



Analysis of the Effect of Employee Spending, Goods Shopping and Capital Expenditure on the Realization of Tax Revenue in Indonesia

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ABSTRACT

This study examines the effect of the realization of government spending consisting of goods expenditure, capital expenditure and employee expenditure on tax revenue in Indonesia. In this study, we use four analytical methods that consist of Granger Test, Partial Adjustment Model (PAM), Error Correction Model (ECM) and Vector Autoregression (VAR). The result shows that the realization of goods and employee expenditure are significant determinant of the tax revenue. Further examination shows that the shocks on goods and employee expenditure have a positive impacts toward tax revenue. However the shock effects are different on those variables. On the shock to goods expenditure, the tax revenue response will occur directly, in contrast to shock on employee expenditure that requires time lag. This study also finds that between PAM and ECM, the ECM model is more appropriate to be used to explain the effect of government spending on tax revenue in Indonesia.

Keywords: Goods Expenditure, Capital Expenditure, Employee Expenditure, Tax Revenue

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INTRODUCTION

One of the main functions of the state is to create welfare for its citizens. This function is carried out through various programs and activities carried out by the government. To carry out various government programs and activities, of course, a lot of funds are needed. The funds are allocated in the state revenue and expenditure budget (APBN) as state expenditures. In Indonesia, government expenditure (state expenditure) can be classified into goods expenditure, personnel expenditure and capital expenditure.

On the other side of the state revenue and expenditure budget (APBN) a state revenue plan is drawn up. In Indonesia, taxes are one of the main sources of state revenue. Since 2008 tax revenue has grown from IDR 566 trillion to IDR 1,339 trillion in 2017 (BKF, 2019). In the 2018 State Budget, it was recorded that the tax revenue target reached 85 percent of the total planned state revenue (BKF, 2019).

In the relationship between government spending and tax revenue there are several different views. The spend-tax hypothesis states that government spending affects tax revenue, on the other hand the tax-spend hypothesis argues that tax revenue determines the amount of government spending. different.

Thus, what is the prevailing view empirically in Indonesia? What is the causal relationship between government spending and tax revenue in Indonesia? Is government spending an important factor affecting the amount of tax revenue? These are the questions that the author wants to answer by conducting this research.

The state revenue and expenditure budget is a plan of income and expenditure in one fiscal year. Meanwhile, state spending can be divided into routine spending, development spending and balancing funds. Routine expenditure consists of personnel expenditure and goods expenditure while development expenditure consists

of capital expenditure. This state revenue and expenditure budget is made with the aim of encouraging, controlling and developing the country's economy so that in the end the welfare of the community can increase.

In accordance with the above definition, one of the components of the state budget of revenues and expenditures is government expenditure. This government expenditure is a form of government intervention to support economic activity by providing goods and services that cannot be provided by the private sector and ensuring a fair and equitable distribution of wealth.

Until now, there are at least four theories that try to explain the relationship between government spending and tax revenues, namely: The spend-tax hypothesis, tax-spend hypothesis, fiscal synchronization and institutional separation. The spend-tax hypothesis proposed by Peacock and Wiseman is based on the view that the government is always trying to increase spending, however, people do not like to pay large taxes to finance the growing government spending.

Peacock and Wiseman base their theory on the view that society has a level of tax tolerance, that is, a level where people can understand the amount of tax levy required by the government to finance government spending. So people realize that the government needs funds to finance government activities so that they have a level of willingness to pay taxes.

Thus, it can be concluded that in Peacock and Wiseman's theory, the relationship between government spending and tax revenue is stated. In this theory, it is stated that government spending can be followed by an increase in tax revenue.

On the other hand, the tax-spend hypothesis presented by Friedman assumes that there is a positive relationship between tax revenue and government spending. In this theory, an increase in

the tax burden will have an impact on an increase in government spending. On the other hand, a reduction in taxes will limit government programs which in turn will result in a decrease in government spending. Thus, according to this theory, reducing the tax burden can be an alternative solution in overcoming the budget deficit.

In the third theory, namely fiscal synchronization, the government basically does not only look at the revenue or expenditure side. In this theory, fiscal decisions taken by the government are highly dependent on public opinion related to the government's function as the provision of public services and the government's function in income redistribution. Thus, according to this theory, there is a mutually influencing relationship between government revenues and expenditures.

The last theory is institutional separation which states that government revenues and expenditures are independent and do not affect each other. This is based on the idea that there is a separation of functions between the legislature and the executive in a country.

Thus, from the four theories above, which theory applies empirically in Indonesia? There are several studies that examine the relationship between government spending and tax revenue. One of the studies that examines this is the research conducted by Hondroyannis and Papapetrou (1996) in Greece which states that there is a long-term relationship between government spending and tax revenue. Another study also conducted by Richter and Dimitrios (2013) in Greece concluded that basically government spending affects the amount of tax revenue, and thus this study supports the Thespend-tax hypothesis.

The spend-tax hypothesis is a theory which states that the political system has basically determined a country's budget first, and then looks for ways to finance the budget (Richter & Dimitrios, 2013). The

problem is that this budgeting system will have an impact on the state budget deficit (Baffes & Shah, 1993). Agreeing with this, Friedman argues that the fiscal problem is basically not due to the application of too high taxes, but occurs due to the realization of government spending that is too large (Anderson, S. Wallace, & Warner, 1986). However, this is different from the opinion of Blackley (1986) which states that it is state income that affects state spending.

To test this difference of opinion, several studies have been conducted in various parts of the world. Research conducted by Ewing and Payne (1998) in South America found that the causality relationship between spending and state income can be different in each country. In Chile and Paraguay the causal relationship occurs in two directions, in contrast to Colombia, Ecuador and Guatemala which support the tax-spend hypothesis.

The tax-spend hypothesis also occurs in Spain (Kollias & Kollias, 2000) as well as in oil-producing countries (Fasano & Wang, 2002). Different results occur in the United States where the spend-tax hypothesis holds (Jones & Joulfian, 1991). In addition to the United States, this spend-tax hypothesis also occurs in OECD countries according to the results of research by Joulfian and Mookerjee (2006). As for Indonesia, the test conducted by Sriyana (2009) shows that there is a long-term relationship between tax revenues and state spending. Furthermore, in relation to GDP, Rosoiu (2015) states that an increase in tax revenues and government spending has a positive impact on an increase in a country's GDP.

Another study conducted by Alizadeh and Motallabi (2016) examined the relationship between value added tax and government spending in Iran from 2008 to 2014. The results of this study state that value added tax has a significant effect on government spending, both in the form of routine and development expenditure.

In their research, Alizadeh and Motallabi (2016) used the Auto Regressive Distributed Lag (ARDL) method.

From the results of the research above, it turns out that empirically there are differences in research results in various countries, where in one country the spend-tax hypothesis applies, but in other countries the tax-spend hypothesis or even fiscal synchronization can apply.

In connection with the differences in the results of the research above, the authors are interested in conducting research on the causal relationship between state spending and tax revenues in Indonesia. This study will also examine the effect of government spending on tax revenue in Indonesia. As a research novelty, in this study, the expenditure carried out by the government will be broken down into three basic components, namely goods expenditure, capital expenditure and personnel expenditure.

This research will also be carried out using various methods, including Granger Test, PAM, ECM and VAR, to then compare the results of these various

methods. This study will also examine the causal relationship between government spending and tax revenue in Indonesia. So it can be concluded whether government spending affects tax revenue, or vice versa tax revenue affects government spending, or there is a mutually influencing relationship between government spending and tax revenue.

METHODOLOGY

The data used in this study is data on the realization of the Indonesian state budget (APBN) for 2007-2017. The data used is monthly data so that there are 132 data series. From the APBN realization data used 3 (three) variables consisting of the dependent variable, namely the realization of total tax revenues and the independent variable consisting of the realization of goods expenditures, the realization of personnel expenditures, and the realization of capital expenditures.

The operational definitions of the variables used in this study can be summarized in the following table:

Table 1.
Variable Operational Definition

Variable	Notation	Information
Dependent variable	TAX	Total amount of tax revenue in a given month
Independent variable	BBARANG	The value of shopping for goods in a certain month
Independent variable	BMODAL	Value of capital expenditure in a certain month
Independent variable	BPEGAWAI	Value of employee expenditure in a certain month

As previously explained that in this study, will be conducted testing the effect of spending on goods, capital expenditures and personnel expenditures on tax revenue. To perform these tests, PAM and ECM methods are used. The research model can be described as follows:

Model I (PAM):

Partial Adjustment Model (PAM) test is a test with the assumption that in the long run an equilibrium point will occur, which can be presented in the following model:

$$TAX_t = \beta_0 + \beta_1 BBARANG_t + \beta_2 BMODAL_t + \beta_3 BPEGAWAI_t + \beta_4 Tax_{t-1} + e$$

Model II (ECM):

The ECM test is a test carried out to identify long and short-term relationships that occur due to cointegration between research variables. The ECM model used in the study can be presented as follows:

$$D(TAX)_t = \beta_0 + \beta_1 D(BBARANG)_t + \beta_2 D(BMODAL)_t + \beta_3 D(BPEGAWAI)_t + \beta_4 \mu_{t-1} + e$$

Because the research data is time series data, in order to conduct research, it is necessary to first find a method that is in accordance with the nature of the data being studied. In this case, the test can be carried out using several methods, including

the Granger test to test the causal relationship between government spending and tax revenue, as well as the partial adjustment model (PAM) and error correction model (ECM) to test the effect of government spending on tax revenue. In this study, the impulse response VAR test was also used to determine the impact of tax revenue on the shock that occurred in goods expenditures, capital expenditures and personnel expenditures. The data analysis will be carried out using Eviews 9 software.

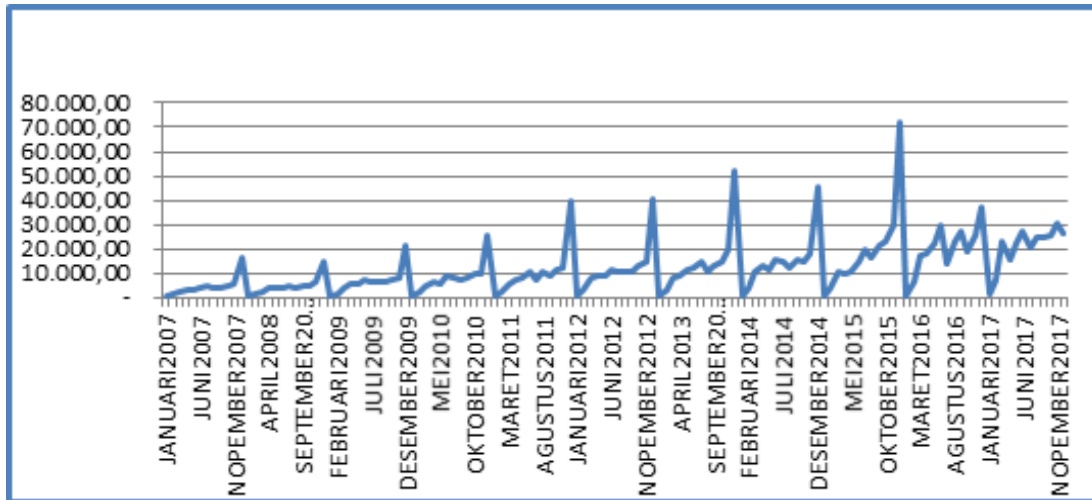
RESULT AND DISCUSSION

From the data on the realization of the 2007-2017 State Budget, the average monthly tax revenue reached 77.59 trillion rupiah. The highest revenue occurred in December 2015 with a value of 224.86 trillion rupiah. The lowest revenue occurred in February 2007 with a value of 22.10 trillion rupiah. On the other hand, the average government spending reached 76.94 trillion rupiah every month. As with tax revenues, the highest government spending also occurred in December 2015 worth 241.18 trillion rupiah. The description of research data can be presented in the following table 2.

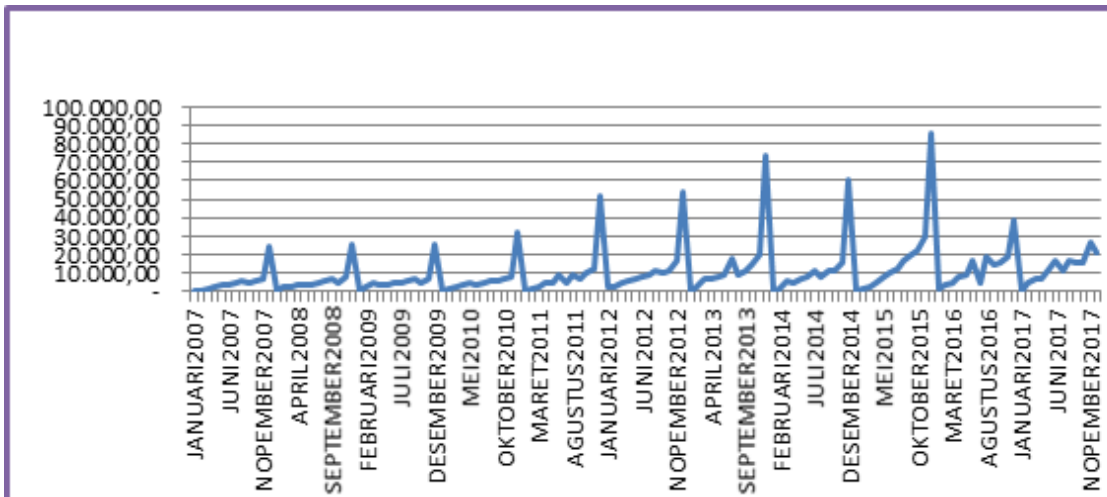
The realization of goods spending on average reached 12.3 trillion rupiah per month. The highest goods expenditure occurred in the period of December 2015 worth 72.27 trillion rupiah. In the data on the realization of the State Budget, there is

Table 2.
Description of Research Data (in billion rupiah)

	BBARANG	BMODAL	BPEGAWAI	GOV-EXP	TAX
Mean	12.301,70	10.684,37	16.623,55	76.942,90	77.587,47
Median	9.396,27	6.659,62	16.055,37	68.074,47	75.126,05
Maximum	72.272,23	86.120,77	37.001,18	241.176,80	224.866,10
Minimum	495,24	99,60	1.743,91	14.497,80	22.103,90
Std.Dev	11.182,95	13.251,47	7.311,57	44.244,19	30.841,81



Graph 1.
Realization of Goods Expenditure (in billion rupiah)



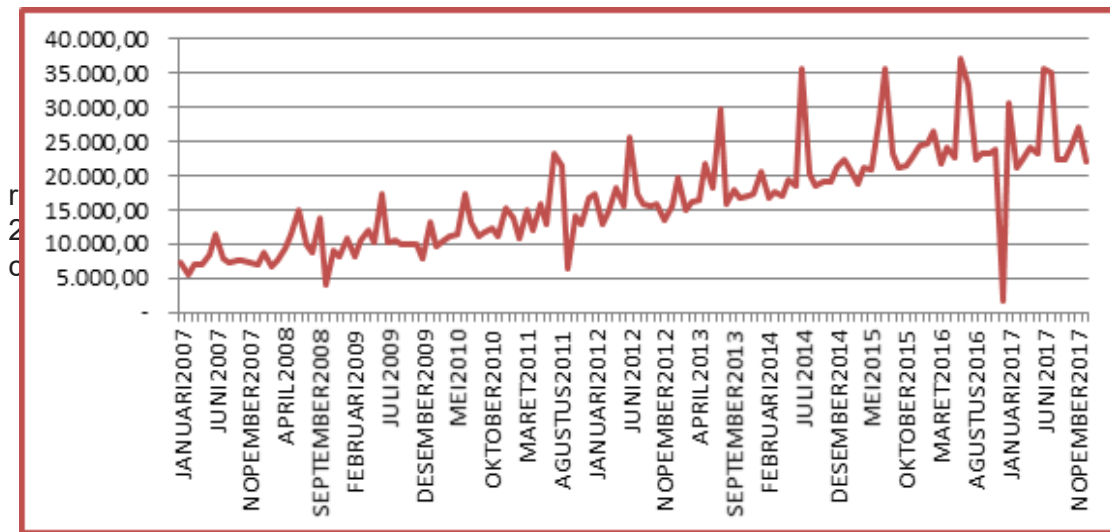
Graph 2.
Realization of Capital Expenditure (in billion rupiah)

an interesting fact, that it turns out that the largest goods expenditure value in each year always occurs in December. The lowest expenditure on goods occurred in the period January 2014 with a value of 495.23 billion rupiah.

The realization of capital expenditures on average reached 10.68 trillion rupiah every month. If we look further, it turns out that the realization of capital expenditures has a pattern similar to the pattern of realization of goods expenditures. Similar to goods expenditures, the realization of capital expenditures reaches its peak

in December every year. This confirms the assumption that government agencies usually try to increase budget absorption in December each year.

For personnel expenditure, on average, it reached 16.62 trillion rupiah per month. A different fact is found in the realization of personnel expenditures, that in fact the largest employee expenditure in each year always occurs in June. This may be due to the policy of giving the 13th salary which is usually given in that month. The highest realization of personnel expenditure occurred in June 2016 worth 37 trillion



Graph 3.
Realization of Personnel Expenditure (in billion rupiah)

The causality test is used to see the direction of the relationship between a variable and another variable. How is the effect of x on y by looking at whether the present value of y can be explained by the historical value of y and seeing whether the addition of lag x can improve the ability to explain the model. In this test, the causality test will be carried out with the Granger Test. This research will examine the causal relationship between government spending consisting of goods expenditure, capital expenditure and personnel expenditure with tax revenues in general.

Before carrying out the Granger step test, it is necessary to determine the optimum lag. To determine the optimum lag, several methods will be used such as Final Prediction Error (FPE), Aike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn (HQ). After knowing the optimum lag, Granger test can then be carried out. Granger test results are in table 3.

From the causality test, it can be concluded that in the relationship between the variable of tax revenue and the realization of government spending which consists

Table 3.
Causality Test Results

Null Hypothesis:	Probability
TAX does not Granger Cause BBARANG	0,0000
BBARANG does not Granger Cause TAX	0,0002
TAX does not Granger Cause BMODAL	0,0000
BMODAL does not Granger Cause TAX	0,0000
TAX does not Granger Cause BPEGAWAI	0,0443
BPEGAWAI does not Granger Cause TAX	0,0000

of goods expenditure, capital expenditure and personnel expenditure, it turns out that tax revenue has a mutually influencing relationship with government expenditure which consists of goods expenditure, capital expenditure and expenditure. the employee. The causal relationship between tax revenue and the realization of government spending is in accordance with the view that the actual value of government expenditure in one year has been previously budgeted in the State Revenue and Expenditure Budget. taxation. In addition, in the event of a tax revenue shortfall that results in a lack of state revenue, it will usually be followed by adjustments to government programs which of course will affect the realization of state spending.

On the other hand, every government expenditure for goods expenditure will be subject to value added tax, thereby increasing the value of tax revenue. Goods expenditure will also increase private sector income which will increase income tax. Government expenditures in the form of personnel expenditures will also be subject to income tax. This employee income in turn will also be spent by employees so that it will increase value added tax revenue. Thus, it can be concluded that according to economic theory, government spending is seen as capable of providing a multiplier effect on economic growth. Economic growth in turn will increase taxes.

From the causality test, it is concluded that in Indonesia, there is a mutually influencing relationship between the realization of government spending consisting of goods expenditures, capital expenditures and personnel expenditures with tax revenues.

However, how does each expenditure realization affect the realization of tax revenue? To find out, the Partial Adjustment Model (PAM) and Error Correction Model (ECM) will be tested.

To test time series data, it is necessary to test stationarity first. Stationarity

test is a test used to determine whether the research data contains a unit root. The data is said to be stationary if there is no unit root in the data. To test the stationarity of the data in this study, the augmented dicky fuller test was used. In this case it is said to be stationary if the resulting prob value is less than the set value of 5%. As for the tests carried out on the data on each variable, it turns out that all variables contain a unit root at the level level. This is evident from the prob value that exceeds 5% However, it turns out that at the first difference level the data has become stationary. Thus, further testing can be carried out.

Partial Adjustment Model (PAM) test is a test with the assumption that in the long term an equilibrium point will occur. The results of the PAM test can be presented in the following model:

$$\log \text{TAX} = \text{ant} \log(4,03532) + 0,259541 \log \text{BBARANG} - 0,049198 \log \text{BMODAL} + 0,07493 \log \text{BPEGAWAI} + 0,404819 \log \text{TAX}_{t-1} + e$$

The R2 value of the above model is quite good reaching 70.98%. From the model above, it can be seen that the magnitude (1- δ) is 0.404819. Thus, it can be seen that the magnitude of is 0.595181. This means that the difference in the realization of tax revenues will be adjusted by 59.52% within 1 month. From the model above, it turns out that the coefficient of expenditure on goods is much greater than that of personnel expenditure. Thus, based on the PAM model, it can be concluded that if other variables are fixed, the increase in goods expenditure will have more effect on tax revenue than the increase in personnel expenditure. Furthermore, in the model above, the capital expenditure coefficient is negative. This indicates that an increase in capital expenditure has the potential to reduce tax revenues.

Error Correction Model (ECM)

Before carrying out the ECM test, it is necessary to do a cointegration test first. In this research, the cointegration test will be carried out using the Engle-Granger Cointegration Test. Cointegration is a long term relationship (equilibrium) between variables that are not stationary. The existence of a cointegration relationship provides an opportunity for data that are individually not stationary to produce a linear combination between them so as to create a stationary condition. Variables are said to be cointegrated if the relationship between the two variables in the long term will approach or reach equilibrium conditions. From the cointegration test results, it can be concluded that the variables used in this study have been cointegrated. 5%.

After the stationarity test and cointegration test, the ECM test can be performed. Basically the cointegration test states that non-stationary variables, in the long run, are cointegrated. Thus, it can be concluded that there has been an imbalance in the short term on these variables. Therefore, adjustments are needed through an error correction model. cointegration among research variables (test results attached).

From the results above, it can be concluded that the ECM test is valid to be carried out because it has a negative value and a significant prob. Thus, it can be said that in the short and long term, the variable expenditure on goods and personnel expenditure has a significant effect on value added tax revenue. The value of R2 in this study reached 79.79% so it can be concluded that the independent variables used were quite good. The ECM model can be presented as follows:

$$D(TAX) = 124,8315 + 2.705364 D(BBARANG) - 0.729931 D(BMODAL) + 0.677541 D(BPEGAWAI) - 0.875915\mu t-1$$

From the model above, it turns out that the goods expenditure coefficient is 2.70. So that every increase in one unit of goods expenditure will result in an increase in tax revenue of 2.70 or 270%. In fact, as we all know, the VAT rate is 10%. By subtracting the 10% tariff which is immediately charged when purchasing goods, we get an increase of 260%. This 260% value is considered to be the result of the economic multiplier generated by government spending. When compared with the coefficient

Table 4.
Comparison of Test Results

Variable	Testing Method	
	PAM	ECM
Belanja Barang	0.0000	0.0000
Uji-t Capital Expenditure	0.2925	0.0266
Belanja Pegawai	0.1696	0.0036
GDP		
Uji -F	0.0000	0.0000
Adjusted R ²	0.709862	0.770195

of personnel expenditure, it turns out that the coefficient of expenditure on goods is much greater than that of personnel expenditure. Thus, based on the ECM model, it can be concluded that if other variables are fixed, the increase in goods expenditure will have more effect on tax revenue than the increase in personnel expenditure. Meanwhile, capital expenditure has a negative relationship with the realization of tax revenues in line with the results of the previous PAM test.

Various tests have been carried out to examine the effect of goods and personnel expenditures on tax revenues. Among these tests were carried out using the Partial Adjustment Model (PAM), Error Correction Model (ECM) and Vector Autoregression (VAR) methods. The comparison of the test results can be summarized in the following table 4.

From the table 4, it can be concluded that the ECM model produces a larger Adjusted R2 when compared to the PAM method. Adjusted R2 value of 0.770195 means that the variable expenditure on goods and personnel expenditure is able to explain 77.01% of the variable realization of tax revenue.

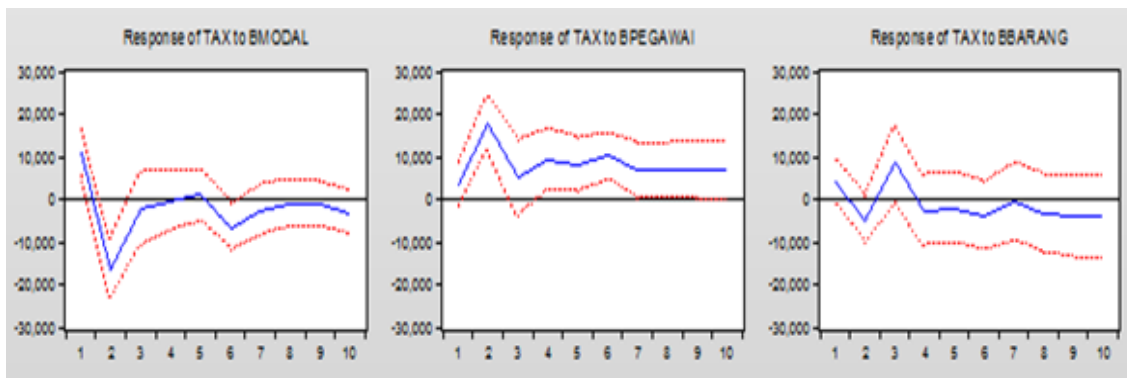
In the ECM method, each variable for goods expenditure, capital expenditure and personnel expenditure is also statistically proven to have an effect on the realization of tax revenues. So it can be

concluded that the ECM model is more appropriate to use to explain the effect of the variable expenditure on goods, capital expenditure and personnel expenditure on tax revenue.

To determine the effect of shock in the economy, the impulse response function method is used. The impulse response function describes the rate of shock from one variable to another variable over a certain period of time. So that it can be seen the length of the influence of the shock of a variable on other variables until the effect disappears or returns to the equilibrium point. The impulse response of the VAR model can be presented in the following figure 1.

From this chart we can examine the relationship between goods expenditures, capital expenditures and personnel expenditures on tax revenues. In the chart there is a picture of the response to tax receipts when given a shock on goods expenditures, capital expenditures and personnel expenditures. When a shock is given to goods spending, tax revenue will respond positively. The response is direct and reaches its highest peak in the first period, and then continues to decline until it reaches the lowest point in the third period. Slightly different results are shown in the response of tax revenues to the shock given to personnel spending. When given the shock of personnel spending, the re-

Figure 1.
Impulse Respon



sponse to tax revenues was slightly flat at the beginning of the period, and only increased and reached its peak in the third period. However, the increase in tax revenue resulting from the shock in personnel spending was not as large as the shock to goods spending.

This difference in the speed of response to tax revenue is in accordance with the theory, namely that goods expenditures will directly increase tax revenues significantly, because value added tax will be collected immediately when the goods are purchased. The next effect is an increase in tax revenue due to an increase in private business income. Different things happen to personnel expenditures where employee expenditure in the form of household income will be deducted by income tax but with a smaller effect, because it must be reduced by non-taxable income. The new employee's income will be levied value added tax when the income is spent. So there will be a time lag between personnel expenditure and value added tax receipts. On the other hand, a negative result is formed from the response to tax revenues when a shock is given to capital expenditures. This is in accordance with the results of research using the previous PAM and ECM methods.

CONCLUSIONS

Testing the causality relationship shows that in general there is a mutually influencing relationship between State expenditures consisting of goods expenditures, capital expenditures and personnel expenditures with tax revenues. The causal relationship between tax revenue and the realization of government spending is in accordance with the view that government spending on goods and capital expenditures will be directly subject to value added tax, thereby increasing the value of tax revenues.

On the other hand, the expenditure on goods and capital expenditures will

increase private sector income which will increase income taxes. Government expenditures in the form of personnel expenditures will also be subject to income tax. This employee income in turn will also be spent by employees so that it will be subject to value added tax which in turn will increase tax revenue.

From the various tests carried out, it turns out that the realization of goods expenditures, capital expenditures and personnel expenditures is empirically proven to have an effect on tax revenues. employees on tax revenue. This is based on the fact that the ECM method gives the highest Adjusted R2 results. In the ECM method the variables of goods, capital expenditures and personnel expenditures are also each proven to have a significant effect on the realization of tax revenues.

When a shock is given to goods and personnel spending by using the impulse response VAR, it turns out that tax revenue will respond positively. However, the shock effect is slightly different in the two variables. In goods expenditure, the response to value added tax receipts will occur directly, in contrast to the shock in personnel expenditure which requires a time lag. On the other hand, a negative result is formed from the response to tax revenues when a shock is given to capital expenditures. This is in accordance with the results of research using the previous PAM and ECM methods.

IMPLICATIONS AND LIMITATIONS

By knowing the response of tax revenues to changes in goods expenditures, capital expenditures and personnel expenditures, the government, especially fiscal policy makers, can design fiscal strategies according to the conditions faced. For example, when the government wants to provide a stimulus to the private sector and expects greater and faster feedback, then the option to increase spending on goods is a rational choice.

On the other hand, if the government wishes to provide a stimulus to the household sector and wants gradual feedback, policies to increase personnel spending such as increasing salaries, giving the thirteenth salary, or providing holiday allowances can be carried out.

The limitations of this study is that in this study tax revenues are still presented in total. It is hoped that in further research, tax revenue can be broken down into types of tax revenue such as income tax, or value added tax. So that it can provide a more in-depth and comprehensive analysis of the relationship between government spending and tax revenue.

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