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The Impact of Government Spending on Gross Domestic Product of the Private Sector in Jordan (1990 – 2018)

Adham Taher Mohmmad Alessa[1] & Hartini Mohammad[2]
[1]V3B-05-06, Bandar University Technology Lagenda, 71700 Mantin, Negeri Sembilan, Malaysia
[2]Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia (USIM), Bandar Baru Nilai, 71800 Nilai, Negeri Sembilan, Malaysia

This study aimed to investigate the impact of government spending on the real total local output of the private sector in Jordan by focusing on time series analysis of selected variables during the period 1990 to 2018. The objective was achieved using the appropriate statistical tests such as data stability and co-integration tests. The variables analysed included the real governmental spending (RGP), the real total output of the Private Sector (RPSP), Remittances of Workers (RRE), Energy Prices (RPP) and Inflation Rate (RINR). This study found a long-term statistically significant correlation between government spending and GDP of the private sector. It also found that long-term complementary relationships exist between the real total local output of the private sector and the variables used in the study. The study recommends the Jordanian government implement a targeted fiscal policy to support the economic activities in the Kingdom, provide customs and tax exemptions and provide appropriate infrastructure to encourage the private sector to invest. This is in addition to providing an appropriate environment for investment and removing the obstacles to investment in general in order to attract the capital of Jordanians working abroad for domestic investment, and foreign investments.

Keywords: Government Spending, Jordan, OLS Model, Private Sector

INTRODUCTION

The private sector is defined as institutions and corporations that are not owned by the state or institutions and as being subject to the capital of individuals or companies (Lienert, 2009). The private sector is considered one of the most important sectors as it is of great interest to the state and is considered one of the means of development. Many economists agree on the great role played by the private sector in developing productive capacities through the high level of technology used in production, the creation of employment opportunities, and the increase of exports. In order to increase the size of the private sector, the state must work to provide the

Correspondence: [1]adham.phd@gmail.com

business environment and support system suitable for reducing taxes and customs duties, provide the appropriate infrastructure and overcome the various administrative difficulties.

In order to guide the role of the private sector, countries generally seek to pursue economic policies that stimulate the role of the sector, given its importance as a partner and complement to the public sector. In the early part of the 20th century, government spending was the main driver of economic activity, and this spending was financed by taxes or indebtedness (Shatanaoui, 2011). Economic performance in many industrialized countries was characterized by a phenomenon noted and accompanied by government spending with an increase in the level of unemployment. The government seeks to reduce unemployment, generate growth and employment opportunities.

The impact of government spending and its role in the economy varies depending on the political and economic systems prevailing in a society for example, the difference between government spending in Arab countries and the extent of its impact on the private sector. The structure of government spending is characterized by its impact on economic activities. Therefore, the state uses government spending as a tool to achieve stability in the economy (Zaedat, 2000). The Jordanian government has undertaken a number of measures to encourage the private sector to invest in Jordan. This has been done through a series of amendments to the investment promotion laws within Jordan and the provision of necessary infrastructure needed for these projects and choosing the appropriate place for the development of industrial regions to encourage more investment. Examples of these measures include exempting companies for ten years from income tax and social services, exempting the fixed assets imported by enterprises for the establishment of projects from taxes, import duties and customs duties; and exempting taxes on spare parts for these assets, in addition to other exemptions (Investment Encouragement Act 2014). The government signed a number of international agreements and collaborated with international organizations to encourage investment.

The researcher noted the scarcity of studies on the impact of government spending on the real total local output of the private sector in Jordan. Most of the research deals with related areas, such as that by Ziyoud, (2011) which aims to know the impact of financial and monetary policy on private investment in Jordan. Zaedat, (2000) aimed at knowing the impact of government spending on the production of the private sector and the impact on private investment in Jordan.

The main objective of this study is to analyse and test the empirical relationship between government spending and private sector production in Jordan by using macroeconomic indicators such as inflation rate, real

expatriate remittances, and real energy prices in Jordan. To achieve this objective, the study first reviewed the theoretical and empirical literature on the impact of government spending on private sector production. The empirical analysis used annual data for the period 1990-2014.

LITERATURE REVIEW

Barro (1990) examined the increase in taxes to support the financing of government spending on investment. This study was conducted in 98 countries from 1970 to 1985. The study found high tax led to a reduction in the net returns on private investment and reflected negatively on the level of economic growth due to the decline in investment. The researcher also divided government spending into non-productive consumption expenditure (such as government subsidies in the form of food) and spending on infrastructure. The result shows that non-productive expenditures negatively affect growth and vice versa. As for expenditure per capita income, Devarajan et al., (1996) investigated the effect of all types of government spending on real per capita income growth. This study was conducted on a group of developing countries between 1970 and 1990. The study found government spending, excluding current expenditure, does not affect the per capita growth rate of real income and that current expenditure has a positive impact on the per capita growth rate of real income. Gupta et al., (2005) studied to find out the effect of government spending on growth rates. The sample of 39 countries from 1990 to 2000 comprised low-income countries. The study concluded that countries with the largest expenditure on salaries and wages tend to have low growth rates, and the countries that allocate the largest share of government spending on capital spending have high growth rates.

Qaqish (2005) identified the effect of government investment expenditure on macroeconomic indicators before and after the economic programmes in Jordan for the period 1976 to 2001. This study shows the important role played by public investments especially after Jordan's entry into economic programmes, which provide the means required to achieve continuous economic growth in order to improve living standards and the economy in general. Shukkani, (2005) examined the effect of fiscal and monetary policies on economic growth in Jordan firstly, for the time period from 1976 to 2004, which was divided into two sub-periods, from 1976 to 1990 and from 1991 to 2004. The results of the study on the first period showed that fiscal policy requires a relatively shorter period of monetary policy to influence the economy. The study for the second period showed that the monetary policy exceeded the success of the fiscal policy in the economic growth. It also found that changes in monetary policy led to increased economic activity response during the economic reform period, and that changes in fiscal policy made

almost no change during the two periods of study.

Massoud (2005) aimed to reveal the impact of spending to balance economic growth. The economic objective was to obtain the largest increase in income and a high growth level of the national economy in Algeria for the period 1990 to 2004. One of the main findings emphasized the inefficiency of fiscal policy in increasing income and economic activity. Alissa (2006) examined the effect of government spending on economic growth in Saudi Arabia and Kuwait for the period from 1970 to 2002, and in the United Arab Emirates from 1972 to 2002 . The most prominent findings of this study of these countries are the dependence on oil and the lack of diversity in the production of these countries; the dependence on expatriate labour by a large proportion; and that the general budget of these countries has evolved. The decline in the price of oil has a direct impact on capital expenditure, while its impact is limited to current expenditure. The results also indicate that long-term elasticity values are higher than those of short-term elasticity that is consistent with economic development.

Podkhdakh (2009) aimed to find out the impact of public expenditure on economic growth for the period 2001 to 2009 in Algeria. The study emphasized that the government should rationalize public expenditure on selected long-term projects, encourage foreign investment in the local economy and support small and medium enterprises as this provides opportunity for business expansion. Chinedu, Daniel, and Ezekwe (2018) found that the public sector does not compete with the private sector for each of the local financial resources available for the short term. There is competition with private consumption, both in the short and long terms, while the public and private sectors compete for financial resources through the real interest rate in the short term. The study concluded that there was a positive impact of sectoral spreads of government expenditure on economic performance in Nigeria. Three variables on sectoral government expenditure out of five sectoral government expenditure variables have a long-run relationship with real GDP. This study confirmed Wagner's law that increases in economic growth is achieved as a result of an increase in government expenditure. The study also verified that government expenditure on agriculture and defence had a statistically significant effect on economic performance in Nigeria while Government expenditure on transportation and communication, health and education were not statistically significant.

The study by Keho (2019) examined the impact of government spending on household consumption for the Economic Community of West African States (ECOWAS). The study used annual time series data for 12 member countries of the Economic Community of West African States (ECOWAS) for the period from 1970 to 2016. The

countries under study included Benin, Burkina Faso, Cote d'Ivoire, Gambia, Ghana, Guinea-Bissau, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo, and used the Common Correlated Effect Mean Group (CCEMG) estimator that accounts for both parameter heterogeneity and cross-sectional dependence. The study provides various pieces of evidence through whole-panel and country-level analyses. The panel estimates indicate that government consumption has, on average, a negative effect on private consumption, implying that government and private consumption are substitutes. Country-level results reveal, however, considerable heterogeneity in the degree of substitutability across countries. They show crowding out effects in six countries, crowding in effects in one country and no significant effect in five countries. Therefore, government consumption is not a good instrument to stimulate aggregate demand and economic growth in ECOWAS countries.

STUDY QUESTION AND STUDY HYPOTHESIS

In order to achieve the objective of this study the following question was raised:

1- What is the impact of government spending on private sector production?

This study is based on a specific hypothesis, through which we reach to know the impact of government spending on private sector production in Jordan through:

H_0: There is no relationship between government spending and private-sector production in Jordan.

Methodology

The unit analysis of this study includes all private sector production in every sector in Jordan covering 1990 to 2018. A typical OLS analysis using the unit root test, Co-integration Test, Granger Causality test, Error Correction Model was used to analyse the input of the variables for the measurement of the impacts of government spending on private sector production over the period from 1990 to 2018. The period of observation that was subject to analysis was 28 years. The source of data was collected from the World Bank and the Central Bank of Jordan website. Real GDP of private sector (RPSP) was considered the dependent variable while Real Government Spending (RGP), Inflation Rate (INR), Real Energy Prices (PP), Workers' Remittances (RRE) were considered the independent variables affecting the productivity of the Jordanian economy. The model developed in this study was used to analyse the impact of government spending on private sector production over the period from 1990 to 2018. The data used in this study was from the Central Bank of Jordan and the World Bank.

Table 1
Unit Root Test Results for Standard Model Variables

Variable	Stability level	T Tabulate	T Calculated	Probability
RPSP	Stable at the first level	-2.2010	-3.757320	0.0009
RGP	Stable at the first level	-2.2010	-7.040581	0.0002
RINR	Stable at the first level	-2.2010	-6.078910	0.0080
RRE	Stable at the first level	-2.2010	-4.048542	0.0084
RPP	Stable at the first level	-2.2010	-6.421036	0.0003

Table 2
Co-Integration Test of Productivity

Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.698076	74.38731	69.81889	0.0206
At most 1	0.599979	46.84299	47.85613	0.0621
At most 2	0.536817	25.76952	29.79707	0.1358
At most 3	0.256866	8.067950	15.49471	0.4582
At most 4	0.052474	1.239725	3.841466	0.2655

EMPIRICAL RESULT

The empirical result measured the impact of government spending on GDP for the private sector in Jordan using OLS model to analyse through a unit root test.

The Unit Root Test

The Augmented Dickey-Fuller (ADF) test indicated that all variables were stabilized, depending on the appropriate deceleration period determined at the minimum value of criterion AIC where the deceleration period was equal to one for all the variables as shown in Table 1.

The unit root test results revealed that the absolute value for t calculated is more than t tabulate, meaning that all variables of the study are stable at the first level.

Co-integration Test

Table 2 shows the tests applied to the co-integration test. All variables must have the same degree of dormancy. To make sure that all the variables of the study are not stable at their level and that they are stable at the first level, it is necessary to carry out the Johansson Co-integration Test where there can be a common integration and long-term stable relationship between the variables of the study. This means that the appropriate model for this type of data is a Correction Model Error (ECM) Error Correction Model. The common integration equation was as in Table 2 after reversing the signals and adopting one deceleration period according to the minimum value of the AIC test.

Table 3
Granger Causality Test

Null Hypothesis:	Observation	F-Statistic	Prob.
RRE does not Granger Cause RPSP	23	0.59131	0.5640
RPSP does not Granger Cause RRE		3.88133	0.0397
RGP does not Granger Cause RPSP	23	1.39768	0.2727
RPSP does not Granger Cause RGP		6.39047	0.0080
RPP does not Granger Cause RPSP	23	0.74331	0.4896
RPSP does not Granger Cause RPP		7.92850	0.0034
RINR does not Granger Cause RPSP	23	0.65979	0.5290
RPSP does not Granger Cause RINR		1.79902	0.1940
RGP does not Granger Cause RRE	23	3.26142	0.0618
RRE does not Granger Cause RGP		2.56277	0.1049
RPP does not Granger Cause RRE	23	0.72128	0.4997
RRE does not Granger Cause RPP		1.14475	0.3404
RINR does not Granger Cause RRE	23	2.20483	0.1392
RRE does not Granger Cause RINR		0.48202	0.6253
RPP does not Granger Cause RGP	23	3.51383	0.0515
RGP does not Granger Cause RPP		2.45178	0.1144
RINR does not Granger Cause RGP	23	0.53328	0.5957
RGP does not Granger Cause RINR		2.37849	0.1212
RINR does not Granger Cause RPP	23	0.28431	0.7559
RPP does not Granger Cause RINR		3.77868	0.0426

Reject at a significant level of 10%**Reject at a significant level of 5%*

The results of the co-integration test of productivity show the existence of a vector for the combined integration of the variables. The value of Co-integration Rank Test (Trace) is greater than the critical value at the level of 5%. The common integration equation was as stated in Equation (1) below after reversing the signals and adopting one deceleration period according to the minimum value of the AIC test.

RPSP= 1.688 RGP + 0.77 RRE - 115.23 RINR - 13.42 RPP (1)

(0.44) (0.450) (33.35) (20.1415)

Granger Causality Test

The Granger Causality Test was used in order to determine the causal relationship direction between the government spending and GDP of the private sector, as well as the causal relationship between the other variables of the model and whether this relationship is one-way, or reciprocal direction. Table 3 shows the results.

The Granger Causality Test showed that there is a one-way causal relationship of private sector output to government spending, employee turnover and energy prices. On other hand, there is a causal relationship with one direction of energy prices to government spending; there is a one-way causal relationship with government

spending and worker's remittances; and there is a causal relationship with the direction of energy prices to the rate of inflation.

Error Correction Model

The objective of this study is to investigate the effect of the relationship between government spending and the real GDP of the private sector. Once the data were not at their level and stable at the first difference, and there was a long-term mutual integration relationship between them, the error correction model was used. Therefore, the study used some tests from the error correction model (Variance Decomposition, and Impulse Response Function) because any random shock in any variable can affect other variables of the model.

Variance Decomposition

The objective of this test is to identify the amount of the variance error for each variable that predicts the volume return to the error expectation in other variables. The test to the variables (Real GDP of the private sector, government expenditure, workers' remittances, inflation rate and energy prices) was applied in the following order:RPSP, RGP, RRE, RINR, and Table 4 shows the results.

The results of the analysis in Table 4 show that the real GDP of the private sector is affected by government expenditure. This is evident in the second period. The change in government expenditure explains 2.12% of the error forecast in the real GDP of the sector which is due to random errors in government spending. The increase in the ratio in subsequent periods can be seen to reach 16.53% in the tenth period, indicating the effect of the change in government spending on the real GDP of the private sector not for one period but for future periods. The real GDP of the private sector is slowing down, with a time lag.

Table 4
Analysis of variance components

Period	RPSP	RGP	RRE	RINR	RPP
1	100.0000	0.000000	0.000000	0.000000	0.000000
2	94.08509	2.120178	0.118822	2.672945	1.002968
3	58.17848	6.492792	32.04469	1.195451	2.088586
4	56.15605	4.119077	36.40627	0.767635	2.550967
5	4.565588	24.60007	70.54910	0.071286	0.213953
6	4.078645	17.64220	76.67808	0.094172	1.506905
7	0.434170	24.00890	74.84314	0.093544	0.620245
8	3.047184	15.85648	80.56082	0.035971	0.499541
9	0.300800	24.89937	74.20744	0.064164	0.528228
10	2.540276	16.53009	80.57487	0.019048	0.335715

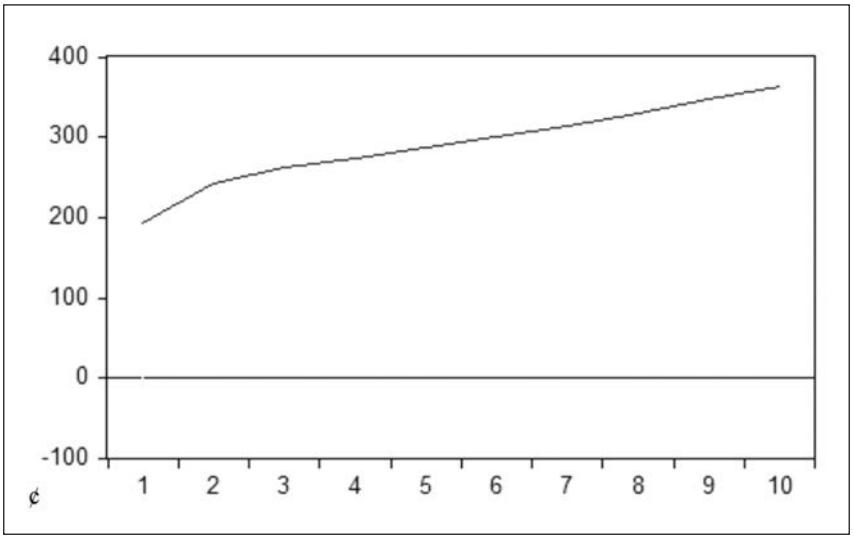

Figure 1: The response of RPSP to Cholesky on S.D RGP Innovation

The results of the analysis in Table 4 show that the real GDP of the private sector is affected by workers' remittances, inflation rate, and energy prices with the existence of the government expenditure in the model. It is clear that during the second period, the change in workers' remittances was explained by about 11.8% of the forecast error in the real GDP of the private sector. That is, it refers to the percentage of discrepancies in the prediction of the real GDP error of the private sector, which is due to random errors in workers' remittances.

It is also noted that the rates increase in subsequent periods reached 80.57% in the tenth period. This indicates the impact of remittances on the real GDP of the private sector not for one period but for periods to come, and this indicates that the impact of the change in remittances of workers on GDP the real total of the private sector is at a time lag.

The results in Table 4 indicate that changes in both inflation and energy prices are 2.67% and 1.002% respectively of the real GDP of the private sector in the second period. Decreases in subsequent periods reached 0.019% and 0.33% in the tenth period.

Impulse Response Function

This test aims to identify the impact of the sudden rise of the independent variables on the dependent variable in the short term, and ten periods were selected to see this effect. This test is also affected by the order of the data in the model because of the nested

relationships between variables. Figure 1 shows the response of the real GDP of the private sector to the random shock in government spending. There is a positive effect of government spending on real GDP of the private sector in the end of the second period which then slowly increased until the tenth period.

CONCLUSION

This study aimed to demonstrate the impact of government spending and the real GDP of the private sector in Jordan for the period 1990 to 2018, using OLS model for annual data. The main results of this study are summarized as firstly, there is a long-term statistically significant correlation between government spending and GDP of the private sector. The results of the Granger Causality Test show that there is a one-way causal relationship of private sector output to government spending, employee turnover and energy prices. On the other hand, there is a causal relationship with one direction of energy prices to government spending; there is a one-way causal relationship from government spending to worker's remittances; and there is a causal relationship with the direction of energy prices to the rate of inflation. The main recommendations of this study are firstly, the Jordanian government must implement a targeted fiscal policy to support the economic activities in the Kingdom, providing customs and tax exemptions and providing appropriate infrastructure to encourage the private sector to invest. Secondly, it must provide an appropriate environment for investment and remove the obstacles to investment in general, in order to attract the capital of Jordanians working abroad for domestic investment, as well as foreign investments. Finally, it must facilitate policies and measures aimed at activating the private sector as this sector is an important factor in increasing the flow of workers' remittances, increasing government spending and revitalizing the economy in general. ■

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