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Analysis of the relationship between Tax Revenue and Government Expenditures in Indonesia

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ABSTRACT

In reality, government spending in emerging nations has been steadily increasing from time to time. Controlling it through fiscal policy, such as tax collections and government expenditure, is one of the measures that may be implemented. The primary goal of this study is to determine the magnitude of the link between tax income and government spending in Indonesia from 2000 to 2020. The World Development Index and the Central Bureau of Statistics are the primary data sources used by the researcher to attain this study goal. The researcher utilized the Vector autoregressive (VAR) technique and the Granger causality test to determine the link between tax income and government spending. Because the coefficient of determination is 65.41 percent, which is far from 100 percent, and the two variables, namely tax revenues and government expenditures, are not affected by the clause relationship, the results of this study indicate that the trend of the government expenditure ratio is less stable. The two variables do, however, have a short-term link, and there is no long-term balancing relationship between government spending and tax income.

Keywords: Tax, Expenditure, Government, Indonesia, VAR

JEL Classification: C10, C11, E10, E12

INTRODUCTION

Fiscal policy is an adjustment strategy in the sphere of government expenditures and revenues to improve economic circumstances (Rahayu, 2014), noting that there is also monetary policy, which has the same aim as fiscal policy, which is to improve economic conditions. This fiscal strategy works by altering the structure of governmental revenues (in the form of taxes) and expenditures (Prestianawati et al,2019; Garcia & Puspaningtyas, 2021).

The allocation of government expenditure and tax income is heavily influenced by fiscal policy. If policymakers are aware of the link between tax income and government expenditure from the economy, a prolonged budget deficit can be avoided, just as it can be avoided in an economy. Keynes' theory has inspired several economists and policymakers to better direct fiscal policy tools like government spending and taxation in order to stabilize the economy without dramatically altering prices (Aslan, 2009).

The ability to emerge countries to achieve considerable economic growth is dependent on their budgetary policies. As a source of state revenue, tax payments are targeted to the community. Government spending encompasses all expenditures made by the government, both for the government and for society and the economy as a whole (Sasongko et al.,2021).

In line with Sasongko et al. (2021), Aisha & Khatoon, (2009) explains that government spending and government revenues are the determinants. Fiscal policy has its own type, for example, an expansionary fiscal policy which is carried out by setting the level of government spending to be a larger amount when compared to government revenues. Besides being able to take the form of expansionary fiscal policy, there is also a contractionary fiscal policy that is carried out by reducing government spending activities and increasing tax revenues. Through this fiscal policy, the government makes the most appropriate decisions for the economic conditions in the country.

To put it another way, this fiscal policy becomes a macroeconomic policy that has an impact on economic growth. As a result, by enacting fiscal policy, suitable control actions on economic activity may be carried out. Taxes are one of the activities that can be regulated by this policy. Taxes are a source of state revenue that will be used to fund different state finances or expenditures; therefore, they play an essential role in the economy of a nation. It should be acknowledged that, as indicated by, the connection between government revenue and government spending is critical to understand in order to assess whether a fiscal imbalance exists (Eita & Mbazima, 2008).

Tax reductions are a measure used by the government to regulate the economy and stimulate economic growth. Despite the fact that taxes are an important part of the economy. Regulations governing the rise or decrease in government revenue through taxes constitute a critical component of a country's economic policy (Efuntade & Akinola, 2020).

In other words, fiscal policy may be utilized as both a method for adjustment and a tool for government stabilization. It is critical to have discussions on expenditures as well as state revenues. Finally, the link between tax income and government spending is a topic of discussion. As a country that similarly relies on taxes for revenue, examining the influence of tax revenues on government expenditure is a fascinating exercise. Not to mention the fact that the Indonesian government's budget has constantly been in deficit in recent years (Handoyo et al.,2020).

The state budget deficit occurs when the government spends more than it earns; in Indonesia, the budget deficit has become a well-known phenomenon that appears to be inextricably linked to the country, since the government budget has always been in deficit from 2000 to 2020. The main objective of this study is to determine the relationship between tax revenue and government spending in Indonesia from 2000 to 2020. Because it was evident at the conclusion of the previous year that the government budget had again faced a pretty substantial deficit as a result of numerous multifaceted causes, the writers are interested in studying it. The VAR technique and the Granger causality test were used to examine the connection between tax income and government spending in this study.

LITERATURE REVIEW

Taxes are a type of state revenue that is used to pay a variety of government finances and capital demands. To put it another way, this tax is a tool employed by the government to control its economic circumstances. As previously said, tax tools are an essential component of fiscal policy. Government income and expenditures have a significant influence in determining whether a country's economic growth is accelerated or slowed (Wilantari,2021).

According to this fiscal strategy, (Kusriyawanto, 2014) said the economy may be stimulated by rising government expenditure levels. Increased tax collections, on the other hand, can help to slow down the economy, there is a link between tax revenue and economic growth. Given the rise in tax income, economic development will be aided. Furthermore, it is well recognized that tax funds are collected and then spent on productive government expenditures, resulting in these activities have a beneficial influence on economic growth.

In terms of tax income and government expenditure, Sumaryani (2019) noted that increased tax revenue may also lead to increased government spending. This will be able to accelerate the rate of economic growth in the long run, this taxation is required to fund different government expenditures, to put it another way, there is a strong link between taxes and government expenditure. So, as a starting point for gaining a good grasp of the two issues, I've included a few possible hypotheses below.

According to Peacock (1979), when the government's revenue rises, it spends more, which is known as the first hypothesis of income expenditure. Furthermore, the second hypothesis, namely income expenditure, explains how changes in government spending generate changes in government revenue. The effect switches from spending to earning.

According to Champita (2016), these two topics examine the causation that exists between government revenues and expenditures using a vector autoregressive model (VAR). Greater government expenditure leads to increased government revenue, according to Granger causality results.

Regarding the relationships between tax revenue and government spending, Taha & Loganathan, (2008) highlighted that in neoclassical and endogenous growth models, changes in government spending encourage the amount of revenue, whether it comes from taxes or non-taxes. To put it another way, there is a one-way link between these variables. Higher government income collection will eventually lead to increased government spending in the short run.

RESEARCH METHOD

Date Source

The data used in this study are Government Expenditure (% of GDP) and Tax Revenue (% of GDP). The information is based on secondary sources such as the World Development Index website and the Central Bureau of Statistics. The data sample utilized is a 21-year data sample, spanning 2000 to 2020.

Variable Operational Definition

The following are the definitions for the variables utilized in this study:
1. Government Expenditure is a term that refers to all current government spending on the acquisition of goods and services, which comprises the majority of expenditures for national defense and security in this situation.
2. Tax revenue is an obligatory payment made by taxpayers to the government for a variety of objectives.

Analysis Techniques

The following is a list of the analytical techniques utilized in this study:
1. Stationarity test. Using Augmented Dickey-Fuller with an error value (0.05) to test the stationary of each variable.
2. Differencing will be performed if the data is not stationary, resulting in stationary data that is fulfilled is stationary differencing.
3. Determine the value of the Akaike Information Criterion (AIC).
4. Test of Cointegration
5. Model Analysis (VAR)
6. Analyze and test Granger causality.

RESULTS

Stationary Test

It is required to do a stationarity test first in order to satisfy one of the assumptions in the causality test and VAR. The unit root test utilizing the Augmented Dickey-Fuller Test (ADF Test) technique was utilized to determine stationarity in this study. The unit root test yielded the following results:

Table 1. Unit Root Test with ADF on GE and TR Data in Indonesia

Variable	Unit Root	Include in test Equation	ADF Test Statistic	Critical Value 5%	Description
Government Expenditure (GE)	Level	Intercept	-1.828482		
	First Diff	Intercept	-4.259781	0.0041	Stationer
Tax Revenue (TR)	Level	Intercept	-0.775049		
	First Diff	Intercept	-5.119869	0.0007	Stationer

The unit root test findings on GE and TR data from 2000 to 2020 reveal that the GE and TR data are stationary at the first level difference. The ADF (Augmented Dickey-Fuller test statistic) value was found to be -4.259781, with a critical value of 0.0041, indicating that it is less than the p-value. The GE data in this situation indicates that it is stationary at the first difference. Likewise, what happened to the TR data, showed that the data was stationary at the first difference level. Therefore, GE and TR can be directly analyzed with VAR (Vector autoregression).

Optimum Lag Test

It is critical to determine the best lag length before doing a causality test or a VAR test since the optimal lag has a high sensitivity to the causality test and the VAR test. The ideal lag duration was determined by looking at the lowest or least Akaike Information Criteria (AIC) value in this study. Because the data utilized is yearly and only 21 years, the lag lengths used in this test range from 0 to 4. The duration of this lag is thought to be adequate to characterize GE and TR over an annual timeframe.

Table 2. AIC value at Lag 0 to 4 GE and TR data in Indonesia

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-35.34177	NA	0.277389	4.393149	4.491174	4.402893
1	-24.94697	17.12083*	0.131669*	3.640820*	3.934896*	3.670052*
2	-22.34308	3.676083	0.159632	3.805068	4.295194	3.853788
3	-20.75781	1.865023	0.227019	4.089154	4.775330	4.157362
4	-18.42230	2.198131	0.316284	4.284976	5.167202	4.372671

The AIC value at Lag 0 to 4 indicates that GE and TR Lag length are in LR, FPE, AIC, SC, and HQ at Lag 1, based on the results of the Optimum Lag test in table 2. Because five criteria yield the same result, lag 1 will be chosen. This depicts the relationship between GE and TR at the time. According to the data, there is no previous influence for these two variables, which implies that the optimal lag is at lag 1 based on the FPE criterion of 0.131669.

Cointegration Test

A cointegration test is required to determine the link between variables; this test is used to get an explanation of the relationship between economic variables such as GE and TR in their long-term balance. If the time series variable is cointegrated, the cointegration test findings indicate that there is a stable long-term connection. However, the results of the cointegration test revealed that the probability value obtained was higher than the significance threshold (critical value) of 0.05. Meanwhile, the GE cointegration probability has a value of 0.9842. This demonstrates that the GE variable and the TR variable have a short-term link, but that there is no long-term association between them.

VAR Model Analysis

In this analysis, it has been found that the form of stationary data is not cointegrated, as in the previous cointegration test. This demonstrates that the GE variable and the TR variable do not have a long-run equilibrium connection.

Estimation Proc:
==========
LS 1 1 GE TR

VAR Model:
==========
GE = C(1,1)*GE(-1) + C(1,2)*TR(-1) + C(1,3)

TR = C(2,1)*GE(-1) + C(2,2)*TR(-1) + C(2,3)

VAR Model - Substituted Coefficients:
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GE = 0.744363514655*GE(-1) - 0.0375433279184*TR(-1) + 2.83260540179

TR = - 0.359377026268*GE(-1) + 0.751846710195*TR(-1) + 5.8338701526

Based on the results of the VAR estimate, it can be observed that the dependent variable is in the equation:

GE = 0.744363514655*GE(-1) - 0.0375433279184*TR(-1) + 2.83260540179

Explaining the diversity attachment or GE relationship is 0.654118 or 65.41 percent, which implies that the GE ratio is somewhat different each year, and there is a substantial shift. This is seen in the preceding explanation of the coefficient of determination, which is 65.41 %, far from 100 percent.

Granger Causality Test

Table 3: Granger Causality Test results

H_0	F-Statistic	Probability
TR does not Granger Cause GE	0.08229	0.7777
GE does not Granger Cause TR	4.15833	0.0573

Granger causality test that is tax revenue (TR) is government expenditure (GE) in terms of granger. However, government spending does not lead to more tax revenues, so it can be concluded that there is only one-way causality that runs from tax revenues to government spending (Mehrara & Rezaei, 2014).

DISCUSSION

Based on the findings of research done between 2000 and 2020 utilizing the VER method and the Granger causality test on the link between tax income and government expenditure, it can be determined that:
1. The GE trend ratio tends to be somewhat less stable; this is illustrated by the coefficient of determination which is quite far from 100%, which is 65.41%.
2. The findings of the cointegration test reveal that in Indonesia, there is no long-term equilibrium link between the GE and TR variables.
3. The results of the Granger causality test show that the two variables studied, namely tax revenue, and government spending, show that the causal relationship between the two is not affected, because the p-value of both is greater than 0.05.

CONCLUSION

The researcher utilized the Vector autoregressive (VAR) technique and the Granger causality test to determine the link between tax income and government spending. Because the coefficient of determination is 65.41 percent, which is far from 100 percent, and the two variables, namely tax revenues and government expenditures, are not affected by the clause relationship, the results of this study indicate that the trend of the government expenditure ratio is less stable. The two variables do, however, have a short-term link, and there is no long-term balancing relationship between government spending and tax income.

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DECLARATION OF CONFLICTING INTERESTS

In preparing this article, the authors declare no conflict of interests.

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