THE NEXUS BETWEEN FISCAL POLICY AND ECONOMIC GROWTH FOR JORDAN: FRESH INSIGHTS FROM MAKI COINTEGRATION

OMAR MOHAMMAD AL-KASASBEH

Faculty of Business and Management Unisza University, Jordan. Email: omar_kasasbeh@yahoo.com

ABSTRACT

The current study was carried out to empirically investigate the relationships between government expenditure, taxes, and debt in Jordan, using the annual time series data over the period 1980-2020. Despite the increased awareness of the importance of fiscal policy, Jordan is still seeing a drastic decrease in the volume of growth. Thus, this study was carried out to determine how government expenditure, taxes, and debt affect economic growth. For the empirical analysis, the study adopted Augmented Dicky Fuller, Phillips-Perron unit root tests, Zivot and Andrews and Lumsdaine and Papell unit root tests with structural breaks. It employs recently developed econometric techniques such as Maki cointegration tests allowing for an unknown number of breaks. The results of the cointegration test showed the presence of a cointegration relationship with structural breaks. It was found that the Jordanian crisis that occurred in 1989 harmed economic growth. However, the structural break in 2008 had an affirmative effect on economic growth. According to the study, tax revenues, public deficits, and debt can all be reduced and the economy can thrive if policymakers implement smart fiscal policies that boost gross fixed capital formation.

Keywords: Government expenditure, Public debt, Structural break, Taxes.

INTRODUCTION

Fiscal policy is believed to be related to growth, or more. Apparently it is held that suitable fiscal measures in specific conditions can be utilized to stimulate economic development or growth [1,2] thanks to the evolution of fiscal policy in contemporary systems has become it is the duty of the state and it is incumbent on it to intervene in directing the national economy in all, on the other hand, fiscal policy has become essential in achieving the goals it seeks National economy [3]. For long years, Jordan struggled with the problem of controlling public expenditure and budget deficits, due to burdens in tax revenues collection on one side and expending the large share of the revenues for domestic and external debt servicing; throughout the early '90s, the years full of economic and instabilities, budget deficits were financed by loans [4,5]. Jordan's economy experienced significant structural reforms and policy changes; Jordan's economy got into a structural adjustment supported fiscal accordance program signed with International Monetary Fund, and as a result, the Jordanian economy became more stable [6,7]. However, due to the lack of proper legal, institutional infrastructure, the economy was deeply shaken by external crises and shocks [8,9].

Although a relationship between fiscal policy and economic growth is mentioned in the fiscal economy literature, there are studies examining this relationship that presents different results [10]. This study will investigate the Jordanian economy with the structural break, which is expected to have a positive effect on economic growth for Jordan. It is intended to examine the effect of fiscal policies on economic growth empirically.

The paper is organized as follows: the approaches of historically different economic schools on the effectiveness of fiscal policy in the shaping of the macroeconomic are discussed in the next part. In the third part, some previous empirical studies have been evaluated. Then in the fourth part, the empirical analysis in which the impact of fiscal policies on economic growth in Jordan has been investigated by the Maki method. The conclusions are shown in the last part.

Theoretical background

Historically, on the effectiveness of the fiscal policy, varied economic schools exhibit different purposes of views. Within the classical approach, the importance of a balanced budget was highlighted through the prevailing economic paradigm till the eruption of the Great Depression in 1929. It had been emphasized that budget deficits would cause Economic instability. It was argued that the budget should be identical, except in extraordinary circumstances so the classical economists work in connecting the effectiveness of tax regulations and government spending that targeted the demand management to the finance method of the enforced policies [2]. The classical approach has remained too insufficient to resolve the crisis because it did not predict the Great Depression. As well, the government ought to intervene in the economy by revenues, public spending and budget. The Keynesian theory opened the principle of a balanced budget to be discussed and pointed to the relevancy and also the macroeconomic effect of the unbalanced budget [11]. According to the Keynesian view, the effectiveness of monetary policy tools is restricted (due to a liquidity trap). Aggregate demand could be raised by public spending, and revenues. Hence, so as to cut back the inflation level contractionary financial policy ought to be applied by following budget surplus policy, whereas within the time of recession monetary expansion would be provided by a budget deficit [12]. Keynesian arguments indicate that, financial contraction leads to an impermanent contraction by the aggregate demand channel. The multiplier impact refers to the potential of the spending cuts that cause a recession in the economy which are bigger than the tax increase. As well as, the monetarist view shows that the economy is generally stable, it is believed that interventionist monetary policy is unacceptable, and by the identical reservations, the fiscal policy is harmful. As indicated by Friedman, if there is inevitable intervention, then monetary policy should be preferred rather than fiscal policy because of the latter's delayed effects [13,14].

Review of empirical literature

Many studies of the association between fiscal policy and economic growth were conducted. As well as the Government spending, Debt, tax revenues have been used by these authors, and it is found different D, tax revenues, have been used by these authors and found different responses of macroeconomic activities to fiscal policy. As stated by Di Sanzo *et al* [15] examined the Tax Structure and Economic Growth they used annual data from 1970 to 2012 for a panel of twenty Organisation for Economic Co-operation and Development countries, and re-evaluates the results

of previous research relying on linear and non-linear panel cointegrated vector autoregressive (VAR) models. The asymmetric impact of tax changes on growth is estimated adapting the threshold cointegration methodology proposed by Hansen [16] to the panel framework. They found that property taxes are the least harmful for the growth while income and consumption taxes are negative for the growth and have comparable effects. Moreover, their findings were robust and significant when the tax burden is above the threshold value of 30%.

Juliana [16] examined the impact of tax structure on economic growth in Nigeria. It covers the period from1994 to 2016. The tax was disaggregated into company income tax, personal income tax, petroleum profit tax, and value-added tax. The data were analyzed utilizing stationarity, and cointegration test, and OLS. The study found that all the tax components studied (company income tax, personal income tax, petroleum profit tax, and value-added tax) have a vital influence on economic growth in Nigeria. It is concluded that tax administrative loopholes should be plugged for tax revenue to contribute immensely to the development of the economy.

Moreover, Gómez-Puig and Sosvilla [17] investigated long-run and the short effect of increasing debt on economic growth. An annual data from peripheral and central countries of the euro area (EA) between (1961-2013) is used. Then estimating a production function augmented with a debt stock term by applying the Autoregressive Distributed Lag (ARDL) bounds testing approach. The results suggest different patterns across euro area member states and tend to support the view that public debt always has a negative impact on the long-run performance of euro area countries, in any case, its short-run effect may be positive depending on the country.

In addition, Lof and Malinen [18] assessed regression methodology and VAR model to investigate the profoundly debated connection between debt and growth covering the period 1954–2008 and 1905–2008. While a few investigations demonstrated that abnormal amounts of sovereign debt hamper the growth prospects of a country. They utilized data on 20 developed nations and found a huge negative turn around the impact of growth on debt, which clarifies the negative connection.

Furthermore, Paul and Furahisha [19] studied the validity of Wagner's law and Keynesian hypothesis of the long run association between government expenditure and economic growth in Tanzania from 1978 to 2014. The Johansen test of cointegration discovered that the variables were cointegrated in the long run. Moreover, the Granger causality result showed robust sustenance for all Keynesian theory and Wagner's law. The result indicated that when government expenditure was reserved at its aggregate level, the disaggregated levels, and development expenditure from foreign sources will stimulate economic growth, therefore, favoring the Keynesian theory. Moreover, Wagner's law was only maintained in one example where causality runs from economic growth to development expenditure from national sources.

In addition, Sudarsono [20] examined the relationship between economic growth and government expenditures for Organization of Islamic Cooperation (OIC) countries using time series data for the period 1970–2006. The study utilized aggregate data as well as disaggregated data for Granger causality test. By testing for causality between economic growth and government expenditures, the study found that government expenditures do cause economic growth in Nigeria, Tunisia, and Iran, which are compatible with Keynesian's theory. Moreover, the economic growth does cause the increase in government expenditures in Benin, Indonesia, Libya, Saudi, Algeria, Burkina Faso, Morocco, and, Malaysia which are well-suited with Wagner's law which provided for states that public expenditure constantly rises as Gross Domestic Product grows.

METHODOLOGY

The present study comprises the variables used in the study are valid for Jordan. It consist of the data for taxes (T), government expenditure (GE), Debt (D), and economic growth (GDP) variables that were sourced from Central Bank of Jordan (CBJ) and World Bank Database Indicators (WDI). The data covered the period 1980 to 2020. The econometric analysis originates from the extended neo-classical model of Mankiw *et al.* (1992), Macek [21]. In respect to this study, individual variables of the analyzed model can be written as:

$$GDP_t = f(T_t, GE_t, D_t) \tag{1}$$

In respect to this study, the empirical equation is transformed into logarithm specification and modeled individual variables of the analyzed model can be written as:

$$LNRGDP_t = \beta_0 + \beta_1 LNT_t + \beta_2 LNGE_t + \beta_1 LND_t + \varepsilon_t \tag{2}$$

Economic findings and empirical findings

Unit root and structural break

A nonstationary variable indicates the presence of a unit root in a time series. In the case of a nonstationary variable, the effect of a possible policy change or a shock on the variable would be permanent. In this study, (ADF), and (PP) tests were used to test the unit root and stationarity of the series. If there is a break in the series, the results of the ADF, and PP unit root tests tend to support the hypothesis that the series has a unit root Perron, (1989). Thus, Zivot and Andrews (1992) developed a single break model, and Lumsdaine and Papell (1997) two-break unit root tests in which the break date is endogenously determined.

According to the results of the Augmented Dicky-Fuller, Phillips-Perron unit root tests are shown in Table 1, it can be seen that the *LNRGDP, LNT, LNGE,* and *LNBD* series was non-stationary and not integrated at the level but became integrated and stationary after taking the first difference.

According to Table 2 shows, the results of the Zivot and Andrews unit root test are presented. According to the findings, when the stationarity of *LNRGDP, LNGE, LNT, and LND* series was examined considering the structural breaks, the test statistics were obtained in both Model A (Intercept) and Model C (Intercept and Trend) were smaller (in absolute value) than the critical values. For this reason, it is concluded that all five series had a unit root.

Table 1: ADF and PP Unit Root Tests

Variables	ADF		PP	
	Level	1st Diff.	Level	1st Diff.
	t stats	t stats	t stats	t stats
LNRGDP	−1.954	−3.882*	−2.150	−4.428*
LNGE	−2.910	−5.555*	−2.536	−6.015*
LNT	−3.766	−4.795*	−4.656	−4.325*
LND	−2.129	−8.564*	−2.011	−8.998*

Source: Research finding. *, **, *** denotes 1%, 5% and 10% level of significance, respectively, Schwarz Information Criteria (SIC) were used in lag selection

Table 2: Zivot and Andrews Unit Root Test

Variables			Critical Values		
LNRGDP	A	1990	−4.478	−5.34	−4.93
	C	2016	−4.601	−5.57	−5.08
LNGE	A	2006	−4.950	−5.34	−4.93
	C	1999	−4.877	−5.57	−5.08
LNT	A	1996	−2.623	−5.34	−4.93
	C	1981	−3.158	−5.57	5.82
LND	A	1992	−4.434	−5.34	−4.93
	C	1989	−4.478	−5.57	−5.08

Research finding. Critical values were obtained from Zivot and Andrews (1992)

Table 3: Lumsdaine and Papell Unit Root Test

Variables	Model	Lag	Break Dates	Test Statistics	1%	Critical Values 5%	10%
LNRGDP	AA	0	1990 2015	−4.382	−6.74	−6.16	−5.89
	CC	0	1992 2014	−5.1581	−7.19	−6.75	−6.48
LNGE	AA	0	1989 2013	−4.534	−6.74	−6.16	−5.89
	CC	0	1974 2015	−6.154	−7.19	−6.75	−6.48
LNT	AA	0	1976 1996	−4.666	−6.74	−6.16	−5.89
	CC	0	2001 2009	−5.757	−7.19	−6.75	−6.48
LND	AA	2	1981 1997	−5.054	−6.74	−6.16	−5.89
	CC	2	2008 2016	−4.653	−7.19	−6.75	−6.48

Source: Research finding. Critical values were taken from Ben David *et al.* (2003)

According to Table 3 shows, Lumsdaine and Papell test is a unit root test that allows for two structural breaks. According to the results presented test statistics of *LNRGDP*, *LNGE, LNT,* and *LNBD* series for both Model AA and Model CC were smaller (in absolute value) than the critical values. For this reason, the basic hypothesis of unit root with the structural break is accepted. Thus, the series has a unit root.

Maki (2012) cointegration test with multiple structural breaks
Due to major economic events like shifts in the financial system and economic and financial crises, the equilibrium relationship might change, which, in turn, may affect the reliability of the Engle and Granger, (1987) and Johansen cointegration test, (1995) cointegration test. Leybourne and Newbold, 2003; Kellard, 2006, illustrate that the Engle and Granger, (1987) test overwhelmingly finds spurious cointegration when the breaks in level and slope of independent time series are neglected, whereas (Campos *et al.*, 1996; Gregory *et al.*, 1996; and Gabriel *et al.*, 2001) reveal that ignoring the existence of structural breaks leads to substantial decrease in the power of standard cointegration tests. Maki (2012) proposes a new long-term cointegration test which asserts that breaks by utilizing four different models.

According to Table 4 show, the results for Maki (2012) cointegration test with multiple breaks. It can be seen that models are statistically significant at the 1% significance level. It was concluded that there is a cointegration relationship, and the series would move together in the long run. According to the findings, the problem of spurious regression would not occur in the long run analyses of the series at the level. However, allowing for more than two breaks does not show any more proof of cointegration and further structural breaks.

It can be seen that the shocks that occur in Jordan generally reflect the dates of structural breaks. The exchange rate of the Jordanian, which dropped from 3 dollars in 1982 to 1.5 dollars in 1988 led to a doubling of the Jordanian debt. The periods in which the general macroeconomic stability deteriorated the most were observed as 1988 and 1989, 1990,1991, 1992, and 1993 in addition, 1991 Gulf crisis. The Global crisis 2008, and the Syrian crisis and Jordan's energy crisis played a significant role in the emergence of the crises in the past years.

Estimation of long-term coefficients
The long-term coefficients among the series were estimated using the DOLS estimator. The structural breaks that occurred in the results of MODEL 2, which is the most popular model in the literature, were included in the model as dummy variable. The obtained results are given below.

Table 4: Maki Testing for Cointegration

Test	Model	Statistics	Break Dates		1%	Critical Values 5%	10%
$T_B{\leq}1$	Model 0	−8.008*	1988		−5.989	−5.514	−5.272
	Model 1	−7.649*	1990		−6.947	−6.106	−5.010
	Model 2	−8.555*	1989		−7.001	−6.702	−6.873
	Model 3	−9.723*	1993		−7.508	−6.981	−6.803
$T_B{\leq}2$	Model 0	−7.279*	1988;	1991	−6.229	−5.704	−5.427
	Model 1	−8.605*	1990;	2015	−6.575	−5.086	−5.820
	Model 2	−8.907*	1989;	2008	−7.232	−6.702	−6.411
	Model 3	−10.309*	1993;	2012	−7.737	−7.201	−6.926

Source: Research finding. Critical values were taken from Table 1 in Maki (2012). * %1 significance level, ** %5 significance level

Table 5: Long-Run Estimators

RGDP as Dependent variable	Test
CONSTANT	6.202*
LNGE	0.289*
LNT	0.721*
LND	−0.061**
D1989	−0.034**
D2008	0.083*

Source: Research finding. The DOLS regressions were estimated with two lag. Also, D89t and D08t are the impulse dummies taking the value one if (t<1989) t>and (t<2008). *, **, *** denotes 1%, 5%, and 10% level of significance respectively

The results of DMOLS long-run coefficient estimator are given in Table 5. With RGDP as the dependent variable, according to the results of the DMOLS estimator, a 1% rise in T causes a 0.721% rise in economic growth. There is an affirmative effect relationship between economic growth and T. A 1% boost in GE results in a 0.289% increase in economic growth.

Furthermore, debt indicates a negative impact on economic growth at 5% level, a 1% increase in debt results in a −0.061 decrease in economic growth. It is seen that the break that occurred in 1989 negatively influenced economic growth. It was found that the Jordanian crisis that occurred in 1989 had a negative impact on economic growth. However, the structural break in 2008 had an affirmative effect on economic growth.

CONCLUSION

The influence of fiscal policy was investigated on economic growth in Jordan. A well, in the first step, the stationary of the series was tested by utilizing ADF and PP unit root tests which are traditional unit root tests. Within the second stage, the stationary of the series was analyzed by utilizing ZA (1992), LP (1997) unit root tests, which are among tests that take into consideration structural breaks. The findings demonstrate that the series had a unit root with structural breaks, it became stationary after showing the differences.

Furthermore, the cointegration test developed by Maki (2012) was implemented, which allows multiple structural breaks. It can be stated that the structural breaks observed as the result of the analysis in Maki's (2012) cointegration test occurred due to the effect of shocks that happened in Jordan or international shocks that affected Jordan. The findings make a significant contribution to the literature which are obtained as the result of the analyses on Taxes, Debt, and Government Expenditure. The point that draws attention in the study is that Debt has a long-term relationship with GDP. According to the study, tax revenues, public deficits, and debt can all be reduced and the economy can thrive if policymakers implement smart fiscal policies that boost gross fixed capital formation.

REFERENCES

1. Barro RJ. Government spending in A simple model of endogeneous growth. J Pol Econ 1990;98:S103-25.
2. Karagöz K, Keskin R. Impact of fiscal policy on the macroeconomic aggregates in turkey: Evidence from BVAR model. Procedia Econ Fin 2016;38:408-20.
3. Farhi E, Werning I. Fiscal multipliers. In: Handbook of Macroeconomics. Vol. 2; 2016. Doi: 10.1016/bs.hesmac.2016.06.006
4. Alam SA, Inchauste G, Serajuddin U. The Distributional Impact of Fiscal Policy in Jordan. The Distributional Impact of Fiscal Policy: Experience from Developing Countries; 2017.
5. Kasasbeh O. Public debt and economic growth: Is there any causal effect? An empirical analysis with structural breaks and granger causality for Jordan. Int J Trends Account Res 2021;2:106-10.
6. Al-Fawwaz TM. The impact of government expenditures on economic growth in Jordan (1980-2013). Int Bus Res 2015;9:99.
7. Al-Masaeed AA, Tsaregorodtsev E. The impact of fiscal policy on the economic growth of Jordan. J Econ Sustain Dev 2018;9:84-110.
8. Alawneh A. The impact of public expenditure and public debt on taxes: A case study of Jordan. Account Fin Res 2017;6:10.
9. Alqaralleh H, Al-Saraireh A, Alamro H. Interaction between fiscal policy and economic fluctuation: A case study for Jordan. Int Rev Manag Mark 2018;8:107-11.
10. Alkasasbeha OM, Haron NF, Abueid AI. The impact of government expenditures, taxes on economic growth in Jordan. Am Based Res J 2018;7:32-8.
11. Tobin J. Keynes's policies in theory and practice. In: The Policy Consequences of John Maynard Keynes. Milton Park, Abingdon-on-Thames: Routledge; 2017. p. 13-21.
12. Ocran MK. Fiscal policy and economic growth in South Africa. J Econ Stud 2011;38:604-18.
13. Erkam S. Effectiveness of Fiscal Policies: Theory and an Application. Ankara: Maliye Bakanlığı SGB Publishing No; 2010.
14. Abata MA, Kehinde JS, Bolarinwa SA. Fiscal/monetary policy and economic growth in Nigeria: a theoretical exploration. Int J Acad Res Econ Manag Sci 2012;1:75.
15. Di Sanzo S, Bella M, Graziano G. Tax structure and economic growth: A panel Cointegrated VAR analysis. Ital Econ J 2017;3:239-53.
16. Juliana MI. Effect of tax structure on economic growth in Nigeria. J Innov Fin Econ Res 2018;6:1-11.
17. Gómez-Puig M, Sosvilla-Rivero S. Nonfinancial debt and economic growth in euro-area countries. J Int Financ Markets Inst Money 2018;56:17-37.
18. Lof M, Malinen T. Does sovereign debt weaken economic growth? A panel VAR analysis. Econ Lett 2014;122:403-7.
19. Paul F, Furahisha G. Government Expenditure and economic growth nexus: Wagner's law or Keynesian hypothesis for Tanzania? Afr J Econ Rev 2017;5:32-47.
20. Sudarsono H. The relationship between economic growth and government spending: A case study of OIC countries. J Ekon Pembangunan Kajian Masalah Ekon Pembangunan 2015;11:149-59.
21. Macek R. The impact of taxation on economic growth: Case study of OECD countries. Rev Econ Perspect 2014;14:309-28.