The Relationship between Budget Deficit and Economic Growth from Malaysia's Perspective: An ARDL Approach

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Abstract. Theoretically, there are controversial thoughts that discussed on the relationship between budget deficit and economic growth. While Keynesian economies claimed that these two series are positively related, the neo-classical economies claimed the opposite. Meanwhile, the Ricardian equivalence hypothesis argued that there is neutral relationship between budget deficit and economic growth. The objective of this paper is to investigate the relationship between budget deficit and economic growth from Malaysia's perspective. Four variables were used, namely real GDP, government's debt, productive expenditures and non-productive expenditures. ARDL approach is used to analyze the long-run relationship between all series since it can cater for small sample size. By using quarterly data from 2000 to 2011, it was found that there is no long-run relationship between budget deficit and economic growth of Malaysia, consistent with the Ricardian equivalence hypothesis. However, productive expenditure has positive long-run relationship with the economic growth. In case if there is a shock in the Malaysian economy, the only variables that can help to converge the economy to its equilibrium is the changes in GDP and productive expenditures. For future recommendation, it is suggested that other researchers will enhance this research by including other developing countries as the sample of analyses.

Keywords: budget deficit, ARDL, government expenditure, economic growth, error correction model

1. Introduction

Malaysia has an aspiration to achieve a status of a developed country by 2020, provided that the economy can grow between six to seven percent per annum. Due to external factors and uncertainties in the global economic condition, Malaysia should highly depend on the domestic economy as the main source of growth. Therefore, it is highly crucial to observe the domestic macroeconomic conditions such as inflation rate and government expenditures. By definition, when the government expenditures exceed its revenues, a country will face budget deficit. Based on the past 22 years' record, the Central Bank of Malaysia had reported that the highest budget deficit recorded by Malaysia was in the fourth quarter of 2006, amounting to RM 24,605 million [1]. However, Malaysian Rating Corporation Bhd. (MARC) reported that these deficits were mainly due to the domestic debts. In order to finance all those debts, the government borrows from domestic market through the sales of the Malaysian Government Securities (MGS). Since the demand for this domestic instrument is quite high especially from the financial institutions, the government does not have to worry about the sources of domestic financing [2]. Even though the pattern of the budget deficit in Malaysia is more towards the domestic debt rather than the international debt, its level need to be controlled since high budget deficit may distort the economic growth of a country.

2. Literature Review

Generally, there are controversial thoughts regarding on the relationship between budget deficit and economic growth. While the Keynesian economies argued that there is positive relationship between these two series, the new classical economies argued the opposite. Meanwhile, the Ricardian equivalence hypothesis claimed that there is neutral relationship between budget deficit and economic growth [3]. The

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differences in terms of opinions and analyses are mainly due to various factors such as time dimension, types of countries, types of government administration and method of analysis as well as the degree of budget deficit.

By definition, a country faces a problem of budget deficit if the government expenditures exceed its revenues. In other words, the level of public savings is negative [4]. This scenario may give harm to the economic growth of a country. In relation to the economic growth, it can be defined as an increase in the level of production over time. It can be measured by looking at the increasing pattern of real Gross Domestic Product (GDP) from time to time. Various factors may contribute to the economic growth of a country; namely labor force, technology, capital, knowledge, natural resources and etc [5].

Bose, Haque and Osborn investigate the relationship between budget deficit and economic growth for 30 developing countries from 1970 to 1990 [6]. By using panel data analyses, they found that the budget deficit helps the economy to grow provided that the deficits were due to productive expenditures such as education, health and capital expenditures. Same conclusion is derived based on the research made by Fischer [7]. Huge budget deficit helps Morocco and Italy to grow since the excessive spending helps to increase the level of private consumption in the short-run. It was due to the deficits which were used to reduce the burden of taxation from the consumers' perspective [4]. In the long-run, huge budget deficits ruined the level of economic growth for these two countries since they have to struggle in paying back all the national debts.

Few researchers agreed with the new classical economies' thought, in which there is negative relationship between budget deficit and economic growth. Generally, the government has to borrow money internally or externally in order to finance budget deficit. An increase in the demand of the loanable funds by the government will distort the level of private investment due to an increase in the interest rate. The decline in the private investment will definitely reduce the level of economic growth [8]. Based on the research conducted by Ball and Mankiw, the previous statement is proven to be true from the case of the United States from 1960 to 1994 [4]. The same conclusion was found in a research made on the pattern of government expenditures for 30 developing countries [6]. Huge budget deficits had significantly reduce the level of national savings and private investment. Apart from that, high budget deficits will give signal to the citizens that the government has lost control in managing the funds [7]. It was found that the countries that faced budget deficits have lower growth rate as compared to countries that faced with budget surplus. A continuous rise in budget deficits will also leads to a problem of bankruptcy [4]. As a result, the investors will have less confidence to invest in a country. It will further reduce the economic growth of a country. Apart from that, the budget deficit can also reduce the economic growth of a country based on the perspective of politic and election process. Brender and Drazen found that high budget deficit recorded by a country will give negative signals to the citizens that the government authorities did not perform well in managing the funds of a country [9]. As a result, there is a probability of re-election process to be conducted in order to replace the authorities. Indirectly, the authorities who did not perform well may not be able to bring the country to the upper level. Hence, it will not contribute to high economic growth due to lack of confidence among citizens, investors and other neighboring countries.

In opposite, Ghali found that there is neutral relationship between budget deficit and economic growth in Saudi Arabia [10]. The same conclusion was derived based on the cross sectional analysis made by Kormendi and Meguire [11]. Consistent with the Ricardian equivalence hypothesis, it is argued that the budget surplus that is currently recorded by the government will be used to finance future deficits [12]. Therefore, an increase in the budget deficit will not give impact to the economic growth since it is financed through previous surplus.

Most of the above researchers did investigate the relationship between budget deficit and economic growth from the perspective of cross countries. The common method used was panel data, in which it is able to investigate the relationship between series by integrating time dimensions and various countries at a time. The results vary between various researches. Some researchers found that the budget deficit does not give harms to the level of economic growth, while others found the opposite. Apart from that, some researchers also found that there is no relationship between budget deficit and economic growth. Hence, this paper will

investigate the relationship between these two series by using an ARDL approach specifically from Malaysia's perspective.

3. Methodology

In measuring the relationship between budget deficit and economic growth, the author uses the following model:

y = f (debt, prod, unprod)   [Equation 1]

where   y = growth of real Gross Domestic Product (GDP) as a proxy of the economic growth.

                debt = growth of federal government's debt as a proxy of the budget deficit.

                prod = growth of productive expenditures.

                unprod = growth of non-productive expenditures.

The author includes two additional variables (growth of productive and non-productive expenditures) in order to investigate their impacts on the economic growth. It is important to know their relationship since both types of expenditures contributes to the level of budget deficit. The productive expenditures include components listed by Central Bank of Malaysia as development expenditures such as defense and security; agriculture and rural development; trade and industry; transport; education; health as well as housing. Meanwhile, the non-productive expenditures are referring to lump-sum payment paid by the government such as subsidies.

The data used in this paper consists of quarterly data derived from Central Bank of Malaysia, from the second quarter of 2000 to the second quarter of 2011. In this paper, the author uses Autoregressive Distributed Lag (ARDL) approach in order to investigate the relationship between all series. This method is employed since it can be applied for all series regardless of their level of integration; whether I(0) or I(1). Besides, it is a powerful method for small sample size [13].

4. Results and Discussion

The procedure of conducting ARDL approach involves two stages. At first, the author conducts a test to investigate the existence of long-run relationship between the identified series. This test is conducted by comparing the F-statistics of the unrestricted error correction model (as shown in equation 2) with the critical value bounds of the F-statistics.

$$\Delta Y_t = \alpha_0 + \sum \beta_1 \Delta DEBT_{t-i} + \sum \beta_2 \Delta PROD_{t-i} + \sum \beta_3 \Delta UNPROD_{t-i} + \delta_1 Y_{t-1} + \delta_2 DEBT_{t-1} + \delta_3 PROD_{t-1} + \delta_4 UNPROD_{t-1} + \mu_t$$

[Equation 2]

The null hypothesis of the above test can be defined as no long-run relationship between all those series ($\delta_1 = \delta_2 = \delta_3 = \delta_4 = 0$). Since the computed probability of the F-statistic is 0.014, therefore the null hypothesis is rejected at five percent confidence level. In other words, it is proven that there exists long-run relationship between Y, DEBT, PROD and UNPROD. The forcing variables that explained Y in the long-run are DEBT, PROD and UNPROD.

Once the above series are proven to have long-run relationship, the coefficients of the long-run relationship are estimated by using maximum lag of 4. The Schwarz Bayesian Criterion (SBC) had selected a model of ARDL (2,0,0,0) specification. The estimated long-run coefficients are as follows:

Table 1: Estimated Long-Run Coefficients using ARDL Approach

Regressor	Coefficients	T-Statistics	Probability of T-Statistics
DEBT	-0.13923	-1.64170	0.110
PROD	0.00548	2.02920	0.050
UNPROD	0.00321	1.80620	0.079
C	1.37800	4.23830	0.000

Based on table 1, the only variable that is significant in explaining the long-run relationship of the economic growth is productive expenditure at five percent confidence level. In the long-run, when the government increases the productive expenditures by one percent, the Malaysian economy will grow by 0.005%. Federal government' debt and unproductive expenditures have no significant relationship in explaining the economic growth of Malaysia in the long-run.

The estimates of the error correction model based on the associated long-run estimates are shown in table 2. Only two variables are statistically significant at five percent confidence level; namely Y (GDP growth) and PROD (productive expenditures). Apart from that, the coefficient of the error correction term is highly significant and it has a correct negative sign. The ECM coefficient of -1.8054 suggests that there is high speed of convergence to the equilibrium level when the economy is shocked. The convergence to the state of equilibrium is helped by the changes in the level of GDP growth and productive expenditures. The result of this error correction model is reliable since it passes all diagnostic tests. Statistically, the model itself is highly significant based on the probability of the F-statistic.

Table 2: Error Correction Representation for ARDL Model (2,0,0,0)

Regressor	Coefficients	T-Statistics	Probability of T-Statistics
ΔY	0.68189	6.7649	0.000
$\Delta DEBT$	-0.25137	-1.6068	0.117
$\Delta PROD$	0.00988	2.1261	0.041
$\Delta UNPROD$	0.00579	1.7317	0.092
ΔC	2.4878	3.9198	0.000
ECM(-1)	-1.8054	-12.3403	0.000
R-Squared	0.8405		
Adjusted R-Squared	0.81742		
Schwarz Bayesian (SBC)	-93.8741		
DW-statistic	1.8551		
F-stat (prob)	36.8176 (0.0000)		

5. Concluding Remarks

This study presents an analysis of the relationship between budget deficit and economic growth from Malaysia's perspective. By using quarterly data from 2000 to 2011, the author found that there is a significant long-run relationship between productive expenditures and economic growth of Malaysia. Both variables are positively related. However, there is no such evidence that can prove the existence of long-run relationship between budget deficit and economic growth. Similar conclusion can be derived for estimating long-run relationship between non-productive expenditures and economic growth. This result is parallel with the Ricardian equivalence hypothesis which claimed that there is neutral relationship between budget deficit and economic growth. The main reason might due to the size of the budget deficit for Malaysia, which is relatively small as compared to the level of GDP. The size is still under control and manageable. As a developing country that aimed to be a developed country by 2020, there is a need for the government to increase national income, per capita income as well to improve the quality of life. Hence, the productive expenditures spent by the Malaysian government for the specified purposes did help in increasing the GDP growth of Malaysia. At this point, the excessive spending made by the government did not give harm to the economic condition.

Apart from that, if there is any shock to the Malaysian economy, the changes in the level of economic growth and productive expenditures will help the economy to converge to the state of equilibrium at a faster rate. Similar to the long-run relationship, the budget deficit has no role in bringing back the economic condition to its state of equilibrium.

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