The Causal Relationship between Fiscal Policy and Economic Growth in Jordan

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Abstract

This study aims to examine the causal relationship between economic growth and fiscal policy in Jordan using the Granger methodology in order to determine the direction of the relationship between the two variables during the period 2000-2012. The study found that there is a causal relationship going from the economic growth to budget deficit, and not vice versa. Based on the outcome of causality tests, the changes in the economic growth help explain the changes that occur in the budget deficit.

Keywords: budget deficit, economic growth, the causal relationship, GDP, fiscal policy, Granger, Jordan.

1. Introduction

The relationship between fiscal policy and economic growth is a very important topic and has been an essential issue for many economists and policy makers as it represents budget deficit, government expenditure Plans and taxation structure of a country. Since the main objective of every government is to improve economic growth with low debt levels, better education system.

Economic growth is one of the most important determinants of economic welfare. The global economic crisis that broke out in 2008 has reawakened interest in fiscal policy as an instrument for longer-term growth and development. The term fiscal policy has conventionally been associated with the use of taxation and public expenditure to influence the level of economic activities. The implementation of fiscal policy is essentially routed through government's budget. Fiscal policy deals with government deliberate actions in spending money and levying taxes with a view to influencing macro-economic variables in a desired direction. This includes sustainable economic growth, high employment creation and low inflation. Thus, fiscal policy aims at stabilizing the economy, Increases in government spending or a reduction in taxes tend to pull the economy out of a recession; while reduced spending or increased taxes slow down a boom.

In the standard neoclassical growth model, the growth in output over the long run is determined by growth in labor supply, accumulation of physical and human capital, and technological change. If fiscal policy increases the incentive to save or to invest, the equilibrium capital-output ratio will be altered; thus, the growth rate will rise as the economy transitions to a new higher level of output per capita, but in the long-run it will return to its previous level.

The study is carried out to answer the question what is the connection between fiscal policy and economic growth rate in Jordan. To achieve this, the study is structured into three sections: section (1) deals with the literature review; section (2) discusses methodology and data; while analysis of results, conclusion and recommendations are presented in section (3).

1.1 Previous studies

We can summarize some of the studies that have addressed the issue of causality between fiscal policy and economic growth as follows:

Adeolu, Sunday and Abike (2012) investigated how fiscal and monetary policies influence economic growth and development in Nigeria. They argued that curbing the fiscal indiscipline of Government will take much more than enshrining fiscal policy rules in our statute books. This is because the statute books are replete with dormant rules and regulation. They noted that there exist a mild long-run equilibrium relationship between economic growth and fiscal policy variables in Nigeria.

Finally they suggested that for any meaningful progress towards fiscal prudence on the part of Government to occur, some powerful pro-stability stakeholders strong enough to challenge government fiscal recklessness will need to emerge.

Boroacă (2012) examined possible correlations between fiscal policy and economic growth in three EU countries: France, Germany, and Greece for the period 1996-2009, he found that Fiscal policy is a major component of a country's economic policy, and to counteract the negative effects of economic or extra-economic factors, the state can use a series of countercyclical policies. Finally he noted that fiscal policy is one of the most important short term policies that can be applied at the macroeconomic level, so it can therefore affect a country's economic development .

Joharji and Starr (2010) discussed whether government spending can boost the pace of economic growth is widely debated. They examined the relationship between government spending and non-oil GDP in the case of Saudi Arabia. Using time-series methods and data for 1969-2005, they found that increases in government spending have a positive and significant long-run effect on the rate of growth. Estimated effects of current expenditure on growth turn out to exceed those of capital expenditure -- suggesting that government investment in infrastructure and productive capacity has been less growth-enhancing in Saudi Arabia than programs to improve administration and operation of government entities and support purchasing power .

Ocran (2009) examined the effect of fiscal policy variables on economic growth in South Africa. For the period 1990 to 2004. The outcome supported that government consumption expenditure has a significant positive effect on economic growth. Gross fixed capital formation from government also has a positive impact on output growth but the size of the impact is less than that attained by consumption expenditure. Tax receipts also have a positive effect on output growth. However, the size of the deficit seems to have no significant impact on growth outcomes. Mansouri (2008) studied the relationship between fiscal policy and economic growth in Egypt, Morocco and Tunisia. The spans of data for each country are: 1970-2002 for Morocco, 1972-2002 for Tunisia and 1975-2002 for Egypt. The empirical results showed that 1 percent increase in public spending raised the real GDP by 1.26 percent in Morocco, 1.15 percent in Tunisia and 0.56 percent in Egypt. The results also indicated existence of long-run relationships for all the three countries

Blinder and Solow (2005) suggested that consumption has a positive effect on the economy. The proponents of the classical view assert that the effect of government spending is temporary and not effective particularly in the long-run when prices adjust and output and employment are at their optimum levels.

M'Amanja and Morrissey (2005) examined whether or not fiscal policy stimulates growth by examined the case of a small open developing country, Kenya. they used time series techniques to investigate the relationship between various measures of fiscal policy on growth on annual data for the period 1964 – 2002. Categorising government expenditure into productive and unproductive and tax revenue into distortionary and non-distortionary, they found unproductive expenditure and nondistortionary tax revenue to be neutral to growth as predicted by economic theory. However, contrary to expectations, productive expenditure has strong adverse effect on growth whilst there was no evidence of distortionary effects on growth of distortionary taxes. On the other hand, government investment was found to be beneficial to growth in the long run .

Nijkamp and Poot (2004) found that 17 percent of studies showed positive relationships between different measures of fiscal policy and economic growth; 29 percent showed negative relationships; and 54 percent were inconclusive. While they found indications of strong effects of education and infrastructure spending on growth, there was no similar impact of fiscal variables in general. This is not surprising considering mixed effects of different fiscal aggregates, as well as the composition of spending and financing methods used.

Dar and Amirkhalkhali (2002) conducted investigation on the endogenous growth model of fiscal policy and concluded that in the endogenous growth model of fiscal policy (government expenditure and income) is very crucial in predicting future economic growth.

Ajisafe (2002) investigates the relative effectiveness of monetary and fiscal policy on economic growth in context of Nigeria using annual time series data during the year 1970 to 1998. M1 and M2 are used as proxies of money supply and government revenue, government expenditures and budget deficit as the proxies of fiscal policy. Result shows that monetary policy has significant affect on economic growth rather than fiscal policy.
Abduliah (2000) analyzed the relationship between government expenditure and economic growth and found that the size of government expenditure is very important in determining the performance of the economy.

He further advised that, government should not only support and encourage the private sector to accelerate economic growth, but should also increase its budgetary provision on infrastructure, social and economic activities.

Easterly and Rebelo (1993) used cross-section and panel data of different samples for more than 100 countries and concluded that investment in transportation and communication has a positive and strong effect on growth.

1.2. Fiscal policy in Jordan

Fiscal policy in Jordan has been largely pro-cyclical, which made it a major source of macroeconomic instability. For instance, while GDP growth averaged 8.1 percent in 2004-2008, the primary fiscal deficit excluding grants stood at 6.6 percent of GDP and the overall deficit excluding grants averaged 9.3 percent; in 2011 Jordan's budget deficit reached 12.7 percent of GDP, and the overall public sector deficit reached 18.6 percent of GDP.

Fiscal stability has been maintained since the mid-1990s. To sustain this stability in the future, efforts are focused on strengthening fiscal discipline and reforming the tax system in order to increase tax revenue and lower dependence on more unreliable revenue sources, such as foreign assistance.
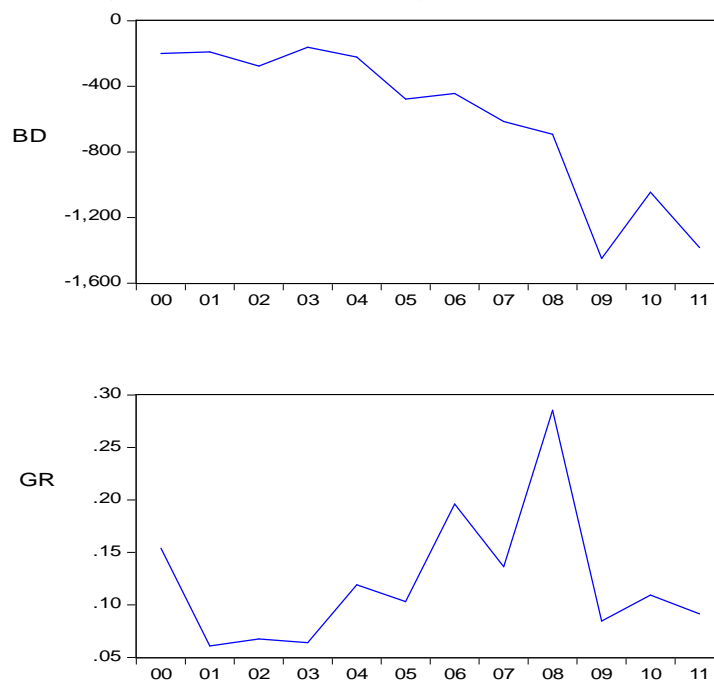
Looking at the economic classification of expenditures, we find that Military Expenditures, Compensation of Employees, Pensions, and Debt Service absorbed altogether 61 percent of total spending on average in 2009-2011, against 58 percent in 2006-2008, military Expenditures, the most dynamic element, rose from 20 percent of total spending in 2006 to 26 percent in 2011. (World Bank, 2012)

Debt service and pensions for accumulated rights are of a contractual nature and cannot be changed easily. Similarly, changing salaries and compensations is a difficult process to implement due to the political cost it entails, and cannot be enforced beyond some levels and thresholds because of the painful welfare loss it generates, capital spending and subsidies, which are categories of spending that can reversed in more ease, amounted together to 25 percent of total spending in 2009-2011 against 28 percent in 2006-2008, the share of capital spending declined to 16 percent of the total in 2011 from 21 percent in 2006 while the subsidy share rose.

We can see that the main source of fiscal trouble came from the revenue side. Indeed, while expenditures to GDP declined by 4.2 percentage points between 2007 and 2011, domestic revenues declined by 9.4 percentage points. As a fiscal stimulus in response to the global crisis, Jordan resorted in 2009 to large scale tax exemptions and cuts and boosted capital spending, the revenue gap arising from the sales tax and customs exemptions alone is estimated at JD500 million, in addition, tax arrears have grown considerably, reaching JD1.7 billion in 2011, and forgone revenues due to the generous and complex investment incentive system were estimated at JD910 million in 2008-09.

Figure 1: The Budget deficit and economic growth in Jordan during 2000-2012

2. Data and Methodology

2.1 Data

The data used for this study are basically time series data for Jordan covering the period 2000- 2012. The two economic variables included in this study are the budget deficit used as an indicator to measure fiscal policy; Budget deficits mean the increase of spending over revenues of budget. The change in Real Gross Domestic Product At Market Prices (GDP) is an indicator to measure economic growth. Data were sourced from The Central Bank of Jordan and The ministry of finance statistics.

2.2 Method

In this paper, the statistical properties of both economic growth and income distribution were investigated, using the unit root test. Causality among variables, using Granger causality test, was utilized to determine the directional causality between variables. Then, a long-term relationship was estimated, using Johansen cointegration test. Finally, the existence of Kuznets hypothesis was tested for Jordan.

2.3 The Unit Root Test

Macroeconomic time series data are generally characterized by a stochastic trend which can be removed by differencing. Some variables are stationary on levels, others become stationary after one differentiation, and some may become stationary by more than one differentiation. To test for the stationary of the variables, the Augmented Dickey-Fuller (ADF) technique was utilized. The ADF equation was performed for the case when it includes intercept only in addition to the case when it includes both intercept and time trend.

The results indicate that both variables, the BD and the GR, are not stationary on their levels. In other words, they have a unit root. Then, we repeated the unit root test for the first difference for both variables. The results point out that the BD became stationary after the first difference and the GR became stationary after the first difference, Since the computed values (in absolute value) are greater than the critical values (in absolute value) at a 1% level of significance, the null hypothesis of the unit root or nonstationary variable can be rejected. (Shaw table (1))

Table 1, Augmented Dickey-Fuller test

Variable			Level	First difference	Second difference
	Critical values 1%	Critical values %5	ADF	ADF	ADF
GR	-4.2	-3.2	-2.8	-6.2	-2.7
BD	-4.2	-3.2	0.27	-5.6	-4.4

2.4 Granger Causality Test

The Granger causality test is a statistical hypothesis test for determining whether or not one variable is useful to forecast another. According to Granger causality, if a variable (*x*) Granger-causes variable (*y*), then past values of variable (*x*) should contain information that helps predict variable (*y*). Granger test assumes that appropriate information for the relevant variables, and includes testing the following equations:

$$GR_{t-1} = \sum_{i=2}^{n} aiBD_{t-i} + \sum_{j=1}^{n} B_j GR_{t-j} + U_{1t}.$$

$$BD_{t-1} = \sum_{i=2}^{n} \lambda_i BD_{t-i} + \sum_{j=1}^{n} \delta_j GR_{t-j} + U_{2t}$$

Since both the BD and the GR became stationary after the first difference, then we are able to perform causality testing for (dBD) and (dGR). The below table show that there is a causal relationship between Budget deficit and growth rate but in one direction so that changes in the economic growth have effects on Budget deficit and not vice versa, where tests showed causal there was no effect of changes in Budget deficit on economic growth real.

Table (2) Granger causality test

Prob.	F-Statistic	Obs	Null Hypothesis:
0.7300	0.12775	11	BD does not Granger Cause GR
0.0130	10.0976		GR does not Granger Cause BD

This means that an increase or a decrease in economic growth can affect and causes the Budget deficit at 1% significant level. On the other hand, Budget deficit does not seem to Granger Cause economic growth.

This suggests that information about Budget deficit in past periods cannot explain the behavior of economic growth in the present time.

2.5 Descriptive analysis of the variables of the study

Table (6) shows descriptive statistics for the variables of the study, the table shows that the variable GR does not far from the normal distribution using the test (Jarque-Bera), and to accept the null hypothesis that the data follow a normal distribution. In the other hand the budget deficit BD is not normal distribution using the test Jarque-Bera As shown us from the results of the sprain values and through review of mean and median values, we find its close, so this indicating the absence of sharp fluctuations in the fluctuation of these variables.

Table (3): Descriptive analysis

BD	GR	
-596.3500	0.122672	Mean
-460.6500	0.106272	Median
-161.4000	0.285375	Maximum
-1449.700	0.060864	Minimum
462.1025	0.064893	Std. Dev.
-0.863319	1.401998	Skewness
2.331578	4.304119	Kurtosis
1.714033	4.781565	Jarque-Bera
0.424427	0.091558	Probability
12	12	Observations

6. Conclusion

The research studies the causal link between fiscal policy and economic growth in Jordan using granger causality test and the supportive cross correlation from 2000-2012. The result from granger causality supports the hypothesis that economic growth causes budget deficit, but the opposite is not true. Therefore the major conclusion drawn from this research is that in order to eliminate the problem of fiscal deficit and sustainable economic growth government should focus on the policies which facilitate increasing privet investment.

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