ravalion (2016) stated that economic growth is an increase in the Gross National Product (GNP) per capita, while the growth rate is an annual increase in the GNP per capita. From the two statements above, it can be summarized that economic growth is an increase in income and purchasing power so that people can carry out consumption activities exceeding expenditures that were made in the previous period.

According to Keynes, in the short term aggregate demand determines the amount of national income (output). The following are some of the main opinions expressed by Keynes (see Blanchard, 2013), as follows: (i) the occurrence of shock to demand can be developed and directed towards a shift in output that is greater, (ii) monetary policy can affect interest rates and aggregate demand, and (iii) the importance of expectations that can affect consumption and investment activities. Furthermore, fiscal policy can have an impact on a country's economic growth. Moreover, Government policies to increase state/government spending can have a multiplier effect which can increase people's income so that public demand for goods and services increases as well.

Government Expenditure/Government Spending Theory

Government expenditure or Government Spending is the budgets cost to provide goods and services through the public sector budget so that it impacts or influences on private sector spending (Ukwueze, 2015). When per capita income is low, demand for public services tends to be low.

Public Finance Theory

In a simple meaning, state/government finance can be said as a study of the role of government in economic activities (Gruber, 2011). This study concerning in the following matters: (i) when does the government interfere in economic activities? (ii) how does the government intervene in economic activities? (iii) what is the impact of the intervention on economic outcomes? and (iv) why has the government decided to intervene in that kind of manner? One of the reasons the government interferes in economic affairs is that there is a market failure. Market failure results in economic activity not being able to maximize efficiency. Furthermore, another reason is to carry out redistribution activities, namely by shifting resources from one community group to another. The purpose of these activities is to do income distribution so that those classified as unable financially can also have the purchasing power of goods and services in meeting their daily needs.

Empirical Studies

Some previous researches have been conducted by several researchers regarding to government expenditures and the policies about reducing in the fuel subsidies and its impacts towards the economic growth. The following are a previous studies of the effects of government spending and policies on reducing fuel subsidies on economic growth: (i). Alexander (1990 in Chude & Chude, 2013), conducted research based on samples from 13 countries of the Organization for Economic Cooperation and Development (OECD) by using panel data for the period of 1959 - 1984. The results showed that the growth in government spending had a significant influence on economic growth; (ii). Gregory & Ghosh (in Chude & Chude, 2013:65), examined the effect of government spending on economic growth. The results showed that countries with large government spending tend to experience high economic growth; (iii). Bleany et al. (2001 in Chude & Chude, 2013:66), examined the effect of government spending on economic growth. The results showed that productive public spending would increase economic growth, while unproductive ones did not have an effect on economic growth; (iv). Nikensari & Trianos (2003) examined the impact of the reduction in fuel subsidies on Indonesia's economic growth in the period 2001-2002. The results showed that in the short term the reduction in the level of subsidies still caused an increase in sectoral GDP. Whereas in the long run reducing fuel subsidies reduces sectoral and nominal GDP as well as on many other economic variables;

Hence number (v). Abouleinei et al, 2009; Fan et al., 2007; Mc Donald, 2005; Ouwyang & Lin, 2014 (in Das & Ganguly, 2016:346) found that eliminating fuel subsidies had a negative effect on GDP. Meanwhile Yusuf, 2008; Granado et al., 2012; Vagliasindi, 2012 (in Das & Ganguly, 2016:346) suggested that a comprehensive subsidy reform program can lead to economic growth and community welfare; (vi). Hamid & Rashid, 2012; examine the economic impact that occurred in Malaysia due to the rationalization policy on energy subsidies. The results showed that cheap energy because of the implementation of the subsidy policy as a factor of production is not the right policy to assist the poor community. The policy is also not suitable for the producer in terms of efficiency. Furthermore, an inefficient allocation of resources will give impact to the nation. It will reduce national income and in the long run will result in an inability to compete; (vii). Balke et al. (2014) conducted research about fuel subsidies associated with world oil prices. The conclusion obtained is that the elimination of fuel subsidies can reduce world oil prices by 6%. Furthermore, the obliteration will affect the welfare of the importing and exporting

fuel countries; (viii). Solaymani et al. (2014) examined the impact of the environmental economy on the transportation sector in Malaysia caused by energy subsidy reforms and oil price volatility. The results of the study indicated that the Malaysian economy will benefit from high energy prices including fuel prices due to the results of energy subsidy reform. The policy will increase real GDP, trade and investment, but income, consumption levels and welfare of rural communities decline. From the transportation sector shows increased output and employment opportunities; (ix). Bashir (2016) examined the economic implications of eliminating fuel subsidies in Nigeria. The results showed that the policy had a negative effect on people's lives there; and (x). Das & Ganguly (2016) examined the policy of reducing fuel subsidies in India that are diverted to the people's welfare program in the form of transfer payments. The results showed a decrease in consumption activities that gave effect to the decline in real GDP by 0.6%.

Research Methodology

This research was conducted to analyze the impact of the policy of reducing fuel & gas subsidies on Indonesia's economic growth. Reducing fuel and gas subsidies (Δs) is an independent variable while the economic growth (Δy) is the dependent variable. Economic growth is the difference between the GDP (Y) of the current year and the GDP of the previous year ($Y - Y_{n-1}$) or can be formulated as: $(\Delta y) = Y - Y_{n-1}$. Whereas Y is the sum of C (public consumption), I (investment), G (government spending) and the difference between X (exports) and M (imports) which can be denoted as $Y = C + I + G + (X - M)$. Furthermore, in the case of reduced fuel and gas subsidies, it can be formulated as follows:

$$\Delta y = f(\Delta s) \dots \dots \dots (3.1)$$

$$\Delta[c + i + g + (x - m)] = f(\Delta s) \dots \dots \dots (3.2)$$

The notation above illustrates the effect of a free variable in reducing fuel and gas subsidies on national economic growth.

Δy = economic growth; s = reduction of the fuel and gas subsidy budget;

Δc = change in the amount of public consumption; Δi = change in the amount of investment;

Δg = change in the amount of government spending; Δx = change in the number of exports; Δm = change in the number of imports.

Types of Data and Data Source.

This study is a quantitative research by using secondary data, obtained from the data published by The Statistic Bureau of Indonesia, Financial Memorandum of State Expenditure Budget published by the Ministry of Finance, Indonesian Economic Analysis published by the National Development Planning Agency (Bappenas). The main types of data used for the Computable General Equilibrium (CGE) model in this study are the Input Output (IO) National Table of 2010, included data based on the economic sector and data on the amount of government infrastructure spending from 2012-2016. I-O Table is a matrix that explains the transactions of goods and services between economic sectors at a certain time, and in the table can be explained the relationship between each economic sector that can be used as a tool to predict economic conditions in a country (Hamzah & Sofilda, 2016).

Equation Model and Analysis Method

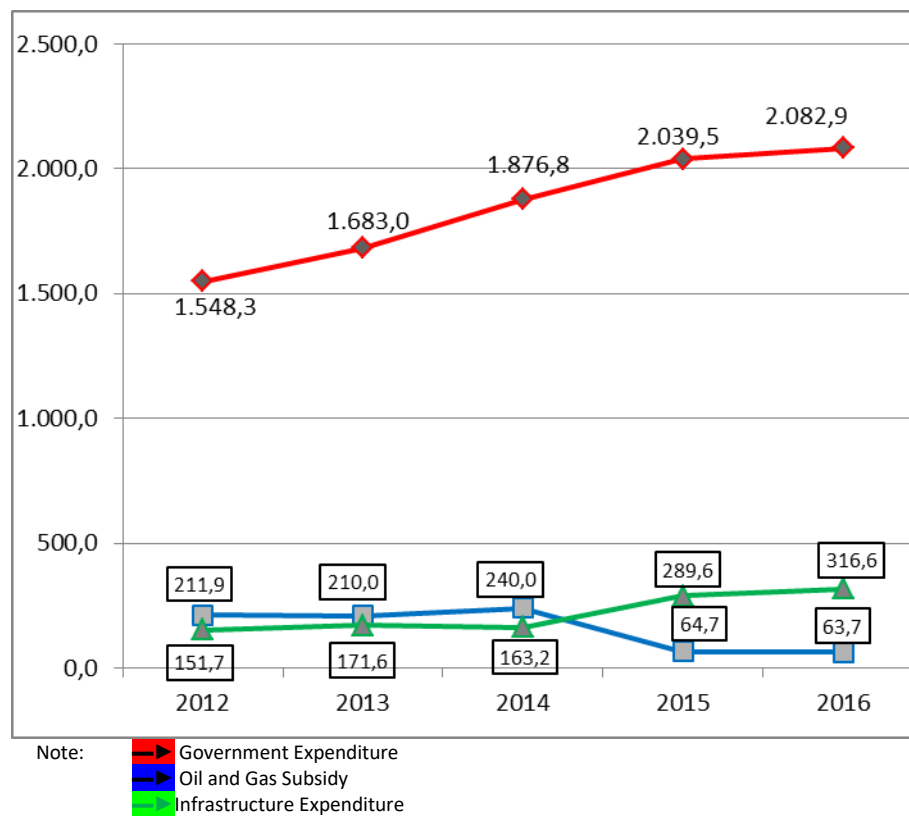
Referring to the government's policy to reduce the fuel and gas subsidy budget allocated to other budgets which are assumed to be more productive which can triggered to increase the economic growth, hence, it will be examined to what extend the policy bestows turmoil to the macroeconomic variables such as C (public consumption), I (investment), G (government spending), X (export) and M (import) which creates national productivity (Y). To find out the impact or influence, the Computable General Equilibrium (GCE) model was selected, which is used to observe the impact of "shock" as a result of new policies implemented that can affect into national economic conditions both in the short and long term.

The CGE model is a comparative static model. In order to find the research objectives, it has been performed an adjustment into the formation of the model, change and incorporation of the basic model derived from the CGE model based on ORANI-F (Horridge et al, 2006) and the WAYANG model (Wittwer, 1999). In the CGE model the assumption used is that all industries operate in perfect competition in both the input and output markets. With this assumption, it is assumed that there is no party is considered to be able to influence the market so that all components in the economy are price takers. In this model, there is a dynamic element that is shown by the accumulation of capital and the growth of the labor force each year. Furthermore, besides being a method, this model at the same time also being an analytical tool to examine the impact of fiscal policy on subsidized budgets on macroeconomic performance including public consumption, investment activities, changes in labor and others.

Results and Discussions

One of the components contained in the APBN is the subsidy which represents the government's policy in conducting the income equalization program. Including the energy subsidy is the fuel and gas subsidy budget allocated to the infrastructure development budget. The enactment of The Regulation of The President of the Republic of Indonesia Number 191 of 2014 has an impact on the government's fiscal policy in determining the amount of energy subsidies. An increase in infrastructure spending in 2015 from 2014 amounted to 126.4 trillion *IDR*. On the other hand, there was a decline in fuel and gas subsidy spending by 175.3 trillion *IDR* in the same period. The development of state spending in the fuel and gas subsidy sector and infrastructure spending from 2012 – 2016 can be seen in the graph showing below:

Graph 1
The Development of Government Expenditures, Fuel and Gas Subsidies and Infrastructures Spending Budget, Year of 2012 – 2016 (in Trillion IDR)



Source: Ministry of Finance; the Indonesian Statistic Bureau. Data processed.

Table 1 below shows the Indonesian Macro Economic Variables Growth from the year of 2013-2016.

Table 1: The Indonesian Macro Economic Variables Growth the year of 2013-2016

Macro-Economic Variables	2013	2014	2015	2016
Domestic/Household Consumption	4.30%	5.30%	4.96%	5.01%
Investment	3.90%	5.50%	6.20%	7.30%
Government Expenditures	IDR 1,683 T	IDR 1,876 T	IDR 2,039 T	IDR 2,082 T
Export	US\$ 182.5 M	US\$ 175.9 M	US\$ 150.3 M	US\$ 145.1 M
Import	US\$ 186.6 M	US\$ 178.1 M	US\$ 142.6 M	US\$ 135.6 M
Openly Un-employee Rate	IDR 5.88 M	IDR 5.70 M	IDR 5.81 M	IDR 5.50 M
Government Revenue (Tax Sector)	IDR 1.077 T	IDR 1.146 T	IDR 1.240 T	IDR 1.284 T
Economic Growth	5.7%	5.00%	4.80%	5.00%

Source: The Ministry of Finance & The Indonesian Statistic Bureau. Data processed

Data Processing Results

This research was conducted using the Computable General Equilibrium (CGE) processing method using Input Output (I / O) data in the year of 2010 and infrastructure spending data for the year of 2012-2016. The stages in processing the data is to combine the 2010 IO data with infrastructure spending budget data for 2012 - 2016 as a “shock” and then calculated by the program used an average number of the results of the shock which is ultimately gives the results of data processing as follows, as shown on Table 2 below:

Table 2: The Impact of the Budget Reallocation on Fuel and Gas into Infrastructures Budget Towards the Economic Macro Indicators in the Short and Long Run (Changes in percentage)

Macro Indicators	Variable Model	Short Term	Long-Run
Real GDP, Expenditure Term	x0gdpexp	0.225	0.281
Nominal GDP, Expenditure Term	w0gdpexp	-2.093	-0.212
Real Household Consumption	x3tot	0.000	0.021
Real Investment	x2tot_i	5.662	5.211
Export Volume	x4tot	-5.112	-6.654
Import Volume	x0imp_c	-0.152	-1.344
Term of Trade	p0toft	-1.510	-1.972
CPI/IHK	p3tot	-0.900	1.299
Real Inventory	x6tot	5.501	5.879
Agregate Revenue from Taxes	w5tax_cs	-0.432	-1.232
Amount of Agregat Output	x1prim_i	-0.007	-0.121
Government Expenditures/ Government Spending	w0govt_g	-0.237	-0.443
Real Income	Realwage	2.286	2.119
Employee Rate Absorption	lab_io	-0,517	-0,221

Source: Data processed

Household/Domestic/Public Consumption

The real household/public consumption figure is 0.000% which means that the reallocation of the fuel and gas subsidy budget to the infrastructure budget can maintain the people's purchasing power from going down. Furthermore, in the long run, household real consumption shows by 0.021%, which means that the fiscal policy implemented effect has an impact on increasing household consumption. In correlation with the level of public consumption, the results of the study show that the level of real wages in the short term is 2.228% and in the long term is 2.119%. These results provide information that there is an impact on increasing the purchasing power of most people because of the policy, therefore it can maintain its level of consumption.

Investment

The study showed that the Real Investment value is 5.662% for the short term and 5.211% in the long-run, means that the government policy is one of the stimulators of increasing investment activities.

Government Expenditures/Government Spending

The government expenditure component shows the value of minus 0.237% in the short term and minus 0.443% in the long term which means that the fiscal policy has an impact on reducing government spending in the short and long term.

Exports Activities

The export activity figures show the value of -5.112% in the short term and -6.654% in the long term which means that the policy of reallocating the fuel and gas subsidy budget into the infrastructure budget directly impacts the decrease in exports activities.

Imports Activities

The import activity figures show -0.152% in the short term and -1.334% in the long term, which means that the policy of reallocating the fuel and gas subsidy budget to the infrastructure budget causes the value of imports to fall.

Employee Rate Absorption

The employment rate shows -0.517% in the short term and -0.221%, which means that the policy of reallocation of fuel and gas subsidies to the infrastructure budget directly has an impact on reducing employment in both the short and long term.

Government/State Revenue

The government aggregate revenue figure from the tax sector shows the value of -0.432% in the short term and -1.232% in the long term which means that the policy of reallocating the fuel and gas subsidy budget to the infrastructure budget directly impacts the decrease in government revenue from the tax sectors.

Real Gross Domestic Product (Real GDP)

Real GDP in the term of expenditure shows 0.225% in the short term and 0.281% in the long term which means that the fiscal policy has an impact on increasing real GDP or in other words influences the increasing in national economic growth.

Comparison of the Research Findings on Several Empirical Data

When compared this findings with previous study hence will find that as follows: (i). Bleany et al, 2001 (in Chude & Chude, 2013:66), found that productive government spending will increase economic growth. Based on this research it was seen that productive government spending increased the real GDP. So, this study supported research led by Bleany et al, 2001; (ii). Solaymani et al, 2014, evidenced that there were some increased in real GDP, trade and investment. However, it is also found that it has an impact on the decline in community income, community consumption activities and also the welfare of rural communities. On the other hand, the results of this study indicated that the reallocation of the fuel and gas subsidy budget to the infrastructure development budget had an impact on increasing real GDP and increasing investment. So, this findings support the results of Solaymani et al., 2014. Meanwhile, the consumption variables of this research community do not support their research; (iii) Bashir, 2016 conducted research in Nigeria about the economic implications caused by the policy of eliminating fuel subsidies. The results of the research showed that the policies of the Nigerian government had a negative impact on people's lives. The results of this study indicated that the policy of reallocating the fuel and gas subsidy budget to the

infrastructure development budget did not reduce the level of public consumption; (iv) Das & Ganguly (2016) conducted a study in India on the policy of reducing fuel subsidies using the CGE method. Their results showed that there was a decline in public consumption activities for goods and services resulting in a decline in GDP of 0.6%. Meanwhile the results of this research showed that the reallocation of fuel and gas subsidies to infrastructure spending did not reduce the rate of public consumption both in the long term and short term and had an impact on increasing real GDP by 0.225% in the short term and 0.281% in the long term. By comparing the results of current research with previous research it can be seen the renewal and new evidences of the current research.

Conclusions and Suggestions

Based on the description of the results and discussion above, it can be concluded are as follow:

1. In terms of economic indicators such as Community Consumption, although the policy does not have an impact on people's consumption activities in the short term but it gives an impact on increasing long-term community consumption. This shows that infrastructure development has not provided a multiplier effect on the level of growth of public consumption in the short term. Meanwhile it will have an impact on increasing public consumption in the long run.
2. In terms of investment economic indicators, it can be seen that both in the short term and long term the policies adopted by the government have had an increased impact on the investment atmosphere in Indonesia.
3. In terms of Government Expenditure indicators, the fiscal policy has not been able to provide an impact that can increase the government spending both in the short and long term, which means that the policy has not been able to increase government revenue from the tax sector (PNP) or non-tax (PNBP).
4. In terms of export indicators, it is found that the fiscal policy has the effect of reducing nominal exports. This evidence can indicate that a reduction in the fuel and gas subsidy budget results in an increase in the price of goods due to an increase in transportation and distribution costs. As a result, the competitiveness of the goods and services are low because the price of goods and services being unable to compete with products and services from other countries.
5. In terms of import indicators, this fiscal policy has the effect of reducing on nominal imports. This can occurs because some export products depend on the availability of raw materials, semi-finished goods and capital goods from abroad/overseas. With the decline in export activities, import activities also declined which eventually the value of imported products dropped as well.
6. In terms of economic indicators of Labor/Employment Absorption, the policy has an impact on increasing unemployment rate in the short and long term even though the effect of unemployment caused by the policy evidently decreases in the long run.
7. In terms of economic indicators of Government Revenues, this fiscal policy has an impact on the decrease in the value of exports and imports. Besides that, the policy has not been able to increase public consumption in the short term., as consequences the state revenues from the tax sector will fall.
8. In terms of real GDP economic indicators, the fiscal policy of budget reallocation of fuel and gas subsidies to the infrastructure spending budget sector has an impact on increasing national economic growth in terms of real GDP indicators in perspective of spending that increases both in short and long term.

Suggestions

Based on the results of this study which shows that the budget reallocation of fuel and gas subsidies whose impact on real GDP is only 0.225% in the short term and 0.281% in the long term, there are several alternatives that can be suggested, as follows:

1. It is suggested that the policy of reallocation of fuel and gas subsidies should be directed to sectors that are able to stimulate the aggregate added value and have an impact on industrial growth that can lead to higher economic growth.
2. It is recommended that simulations of several fiscal policy options are carried out simultaneously so that policy choices can be identified which can have the highest positive impact on macroeconomic indicators both in the short and long term
3. It is recommended that fiscal policy options in reallocating fuel and gas subsidies to non-energy budgets either to infrastructure development budgets or to other budgets is performed through sectoral selecting and sorting which can encourage the productivity of each sector in order to contribute to in industrial activities that can provide maximum added value and export competitiveness both in the short and long term

4. In determining fiscal policy adopted through the reallocation of the fuel and gas subsidy budget to infrastructure development, it is better to give priority into infrastructure development that is able to support the development of manufacturing industries both in villages/sub-urban areas and cities/urban area thus it will increase the competitiveness of the domestic manufacturing industry in the face of competition domestically and globally.

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