Economics Development Analysis Journal Vol (1) (2022)

Economics Development Analysis Journal

http://journal.unnes.ac.id/sju/index.php/edaj

The Effect of Budget Deficit in Indonesia: A Comparative Study

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Article Information

History of Article
Received October 2021
Accepted December 2021
Pusblished February 2022

Keywords:
Budget Deficits; Economic Growth; ECM Domowitz-El Badawi; Ricardian Equivalence

Abstract

This study aims to analyze the relationship between budget deficits and economic growth based on Keynesian, Neoclassical, and Ricardian Equivalent theories, and to explain the relationship between inflation, poverty, world crude oil prices, and government consumption on economic growth. Time-series data in Indonesia from 1981 to 2019 were analyzed using the Domowitz-El Badawi ECM and VAR methods. The results show that the Ricardian Equivalence is proven to have occured in the short-term in Indonesia, while in the long-term, budget deficit shows a positive impact on economic growth in Indonesia and supports the Keynesian perspective. In the short term, only inflation and government consumption show an impact on economic development: while inflation has a negative effect. In the long run, budget deficit, inflation, poverty, and world oil prices all affect economic growth, while government consumption does not. This proves that government consumption, a fiscal policy, is a policy that has only a short-term effect on economic growth. This study recommends that policies financed by budget deficit are used for long-term investments, such as investment in the education, health, and infrastructure sectors, in order to generate a long-term effect on economic growth.

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ISSN 2252-6560

INTRODUCTION

The ratio of debt to Gross Domestic Products in Indonesia in 1967-1998 was equivalent to 55.7% and was used primarily to support infrastructure development. In the era of President Joko Widodo, which began in 2014, the ratio was estimated at 29.91% and this debt was used for capital injection for state-owned enterprises to build infrastructure. The budget deficit system shows that debt is an important source of financing for Indonesia [(Anwar, 2014)(Sardoni, 2021)], but this situation is negative for the economy, especially state finances because this indicates that state revenues are lower than expenditures (Satrianto, 2015). Debt has been used by the Indonesian government to cover the state budget deficits, and since 1999 Indonesia has started domestic or internal debt (Satya, 2015).

Both developed and developing countries use a budget deficit scheme to accelerate economic growth, equalize people's income, increase people's purchasing power, strengthen the currency exchange rate, and overcome excessive spending due to inflation (Andrian, 2011). The effect of budget deficit on the economy was put forward by the Keynesian group, which states that increasing debt would increase funds for productive business and in turn becomes a stimulus (leverage) on the economy (Ahmad & Rahman, 2018).

The neoclassical group asserts, however, that budget deficit has a negative impact on the economy [(Arjomand et al., 2016)(Dombi & Dedák, 2019)]. This leads to an increase in the tax rate, which reduces productivity and discourages private investment and thus causes a decline in economic growth (Dao, 2014). Another opinion is put forward in the Ricardian Equivalence where the budget deficits have no effect on economic growth (Barro, 1997).

Budget deficit is caused by inflation (Solomon & De Wet, 2004) and countries will try to cover its deficit by borrowing money at home and from abroad. High inflation increases the aggregate demand, which leads to an increased demand for labor and economic growth and thus budget deficit will decrease (Metin, 2012). Oil prices also affect economic growth, both for exporter and importer countries (Trang et al., 2017). High oil prices will cause a decline in economic growth, which in the long run will manifest into a business force that encourages the adoption of energy-efficient technologies and development of alternative fuels derived from renewable natural resources. (Hong & Trang, 2017).

The level of poverty in a country will affect budget deficit and economic growth. A low poverty rate indicates a guaranteed level of fiscal health due to low unemployment, guaranteed food supply, increased economic growth, and a decreasing budget deficit. (Holtz-Eakin, 2010). It is therefore undeniable that government spending has a role in overcoming poverty (Mehmood, rashid; Sadiq, 2010).

Increasing foreign debt has an impact on budget deficit and causes government spending to increase as well. Government spending is used for state spending, such as purchasing goods and services for the benefit of the country. Thus, higher government spending will be negatively related to economic growth (Devi, 2017).

Debt is a stimulus for economic development, so when the economy experiences a slowdown, the government will increase the budget deficit to finance the productive sectors. The long-term policy objective is to reduce the level of budget deficit because if the expenditure is greater than the taxes collected, this will trigger an economic crisis which can result in an increase in unemployment (Holtz-Eakin, 2010).

A budget deficit is a condition when the amount of government revenue is lower than its expenditure. The deficit is influenced by people's low purchasing power, a weak currency exchange rate (Yuliadi, 2006), development financing, inflation (Solomon & De Wet, 2004), economic growth (Peacock & Wiseman, 1979), an increase in oil prices (Satrianto, 2015), and interest rates. Some of the ways that governments take to overcome the deficit are by increasing the income obtained from taxes, and foreign exchange from the export of goods and services, as well as taking both domestic and foreign debts.

There are several views regarding budget deficit, namely Neoclassical, Keynesian, and Ricardian. Based on the Neoclassical view, budget deficit increases the tax burden borne by society in the future. This view assumes that economic actors have a limited life span, the optimal level of consumption is determined by the optimization solution over time, and there is a market balance in each time period (Bernheim, 1989). A budget deficit will hinder private investment, distorting efficient allocation of resources due to underproduction of the private sector, leading to lower economic growth in the long run (Arjomand et al., 2016).

Keynesian economics believes that a larger budget deficit will actually stimulate aggregate demand and attract investors to invest in the country, thus driving long-term economic development. The Keynesian group assumes that economic actors have a short-term (myopic) view, the relationship between generations is not close, and not all markets are always in balance (market equilibrium). Debt is a stimulus for economic development in a country, so that when the economy experiences a slowdown, the government can increase the budget deficit to finance the productive sectors. The impact of the budget deficit ultimately boosts economic growth (Ahmad & Rahman, 2018).

Ricardian rejects Neoclassical and Keynesian views. According to Ricardian, no relationship, both short and long terms, is seen between the two variables. The Ricardian assumes that consumers' spending depends not only on current income but on lifetime income. The budget deficit only delays the tax paid now to be paid in the future with a higher rate, so that society will save the amount of the tax cut and it has no effect on aggregate demand and economic growth (Ghali, 1997).

Inflation is an overall and continuous increase in prices. Inflation that continues to increase will reduce people's purchasing power due to the decline in real currency. Inflation has both positive and negative impacts on the economy: if the level of inflation is lower, both national income and people's interest in saving and investing will increase; however, if hyperinflation occurs, the economy becomes sluggish, the level of saving and investment decreases, and aggregate demand also decreases, which has an impact on slowing down economic growth (Desrini, Ningsih. Puti, 2018).

Poverty is one of the problems in the macro economy with a negative effect on economic progress. Poverty arises because of limited access to education, health, and capital. Breaking the poverty chain, according to Nurkse, can be done by increasing productivity, namely by increasing the quality of human resources which in turn will increase income, savings and investment, and thereby boosting economic growth (Breunig & Majeed, 2020).

Energy has a big role in economic growth. Energy is the most dominant input in measuring economic indicators both quantitatively measured in GDP and qualitatively measured in the Human Development Index (HDI) (Kartiasih, 2012). The fluctuating world oil prices will affect government revenue, but on the other hand this will also increase the burden of subsidies. In the end, oil prices will increase production costs affecting the economy at large (Carfora et al., 2019).

Government consumption expenditure is an injectable variable in the macro economy, where a rising spending will drive economic growth. Government spending in the form of investment spending is a driving force in the economy, so that when the economy in a country is experiencing a decline, government policies in the form of increased spending are used as a stimulus to drive the economy (Rika Swaramarinda & Indriani, 2011).

RESEARCH METHODS

The first objective in this study was investigated with the Domowitz-El Badawi Error Correction Model (ECM). This study also used the same variables, namely inflation, poverty, world oil prices, and government consumption as independent variables that affect economic growth in Indonesia.

$$Growth_t = a_0 + a_1 Def_t + a_2 Inf_t + a_3 Pov_t + a_4 Oil\_price_t + a_5 Cons_t \quad \ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where, $Growth_t$ is Economic growth in Indonesia during t period, Def_t is Budget deficit in Indonesia during t period, Inf_t is Inflation rate in Indonesia during t period, Pov_t is Poverty rate in Indonesia during t period, Oil_price_t is World oil price during t period, and $Cons_t$ is Government consumption in Indonesia during t period.

The second objective in this study was examined using Vector Auto Regression (VAR) to understand the reciprocal relationship among economic variables. The advantages of the VAR model are that there is no need to distinguish between endogenous and exogenous variables, it can identify the appropriate lag length, the estimation is relatively simple, and the results obtained have good accuracy. (Suhel, 2008).

RESULTS AND DISCUSSION

The following is a description of the variables used in the study, namely economic growth, budget deficit, inflation, poverty level, world crude oil price, and government consumption in Indonesia in 1981 - 2019.

Table 1. Description of Research Variables

	GROWTH	DEF	INF	POV	LOG_OIL	CONS
Mean	4.960513	2.778718	9.087436	17.62615	3.569244	7.305641
Median	5.060000	2.400000	7.090000	17.42000	3.404525	7.780000
Maximum	9.080000	6.600000	77.63000	26.90000	4.658521	9.720000
Minimum	-13.30000	0.700000	2.010000	9.220000	2.342767	1.140000

Sorce: Data Processed, 2021.

Economic growth in Indonesia in 1981 - 2019 grew by an average of around 4.96%, with the highest growth occurring in 1989 at 9.08% and the lowest in 1998 at -13.3%. The average percentage of the budget deficit to GDP in Indonesia is 2.78% with the largest deficit found in 1988 with 6.6%. Furthermore, the average annual inflation in Indonesia is 9.09% with the highest inflation happening in 1998 during the economic crisis with 77.63% and this is deemed as hyperinflation. The average poverty rate in Indonesia is 17.63% of the entire population, with the highest rate occurring in 1981 with 26.9%. The highest world crude oil price was recorded in 2013 with US$ 105/barrel and the lowest was in 1998 with US$ 10.41/barrel. Government consumption is estimated at an average of 7.31% of GDP with the largest consumption recorded in 1982.

Table 2. Short-Run and Long-Run t-Test Results of the ECM Equation

Variable	Coefficient	Short Term		Variable	Coefficient	Long Term	
		t count	t-table			t count	t-table
DDef	-0,05947	-0,280428	2,042	Def	0,133965	-1,885682*	2,042
DInf	-0,240531	-9,283183***	2,042	Inf	-0,3745463	-5,42448***	2,042
DPov	-0,074281	-0,841567	2,042	Pov	-0,2863200	-4,265432***	2,042
DLog_Oil	0,565417	0,546693	2,042	Log_Oil	-2,2426084	-3,095841*	2,042
DCons	0,419467	2,00611*	2,042	Cons	0,6752208	-1,268906	2,042
ECT	0,740811	0,0000***	2,042				

Source: Data Processed, 2021

The Domiwitz-El Badawi ECM model is valid because the ECT value is positive and significant. The budget deficit shows no impact on economic development in the short-term, because the value of t count (-0.2804) < t table (2.042). Budget deficit does not immediately influence economic growth because it takes a time lag to have an effect. This occurs because fiscal policy usually takes time to be effective in impacting its goals (Ghali, 1997). Based on the test regarding the optimal time length, it takes at least 4 years for the effect of these variables to work optimally in the economy. According to Ricardian's view, in the economy the government plays a role in spending, collecting taxes, and borrowing for its own sake. These activities have no impact on households but to force them to vary the time allocated for saving. When the government reduces the tax, consumption will not necessarily experience a drastic increase due to increased disposable income, because the income may be saved to anticipate an increase in the tax rate in the future. (Sardoni, 2021). This conclusion can be seen from the * sign in the 4th lag in table 3.

Table 3. Optimum Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-461.2901	NA	15916.67	26.70229	26.96892	26.79433
1	-395.1664	105.7979	2940.882	24.98094	26.84735	25.62522
2	-363.1689	40.22548	4474.701	25.20965	28.67585	26.40618
3	-281.5824	74.59335	579.1323	22.60471	27.67070	24.35349
4	-190.9385	51.79650*	102.9317*	19.48220*	26.14798*	21.78323*

Source: Data Processed, 2021

In the long-run, budget deficit has a positive effect on economic progress with a probability level of 0.0706. If the budget deficit increases by 1%, the growth will increase by 0.07%. The results of this study were obtained from research in countries with weak/low economies which proved that the budget deficit positively influenced economic growth (Gupta et al., 2005) (Bose et al., 2007).

One positive effect of the budget deficit on economic growth is that it forces the government to be cautious in planning and implementing policies. Long-term soft loans and their use for productive activities are two policies that have a multiplier effect on the economy (Maria & Mudayen, 2017). In addition, government spending on the education sector has a long-term effect on the growth. Thus, it is suggested that if a country chooses fiscal policy during a deficit condition, one of the expenditures that needs to be made is investment in the education sector.

Inflation affects economic growth in both the short and long term. When inflation increases by 1%, the economy will decrease by 0.24%. In the long term, if inflation increases by 1%, the economy will decline by 0.37%. This is consistent with [(Lucas, 1988) (Lucas, 2000)], that the inflation tax will affect the rate of return on capital, reduce returns on human capital, and affect slowing economic growth (Gillman et al., 2004). A low and stable inflation rate will be a stimulus for economic growth (Silvia, Engla Desnim; Wardi, Yunia; Aimon, 2013) (Zuhri, 2018), where a low inflation rate will provide benefits to the community, so that economic activity continues to move and economic upward trajectory is maintained.

A budget deficit that lasts a long time and is growing in value is one of the roots of macroeconomic problems because this will lead to inflation. The budget deficit that continues to be financed by foreign debt will increase the burden to be borne by the country. Due to the time lag, the linkage mechanism between the budget deficit, inflation, and economic growth has started to work (Andrian, 2011) (Lozano, 2008).

Poverty is one of the factors that influences economic growth and is an indicator that reflects the economic health of a country. Previous studies have found that poverty showed no effect on short-term economic growth. However, in the long-run, poverty affects economic growth with t-count (-4.2654) < t-table (-2.042). This shows that if poverty rises by 1%, economic growth will decline by 0.29%. Thus, poverty alleviation policies must be beneficial in advancing economic growth (Zhu et al., 2022).

A trickle-down effect policy needs to be implemented by the government so that poverty does not have a worsening effect. Policies taken to cover the budget deficit are at least used to finance investments in the fields of education, health and infrastructure. (Bappenas, 2019). Deficit financing used for investment in these sectors will have a long-term effect on the economy and boost productivity. Education and health will have long-term effects because they form the basic human capital. If the poor have access to education and health, their quality will increase, which in turn will improve their productivity and drive better economic growth.

Oil is one of essential items for society. In the short term, world crude oil price has no effect on economic development, but in the long term, the price shows an impact. When the oil price increases by 1%, economic growth decreases by -2.24%. This shows a very high dependence on petroleum as a non-renewable natural resource. Therefore, socialization needs to be made to the community so that they use new and renewable energy so that their dependence on petroleum can be reduced.

The increase in world crude oil prices causes companies' productivity to decline. On the demand side, the rising oil price has caused a decline in aggregate demand. Both of these have a negative effect on economic growth (Trang et al., 2017). When unemployment rate increases, fiscal policy is needed to maintain people's purchasing power and protect the poor and those vulnerable to poverty. Therefore, indirectly, the increase in world crude oil prices will affect the budget deficit of a country (HONG & TRANG, 2017).

Government consumption used for spending on goods, personnel spending, and spending on other goods and services both in the short and long terms affects economic growth in Indonesia. In the short term, if government consumption increases by 1%, the economy will grow by 0.42%; whereas, in the long run, if it increases by 1%, the economy will increase by 0.68%. Government consumption is one of the production factors in the production function, so that when the input in the production process, namely government consumption, increases, output or GDP will increase, which in turn will drive economic growth into a positive trend (Hajamini & Falahi, 2014) (Alexiou, 2009).

According to Keynesians, the public sector acts as a balancing factor in developing countries because these countries experience virtually identical problems including foreign debt, high inflation, difficulties in the balance of payments, and a weak exchange rate. In developing countries, the role of the private sector has not yet been very efficient, causing the expansion of government activities. The demand for the government to solve these economic problems has resulted in a permanent budget deficit (Arjomand et al., 2016).

Table 4 illustrates the relationship among variables in this study using the Vector Auto Regression (VAR) method.

Table 4. VAR Results

	Coefficient	Standard Error	t-statistic
		Growth	
Def (-3)	0.97312	0.57148	1.70281
Pov (-1)	-1.17880	0.65918	-1.78829
Pov (-3)	-0.51582	0.28689	-1.79797
		Def	
Growth (-1)	-1.14032	0.43457	-2.62404
Def (-4)	0.60210	0.31814	1.89256
Inf (-1)	-0.24404	0.09768	-2.49825
Inf (-2)	-0.21988	0.08145	-2.69954
Inf (-4)	-0.08803	0.05159	-1.70624
Pov (-4)	-0.62649	0.28617	-2.18918
		Inf	
Pov (-1)	5.04843	2.39013	2.11220
Pov (-4)	-4.51177	2.54082	-1.77571
		Pov	
Growth (-2)	0.39204	0.18585	2.10941
Def (-4)	-0.36264	0.18121	-2.00120
Inf (-1)	0.11150	0.05564	2.00386
Inf (-4)	-0.12586	0.02939	-4.28297
Pov (-3)	1.15517	0.06674	17.30940
Log_Oil (-4)	-1.87693	0.78894	-2.37907
Cons (-2)	0.28568	0.13763	2.07576
		Log_Oil	
Log_oil (-1)	0.86108	0.38921	2.21238
		Cons	
Growth (-4)	-0.33258	0.16976	-1.95905
Inf (-2)	-0.16828	0.07345	-2.29107
Pov (-1)	0.50704	0.24275	2.08875
Pov (-4)	-0.44122	0.25805	-1.70979
Log_oil (-1)	4.83635	1.27952	3.77982
Log_oil (-2)	-2.68401	1.43314	-1.87282
Cons (-1)	0.85254	0.28267	3.01602

Source: Data Processed, 2021

The VAR estimates show that the effect of the deficit in the previous 3 periods / Def (-3) on economic growth is 0.97312 and significant. This means that the budget deficit of the previous 3 years will increase economic growth in the current year. Apart from being influenced by the budget deficit, economic growth is also influenced by poverty one year ago (Pov-1) and three years ago (Pov-3). Poverty does affect economic growth, so that many programs carried out by the government are aimed at overcoming poverty so that the number of poor people decreases and thus positively affect economic growth (Mafruhah, 2009).

Economic growth in the past year (Growth -1) shows an effect on the budget deficit. Based on the analysis results, the budget deficit and economic growth have a two-way relationship, where on the one hand, the budget deficit affects economic growth but on the other hand, the growth also affects the budget deficit. In addition, the magnitude of the deficit in the current year is influenced by the budget deficit 4 years ago (Def-4). Inflation has the most significant influence on the budget deficit, namely inflation one year ago (inf-1), two years ago (Inf -2), and four years ago (Inf -4). The poverty rate four years ago (Pov -4) also affects the budget deficit in the current year.

The current inflation rate is only affected by the poverty rate one year ago (Pov-1) and four years ago (Pov -4). This happens because when the level of poverty is high, the policies taken by the government will usually affect the amount of money supply in the community, because many programs are used to stimulate purchasing power, causing inflation in the long run. The government needs to review policies carried out to overcome poverty which have an effect on the onset of inflation in the long run, so it is hoped that these policies are taken to increase basic human capital, which means improving the quality of Indonesian human resources.

Current poverty rate is influenced by many factors, namely economic growth two years ago (Growth -2), budget deficit 4 years ago (Def-4), and inflation rate a year ago (Inf -1) and four years ago (Inf -4). Apart from that, current poverty is also influenced by the poverty rate in three years ago (Pov -3), world oil prices 4 years ago (Log_oil -4), and government consumption 2 years ago (Cons -2).

The current world oil price is influenced by the oil price a year ago (Log_oil -1). In this study, the oil price is not influenced by other variables, except by the oil price itself in the previous year. Because oil is a non-renewable energy, the price depends on the supply and demand made by the world.

Government consumption is influenced by economic growth 4 years ago (Growth -4), inflation 2 years ago (Inf -2), poverty rate a year ago (Pov -1) and 4 years ago (Pov -4), and oil price 2 years ago (Log_oil -2). It can be said that government consumption is very reactive to the increase in oil prices and the current amount of government consumption is also influenced by the size of government consumption in the previous year (Cons -1). This is usually related to the sustainability of the programs carried out by the government, which is reflected in the government expenditure. These programs, frequently, are used to increase purchasing power and are sustainable programs planned by the government.

CONCLUSION

The Ricardian Equivalence theory is proven to occur in the short-term in Indonesia. Meanwhile, in the long-term, Keynesian view has been proven to have occurred where the budget deficit positively affected economic growth in Indonesia in 1981-2019. This is why it has been suggested that the budget deficit has a positive impact on long-term economic growth. However, a deepening of the budget deficit needs to be avoided because if it is not carefully managed, an increase in government debt will disrupt the fiscal carrying capacity of the Indonesian economy. Thus, financing sources other than debt are needed and the debt must be optimized. It is recommended that policies financed from the budget deficit be used for long-term investments, for example investment in the education, health and infrastructure sectors which have been shown to have a positive, long-term effect on economic development.

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