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#### **Abstract**

Problem the fiscal deficit still has a bad influence on the increase in government debt every year. So far, the government has tended to withdraw new debt to cover the fiscal deficit. In conditions of negative primary balance, debt withdrawals tend to increase deficits and fiscal failures in the long run. This condition is also exacerbated by the Covid-19 that hit Indonesia. The deficit has exceeded 3 percent of GDP. even though the state finance law is a maximum of 3 percent of GDP. This condition has had a bad influence on people's purchasing power. caused by a decrease in purchasing power of goods and services. In dealing with this condition, the government needs to increase people's purchasing power through price regulation. Energy subsidiesclosely related to fiscal policy and a number of macroeconomic variables such as: inflation, exchange rates and BIR. This study aims to determine the relationship between energy subsidy control and fiscal deficit, in order to obtain an optimal fiscal deficit. Through the control of energy subsidies, the optimal value of the fiscal deficit can be obtained. Subsidy controls also affect the amount of government debt, so that optimal debt is obtained.

Keywords: Fiscal Deficit, Control, Energy Subsidy.

#### 1. INTRODUCTION

The problem of fiscal deficit is closely related to policy, which places government spending as an important instrument affecting economic growth. Deficit as the impact of low state revenues compared to spending. In dealing with a deficit, it can be done by allowing the deficit to grow by itself, while looking for sources of income to cover the deficit, or by pulling out debt. Debt withdrawals are intended to meet some of the expenses that cannot be met through acceptance. It is necessary to reduce the deficit in order to increase fiscal space. If the deficit reduction is a form of reducing spending, it is feared that it will have an impact on a slowdown in output growth. Meanwhile, reducing the deficit through the withdrawal of debt, of course there will be potential for debt accumulation. The accumulation is caused by the payment of debt installments along with interest made through the withdrawal of new debt. In the face of this condition, fiscal policy needs to be evaluated. From several studies, government spending has a positive and significant effect on increasing output. Fiscal policy is intended to increase national income, control inflation, and encourage economic growth, and GDP as an indicator in its measurement.

Studies conducted, the government needs to control the fiscal deficit. So that optimal growth can be achieved. The fiscal sustainability occurs if the current debt level is below a certain threshold point. A significant increase in debt has resulted in default in a number of debt-intolerant countries. The increase in debt is at an alarming rate, with the debt-to-GDP ratio increasing. Another study states that debt is an instrument in dealing with a deficit, but a maximum limit is required. An increase in debt accompanied by volatility in interest rates will result in fiscal financing difficulties. The increase in debt in the process of fiscal

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## DYNAMIC RELATIONSHIP BETWEEN ENERGY SUBSIDY AND FISCAL DEFICIT IN INDONESIA

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consolidation in the long run, does not necessarily lead to a reduction in the debt-to-GDP ratio. This indicates that the deficit can stop adjusting once the debt has reached a certain threshold.

Fiscal sustainability is closely related to energy subsidy spending, inflation, exchange rates, interest rates and world oil prices. Fluctuating exchange rate conditions have resulted in a sharp increase in government debt. Inflation needs to be controlled at the lowest level. This is related to the welfare of the community and the smooth production and distribution of goods and services. High inflation tends to reduce people's purchasing power, causing production costs to be high, and goods/services to be expensive. On the other hand, the weakening of the exchange rate (depreciation) against foreign exchange resulted in increased government spending. Along with the swelling expenditure related to foreign exchange. The weakening of the exchange rate also affects the increase in debt.

The realization of subsidy spending far exceeds the subsidy fiscal limit set in the APBN. This will exacerbate the deficit. The growth of government debt is in line with the increase in spending and without the support of good state revenues. This condition is exacerbated by the increase in spending for handling Covid-19, resulting in a sharp increase in the fiscal deficit. The problem of fiscal deficit is closely related to the primary balance. The primary balance becomes a real measure of actual fiscal capacity. In a deficit condition, it is important to implement a spending regulation policy. Energy subsidies are government expenditures which in the past few years have experienced a significant reduction. The policy of reducing subsidy spending has had a bad influence on people's purchasing power. The same is experienced by manufacturers. Producers are unable to produce low-priced outputs and services.

Fiscal sustainability has two indicator dimensions, namely: public debt and fiscal deficit, which are projected in the medium term. Fiscal policy is an economic policy that is intended to direct economic conditions for the better, by changing government revenues and expenditures. Fiscal policy instruments include government spending and tax revenues. An increase in taxes and government spending can affect the variables of aggregate demand and economic activity, as well as the distribution of income. An increase in tax rates can reduce people's purchasing power, reducing the amount of output for producers. While an increase in government spending can increase aggregate demand, an increase in output. The fiscal sustainability is the sustainability of government revenues and expenditures, both on the planning and implementation side. In a deficit condition, income is smaller than spending. Financing planning is an important part to be taken into account in fiscal sustainability. In addition to the amount of debt and the primary balance, the magnitude of the real interest rate becomes the burden of government payments on existing debt. The rate of economic growth is positively correlated to fiscal sustainability. Thus fiscal sustainability is rooted in primary balance and debt management. Fiscal sustainability is closely related to public debt regulation. Fiscal sustainability is needed so that economic growth can occur in the short and long term.



Fiscal sustainability studies then began to develop and resulted in the application of various measurement methods. Fiscal sustainability studies are indispensable for policy makers as an indication of the need to correct a country's fiscal policy. In the 2018 State Budget Note, it is stated that the challenges in realizing quality and healthy fiscal sustainability are: (a) limited fiscal space in order to support the financing of priority national development programs; (b) the need to strengthen the quality of spending to realize a healthy and productive APBN; (c) the need for primary balance control; and (d) the need to strengthen the pattern of fiscal absorption. An important pillar of fiscal sustainability is quality government spending. Government spending can affect the components of GDP formation in Indonesia, which is still quite large, which is around 20 percent. For this reason, government spending is directed to increase output. In addition, current economic growth is still supported by public consumption, so government spending is also directed at empowering people to have good purchasing power. Fiscal sustainability needs to pay attention to the relationship between the primary balance and outstanding debt. This relationship assumes that the present value of the surplus primary balance in the future is the same as the outstanding debt at a certain time with the present value constraint approach. If the outstanding debt from year to year has increased, the primary balance surplus from year to year also increases. With an increasing trend equal to, or greater than the increase in debt, so the debt repayment period is getting shorter. The primary balance is the difference between state revenues and expenditures, excluding debt and interest payments. Meanwhile, the fiscal deficit is the difference between state revenues and expenditures, including debt payments.

The fiscal deficit in practice refers to the Maastricht treaty, which puts a fiscal ratio of debt to GDP ratio, and does not exceed 60 percent and a maximum deficit to GDP ratio of 3 percent. The fiscal deficit is a form of fiscal policy that places expenditures greater than revenues, which aims to encourage an increase in aggregate demand and output. Fiscal deficits can be grouped into: primary deficit, which is the difference between government spending (excluding debt installments) and all government revenues. And the fiscal deficit is the difference in receipts that is smaller than expenditures, including debt payments and interest. These two indicators are often used to measure fiscal sustainability.

Fiscal deficit as a government policy that places expenditures greater than state revenues. This policy is closely related to the fiscal stimulus policy in the economy. Deficit policy is ideally used when the economy is in recession, so that it can improve the economy. Currently, the government is still maintaining an expansionary fiscal policy to support economic growth. This policy has the potential for inflation to occur, along with the increase in the amount of money circulating in the community, which affects people's purchasing power to increase. For the government, it is necessary to limit the fiscal deficit not exceeding 3 percent of GDP.

The problem faced by the government at this time is still limited fiscal space in the fiscal. This is due to high mandatory spending (mandatory spending) which is allocated every year and inefficiency in spending, mandatory expenditures are expenditures whose designation has been determined by law and cannot be changed. It is basic in nature and

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strives to be allocated annually, such as: education, health, regional transfers and subsidies. As an instrument in the mechanism of public policy, so that subsidies are still allocated. This is a manifestation of the government's discretion towards the economically weak community.

The policy of reducing energy subsidy spending has had a negative impact on the community. The purchasing power of the people has decreased and the same is experienced by producers in producing goods and services. Pallocating energy subsidy spending, in the context of providing fuel at affordable prices. Fuel is a strategic commodity for the community and one of the important commodities for development. Therefore, the state has an interest in providing fuel for the wider community. Although in practice, the fuel subsidy spending policy still poses a dilemma. KThe energy subsidy policy so far has not been well targeted and tends to hamper national economic growth. Referring to the existing conditions, it is necessary to reorganize energy subsidy spending, which is more basic and structural. This study aims to implement optimal control theory through energy subsidies, so that the fiscal deficit becomes optimal. Through the energy subsidy target value will be obtained from the optimal value of the fiscal deficit. The optimal value of the deficit is closely related to government debt, which in the past few years has experienced a significant increase. Optimal control is also an instrument in determining an optimal fiscal policy. The government can control its spending, so that policies are more optimal. Optimal control as a form of fiscal policy implementation, in order to influence the deficit through the energy subsidy.

#### 2. IMPLEMENTATION METHOD

### 2.1 Data Analysis Sources and Models

This study uses data in series with the period: 1980-2020. Sources of data were obtained from the Ministry of Finance of the Republic of Indonesia, Bank Indonesia, BPS RI, and the National Fiscal Agency. The analytical model consists of: (a) the formulation of a simultaneous equation Keynesian macroeconomic model which is built based on the framework of economic theory and empirical facts. (b) establish an optimal control model in which fiscal policy, namely energy subsidies, government debt, state revenues, research expenditures as controlled variables on fiscal sustainability. (c) testing the accuracy of the deviation from the average target value and optimal value on macroeconomic variables, namely inflation and exchange rate variables by using the t-Test Paired Two Samples for Means difference test.

Keynes's Macroeconomic Model:

Behavioral Similarities:

a. Energy Subsidy:

$$ES_t = a_{11} + a_{12}FD_t + a_{13}ES_{t-1} + u_{1t}$$
 (3.1)



Where:

 $ES_t$  = Energy Subsidy

FD<sub>t</sub> = Fiscal Deficit

 $ES_{t-1}$  = Energy Subsidy in the previous year

b. Government Debt:

$$GD_t = a_{21} + a_{22}FD_t + a_{23}ER_t + a_{24}GD_{t-1} + a_{25}FD_{t-1} + u_{2t}$$
 (3.2)

Where:

 $GD_t = Government Debt$ 

 $FD_t = Fiscal Deficit$ 

 $ER_t = Exchange Rate$ 

 $GD_{t-1} = Government debt$ 

 $FD_{t-1}$  = Fiscal Deficit in the previous year

### **Identity Equation:**

a. Fiscal Deficit:

$$FD_t = GD_t + Inf_t + ER_t + BIR_t + (R_t - (GE_t - ES_t) (3.3))$$

Where:

 $FD_t = Deficit Fiscal$ 

GD = Government debt in the previous year

Inf = Inflation

ER = Exchange Rate

BIR = BI Interest Rate

 $R_{t}$  = State Revenue

 $GE_t = Government Expenditure$ 

 $ES_t = Energy Subsidy$ 

In this study, using discrete dynamic optimal control to obtain optimal fiscal policy. The optimum control problem is the problem of selecting a control modifier among all the admissible control modifiers, i.e. a control that takes the system from the initial state at the initial time to the final state at the final time, thereby providing a maximum or minimum value for the objective function. Control variables and state variables in differential equations or differential equations in optimal control models can represent various parameters in economic theory. In this study, the problems studied involve control in the economy in the form of fiscal policy, namely fiscal sustainability, while the dynamic system is the Keynes macroeconomic model, and the target is a stable economy.

The discrete optimum control problem is to minimize the objective function in the form of a quadratic function to the deviation of the state variable and control variable from the target value. The quadratic form of the objective function gives a single solution. Meanwhile, the minimization of the quadratic function ensures that the optimal control

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function has a single extreme point. The target value of the state and control variables in the objective function is intended so that the optimal state and control variable values approach the target value from the observations. The optimal control model used in general can be written as follows:

Min objective function:

$$L = \frac{1}{2} \sum_{t=1}^{T} \begin{bmatrix} x_t - \breve{x}_t \\ u_t - \breve{u}_t \end{bmatrix}' W_t \begin{bmatrix} x_t - \breve{x}_t \\ u_t - \breve{u}_t \end{bmatrix} (3.4)$$

Against constraints:

$$x_t = Ax_{t-1} + Bu_t + Cz_t$$
,  $t = 1, ..., T$  (3.5)  
 $x_{t0} = x_0$   
 $u_{t0} = u_0$ 

#### Where:

 $x_t$  = is a vector of n-dimensional state variables for time t

 $u_t$  = is the vector of the medimensional control variables

 $\mathbf{x}_t$  = is the target value in the state variable

 $\mathbf{u}_{t} = \text{is the target value on the control variable}$ 

W<sub>t</sub> = is a matrix containing the weight of deviation on the state variable and control variable to the target value.

 $x_{t-1}$  = Variable in year t-1 (lag variable)

 $z_t$  = is a vector of exogenous (non-control) variables

 $x_{t0}$  = Initial value of state variable

 $u_{t0}$  = Initial value of control variable

A = is the parameter matrix of variavel lag

B = is the parameter matrix of the control variable

C = is the parameter matrix of the endogenous (non-control) variables

T = is the final time period of the specified time horizon

The variables used in the optimal control model consist of the following variables:

Endogenous Variable (State):

x[1] : ES = Energy subsidy

x[2] : GD = Government Debt

x[3] : R = State Revenue

x[4] : GE = Government Expenditure

Variables in year t-1 (lag variable):

$$x_{t-1}[1] : ES_{t-1}$$



$$x_{t-1}[2] : GD_{t-1}$$
  
 $x_{t-1}[3] : R_{t-1}$   
 $x_{t-1}[4] : GE_{t-1}$ 

Control Variable : = Fiscal Deficit u[1]: FD

Exogenous (non-Control) variables:

z[1]: Inf = Inflation

z[2]: ER = Exchange Rate

z[3]: BIR = BI Rate

This research model uses optimum control dynamics, so the initial conditions for the state variables and control variables are given. The initial value is the last value of the estimated time horizon. The target value of the state variable and control variable (in the objective function is given based on the growth rate (%) at the last value in the observation time horizon. The constant matrix weight W in the objective function is a determination of the weight of the variable, where each variable is given the same weight, namely 1 (one), describes that each variable is expected to contribute or have the same role to achieve the optimal value, while if it is given a greater weight, this means that it is prioritized to achieve the target. $X_t$  dan  $U_t$ ).

### 2.2 Differential Test

Hypothesis testing was carried out using the average difference test (t test). In the calculation using the t-Test Paired Two Samples for Means to test whether there is a significant difference (deviation) between the target value and the optimal value, through energy subsidies. Hypothesis testing is used to see the deviation between the average target value of macroeconomic variables, namely the exchange rate, exchange rate and SBI with the optimal average value of macroeconomic variables.

#### Hypothesis test used:

 $H_0$ :  $\mu_1 = \mu_2$ , average the target value and the average optimal value for the fiscal deficit are considered the same or the deviation is considered small.

 $H_a: \mu_1 \neq \mu_2$ , the average target value and the average optimal value for the fiscal deficit are considered to be not the same or the deviation is large.

Significance level ( $\alpha$ ) used is 5% or 0.05. Acceptance criteria for hypothesis testing, namely: accept H0 if t count  $\leq$  t table or p-value > alpha ( $\alpha$ ), or accept Ha or reject H0 if t count > t table or p-value alpha ( $\leq \alpha$ ).

#### 3. RESULTS AND DISCUSSION

#### 3.1 Interaction of Government Debt on Fiscal Deficit

The effect of fiscal policy through a fiscal deficit on the economy can be done by determining the constraint function of the optimal control for each parameter of the Keynes

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macroeconomic model estimation. The estimation of the macroeconomic model uses a two-stage least square (2SLS), because in the previously described model there is an identity equation, which results in a biased estimator (if an estimate is made using OLS). Table 1 The estimates generated from the 2SLS are used for prediction and optimization models. The estimation results are as follows:

Table 1 Government Debt 2SLS Regression Results

Variable	coefficient	Standard error	T statistics	Prob
С	-12994.37	27135.06	-0.478878	0.6362
FD	0.175699	0.030037	5.849318	0.0000
GD(-1)	0.723141	0.055717	12.97889	0.0000
R-Squared	0.995	Durbin Watson	1.76	
Adj R-Squared	0.998	Instrument Rank	7	
F-Stat	8354.87			

**Source:** Data Processing Results, (2021). \*p < 0.1, \*\*p < 0.05, \*\*\*p<0.01

The result of the first estimation is the estimated government debt (GD). The increase in government debt is in line with the increase in government spending to finance various government needs. The test results show government debt (GD (-1) has a positive and significant effect on increasing the fiscal deficit (FD). Government debt is closely related to the realization of state revenues, especially those from taxes. In an effort to prevent the spread of covid 19, the government has imposed restrictions on activities. This policy provides a wide range of economic activities for the community. One of the impacts of this policy is that people's purchasing power has decreased sharply, as illustrated by the lower inflation rate.

### 3.2 Interaction of Exchange Rate on Fiscal Deficit

The following table describes the relationship between the exchange rate, BI Rates and the fiscal deficit.

Table 2 Exchange Rate (ER) 2SLS Regression Results

Variable	Coefficient	Standard error	T statistic	Prob
C	382013.8	83738.25	4.561999	0.0001
DF	-0.042516	0.043010	-0.988522	0.3328
BIR	-18579.50	2579,094	-7.203888	0.0000
ER(-1)	1.117192	0.122226	9.140401	0.0000
R-Squared	0.993	Durbin Watson	1.93	
Adj R- Squared	0.992	Instrument Rank	7	
F-Stat	1213.48			

**Source:** Data Processing Results, (2021). \*p < 0.1, \*\*p < 0.05, \*\*\*p<0.01



Table 2, the results of the 2SLS regression, shows the exchange rate value with a positive and significant slope to fiscal deficit. Unlike the case with the BI rate which shows a negative and significant slope. These two variables have a significant effect on the fiscal deficit. In conditions of strong economic pressure, the exchange rate is still relatively stable and is at a value of Rp. 14,550 per US dollar. Likewise, the interest rate (I) is still at a safe level. The stability of interest rates could be due to the low level of community economic activity.

#### 3.3 Interaction of BIR on Fiscal Deficit

Table 3 below describes the relationship between SBIs and the fiscal deficit. Bank Indonesia through monetary policy can influence the national economy, especially through the circulation of money in society (Money Supples = MS and Money Demand = MD). In an open economy, interest rates are an important part that influences the improvement of the economy. However, the volatility of interest rates actually affects the exchange rate, thus affecting the government debt. Efforts to strengthen the rupiah exchange rate against foreign currencies and the stability of BI interest rates are also intended to maintain the amount of debt, especially the exchange rate. Foreign debt carries a high risk as a result of the decline in the exchange rate.

**Table 3** 2SLS BIR Regression Results

Variable	Coefficient	Standard error	T statistic	Prob
С	82816.18	63139.45	1.311639	0.12016
FD	1.26918	0.659863	0.148916	0.0042
BIR	0.570754	0.043230	13.20278	0.0000
R-Squared	0.948	Durbin Watson	0.69	
Adj R- Squared	0.944	Instrument Rank	7	
F-Stat	233.40			

**Source:** Data Processing Results, (2021). \*p < 0.1, \*\*p < 0.05, \*\*\*p<0.01

The results of the regression test show that the BIR value has a positive and significant effect on the fiscal deficit. The increase in BIR has an effect on increasing the fiscal deficit. For this, Bank Indonesia's policies are needed to maintain the stability of BIR.

### 3.4 Interaction of Inflation, BIR and Inflation on Fiscal Deficit

Table 4 2SLS Inflation Regression Results (Inf)

Variable	Coefficient	Standard error	T statistics	Prob
С	9641,507	80650.06	0.119547	0.9058
FD	0.038090	0.052624	0.723816	0.4762***
BIR	-21.29704	12.21238	-1.743889	0.0940*
Inf(-1)	1.003877	0.239425	4.192868	0.0003
R-Squared	0.922	Durbin Watson	1.94	
Adj R- Squared	0.913	Instrument Rank	7	
F-Stat	100.34***			

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**Source:** Data Processing Results, (2021). \*p < 0.1, \*\*p < 0.05, \*\*\*p<0.01

Table 4 shows the BIR value in the negative direction but not significant to the fiscal deficit. Meanwhile, the inflation rate shows a positive and significant value on the fiscal deficit. The problem of current inflation is not the high rate of inflation, but rather the relatively small value of inflation. Small values do not always give a good meaning, but this value also gives meaning to the lack of people's purchasing power. When prices fall (deflation), people's purchasing power is low. This is because people experience reduced income and even no income at all. To maintain people's purchasing power, the government's role is needed, such as energy subsidy assistance. Through energy subsidies, the government can influence the prices of goods and services.

#### 3.5 Optimal Control Model and Simulation Results

The Keynes econometric model discussed earlier is a system of equations that must be met in determining the values of the variables (state and control) at the time of prediction to optimize an objective function. Furthermore, the objective function L is defined which states the closeness of the value of each variable to the target to be achieved at each observation time. Since the value of the variable is expected to be as close as possible to the given target value, the objective function is to minimize the value of L. Thus, the control system is optimal with the objective function as described and the constraints.

The target value of the state variable and control variable (in the objective function is given based on the growth rate (%) at the last value of the observation time horizon. The weight of the constant matrix W in the objective function is the determination of the weight of the variable, where each variable is given the same weight, namely 1 (one), describes that each variable is expected to contribute or have the same role to achieve the optimum value. $\vec{x}_t$  dan  $\vec{u}_t$ )

Simulation of fiscal policy through regulation of energy subsidy spending as a form of government control over the fiscal deficit. The regulation of energy subsidy spending is closely related to government debt, exchange rates, SBIs, inflation. The initial value of the state variable and control variable in the objective function is defined based on the last value in the observation time horizon. The policy simulation is selected in the 2021-2025 period. The constraint function of the optimal control is a reduced form equation from Keynes's macroeconomic model.

2021 2022 2023 2024 2025 7.284 Target 6.562 6.865 7,684 7.918 GD Optimal 6.568 6.625 6.767 7.062 6,966 Target 14,869 14,902 15,348 15,609 14,650 State ER Optimal 14,648 14,609 14,948 15,650 15,647 Variables 7.52 6.00 5.00 **Target** 4.56 5.75 BIR Optimal 6.67 6.53 6.55 6.65 6.42 Inf **Target** 3.06 3.93 4.81 5.69 5.58

Table 5 Result Optimal Value and Target Value



		Optimal	5.06	5.06	5.06	5.26	5.36
	FD	Target	6.97	7.59	6.28	5.08	5.00
	FD	Optimal	5.02	3.10	3.35	3.10	3.07
Control	ES	Target	18,19	19.48	17.35	15.39	14.25
Variable		Optimal	20.11	21.15	18.00	15.25	15,30

Source: Data Processing Results, (2021)

Based on table 5 shows that in 2021 the lowest deviation is government debt, exchange rate, and fiscal deficit, while inflation occurs in 2025. Optimal growth of government debt to fiscal deficit from 2021-2025 shows an increase. For optimal growth the government exchange rate shows a value in the range of 14,609 occurring in 2022. The optimum growth of BIR to the fiscal deficit is in the range of 6.42 which occurs in 2025 and the highest in 2021. Optimal growth of inflation to the fiscal deficit occurs in 2021-2023 shows a value of 5.06. The lowest fiscal deficit optimal growth occurred in 2025, namely 3.07 and the highest in 7.59. The value of the fiscal deficit indicates the low fiscal ability to finance spending. The condition of the fiscal deficit due to the Covid-19 effect has worsened the state's finances. This can be seen from the movement of the fiscal deficit which tends to increase from year to year. If this condition is not immediately addressed, it is feared that it will damage the fiscal. In the government control variable through energy subsidies, in 2021-2025 it shows the lowest value in 2024 with a value of 15.25 while the highest value occurs in 2022 with a value of 21.15.

Post-expansion fiscal policy has had a negative impact on the fiscal. Efforts to increase state revenue, especially from the tax sector, have not been able to give satisfactory results. However, efforts to accelerate economic growth continue. This is illustrated by the increase in government spending every year. It turned out that this condition had a negative impact on the fiscal, especially through excessive debt growth. This condition was exacerbated by increasing the government's reductions in handling Covid -19. By law, the deficit is limited to 3 percent of GDP.

The policy of limiting energy subsidy spending did not have a good effect on economic growth. In recent years, the restriction on energy subsidies has had a bad effect on economic growth, which only grew by 5 percent per year. This condition is actually different from the era of energy subsidies, economic growth reached 6 percent per year. However, the policy of increasing subsidy spending cannot be implemented immediately. This is due to the low fiscal space. However, this policy is necessary especially in an effort to increase people's purchasing power and output growth. So that the industrial sector will grow.

#### 4. CONCLUSION

Optimal control policies related to energy subsidy spending will be a solution in conditions of fiscal deficit and excessive debt growth. Through optimal control, optimal policies will be obtained, both for subsidy spending and debt growth. The energy subsidy policy is believed to be able to stimulate output growth. Which is an indicator of economic growth.

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In a deficit condition, the policy of regulating energy subsidy spending is an important consideration to continue in the future. Subsidy spending is believed to be able to increase the amount of output of goods and services, through increasing people's purchasing power. The policy of limiting energy subsidy spending so far is an inappropriate action. The previous assumption was that subsidized spending could increase fiscal space and encourage economic growth, in reality this could not be realized. In the conditions of covid 19 and the economic recession, a fiscal policy that is truly able to provide impetus is needed to keep the economy growing. The loss of people's purchasing power as a result of the decline in income has affected producers in carrying out production. The conditions that occur are in fact an increase in the deficit and a decline in economic growth.

The policy of refocusing in fact only exacerbated the increase in the deficit, along with the increase in government spending. For this, efforts are needed that are able to provide a stimulus to economic growth. Through increased subsidy spending, it is believed that in the long term it will increase state revenues and reduce the amount of debt. This is in line with the increase in state revenue from the tax sector. However, the policy for regulating subsidy expenditure needs to be carried out more fundamentally and structurally, so that the desired objectives can be realized. optimally contributes to the optimal value of the fiscal deficit. For this, efforts are needed that are able to provide a stimulus to economic growth. Through increased subsidy spending, it is believed that in the long term it will increase state revenues and reduce the amount of debt. This is in line with the increase in state revenue from the tax sector.

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