THE ROLE OF GOVERNMENT SPENDING ON ECONOMIC GROWTH IN A DEVELOPING COUNTRY

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Abstract

The issue of whether government expenditure helps or hinders economic growth is still debatable. This study examines the contribution of government spending towards economic growth in South Africa using annual data from 1980 – 2014. The cointegration approach and Vector Error Correction Model were used to analyse the data. The cointegration test results indicate that there is long run relationship between government expenditure and economic growth in South Africa. The VECM outcome indicates a positive and significant link between economic growth and expenditure on the long run. There is a positive and significant relationship between exchange rate and economic growth and a significant and negative relationship between economic growth and private consumption. Based on these findings, the correlation between government expenditure and economic growth showed that there is positive relationship on the long run in South Africa, while there is a negative and significant relationship between government spending and economic growth on the short run. More spending should therefore be directed towards important sectors such as infrastructural development and industrial development in order to accelerate economic growth. There is also a need for fiscal policy to be used as an instrument to regulate the amount of money in the economy.

Keywords: Economic Growth, Government Spending, Public Goods, Public Debt

1. INTRODUCTION

Most developed countries are still suffering from the legacies of the of 2008/2009 financial crisis. Some are still less vibrant compared to several years back. For instance, in 2014, the universal growth was less than usual and this has shown unexpected downturns for the past decades. Moreover, changes took place; it rose from 2.5 percent in 2013 to 2.6 percent in 2014. This movement was driven by several forces such as soft commodity prices; a steady decrease in interest rate, which conflicted with monetary prices all over the most important economies as well as feeble global trade, and, most essentially, the rapid reduction in oil prices (World Bank, 2015).

Despite the stunting of other countries during the worldwide economic reduction, South Africa was competent to stand through. Politically the country is relatively stable, it has a good banking system and it also endowed with natural assets and a well-equipped regulatory system with a good industrialised foundation. The World Bank positioned South Africa as an "upper middle-income country" and it is among the largest economies in Africa. Moreover, South Africa's legislation is considered to be particularly strong in terms of commerce, labour and maritime law (South Africa, 2015).

During the nineteenth and twentieth centuries there was an alarming increase in the economic growth of South Africa compared to other centuries. This resulted in an improved standard living which according to Moalusi (2004), could be compared to the way people lived for the past two hundred years. In order to achieve and maintain such standards, government is expected to perform a range of distinctive functions in society so as to make life conducive for the people. These functions can be achieved by capital spending which is absolutely affected by external shocks and plays a significant role in clearing up the dynamics of growth in government spending (Fedderke, et al., 2006).

Odhiambo (2015) indicates that ever since 1960, the proportion of government spending to economic growth has over the years been unstable in South Africa. From 2002 to 2005, the ratio stood at 19 percent. Though it changed to 20 percent in 2006, it dropped to 19 percent during 2007-2008 period. It later increased to 21 percent in 2009, which was the highest government spending from 1960 to 2011. That been the case, there seem to be dichotomy in economic literature about government spending. Baro (1990) supports increasing in government spending on social and other infrastructure as a way of improving the rate of development. The argument is that the money spent on social infrastructure such as education as well as health leads to increase in labour productivity which afterward leads to an increase in output. In the same vein, Chude and Izuchukwu (2013) posit that factors such as increase in labour force; expansion in the level of equipment; as well as economic improvement that contribute to the increase of the nation's productivity. Hence, government needs to improve contracts and sustain national security and also to provide essential public goods so as to improve a well-organised market which will arouse economic growth.

Moreover, government spending on infrastructure like construction of roads and electricity supply reduces manufacturing costs, leading to a rise in private organisation's saving which ensures economic growth. In the case of South Africa Chipaumire, et al., (2014) cite the 2010FIFA World Cup competition as a good example. However, on the other hand, they argue that government contribution through spending sometimes may have a negative impact on the financial system of a country. They point out that such spending may result in a debt burden for the national budget. It may lead to inflation as well as increasing taxation which may be a problem for the investors, and persistent government spending may be harmful to economic growth. For example, incessant spending may result in public debt expansion and government consumption crowd-out. For a start, private saving affects the financial system and reduces capital growth at the end. The idea is that when there is an increase in government spending, it can cause stagnation in aggregate demand in the economy and as a result it will affect crowd–in for private business.

The link between government spending and economic growth in South Africa has always been improving over the years. Government's intervention in resources has risen inordinately since the beginning of the 1980s. Its direct participation in the market mechanism and its finance has led to some consequences such as government expenditure to gross domestic product (GDP) which rose from 24.4 percent in 1979/80 to a provisionally estimated 31.4 percent during 1992/93 fiscal years. This however has resulted in a higher tax burden which increased from 15.8 21.9 percent during the same period. It has also brought about a short fall between the current expenditure and the current revenue, resulting in lack of saving which reached 4.8 percent of GDP in 1992 and led to an increasing trend in government debt. Recently, the deficit before borrowing and debt repayment has increased very sharply to a high level of 8.6 percent of GDP during 1992/93 and to a budgeted level of 6.8 percent of GDP in 1993/94 fiscal year.

There are many factors that contributed to the deterioration of government spending in South Africa; among these is the process of socio-political reform which resulted in an imbalance between government revenue and government expenditure (van der Merwe, 1993). According to the (Sala-i-Martin, et al., (2015), South Africa was ranked 49th in its global competitiveness out of 140 economies. In terms of the production of platinum, gold, chromium and iron, in recent years, it is among the top nations as it is blessed with natural assets. However it has failed to address some structural problems which seem to perpetuate the gap between the rich and the poor. They also bring about the reduction of the labour force, increasing the level of unemployment, declining infrastructure and elevating corruption and crime. Therefore, this has affected growth which has led to sluggishness that is below Africa's average (Trading Economics, 2016).

According to Vedder and Gallaway (1998), government extravagant spending can become burdensome at some point and this may lead to economic stagnation and decline. Furthermore, that can create a situation of too much money in circulation as a result of misallocation of money which makes spending to be too great. This however makes cost to outweigh its advantage. Moreover, spending too much money sometimes may cause extra cost which may lead government into borrowing. Nevertheless government always has the means of generating back any amount that it spends and this usually has its own consequences most especially for tax payers which sometimes discourages productive behaviour (Mitchell, 2005).

Another problem emanating from government spending is the issue of crowding-out. This happens through squeezing out of private organisations through the expansion of the public sector because when government uses scarce resources there will be less available for the private sector to use. That being the case, the inefficiencies of the market system can however be overcomed through government spending by allocating economic resources. It can also be used to facilitate the smooth cyclical instability in the country and create employment and price steadiness. Therefore, the role of government in economic growth is crucial and indispensable in a country (Alexiou, 2009).

Several researchers such as Bleany, et al., (2001), Gemmell and Kneller (2008), Mitchell (2005) and Odhiambo (2015) have studied the impact of government expenditure on economic growth in South Africa. This study focuses on the same relationship by employing the Johansen cointegration and VECM analysis. Furthermore, other macroeconomic variables are introduced into the system to determine their impact on economic growth and they also serve as control variables. The rest of the paper is organised as follows: section 2 provides the theoretical and empirical literature on the role of government expenditure on economic growth; section 3 discusses the methodology; section 4 shows the empirical results and section 5 presents the conclusion and policy recommendations.

2. LITERATURE REVIEW

There are several economic theories which can be used as frameworks for the relationship between government spending and economic growth. However, for this study focuses only on the Musgrave's hypothesis of public spending increase and the Wagner's theory. According to Verbeck (2000), Musgrave emphasised that a decreased level of per capita earnings results in a low demand for public services. Musgrave's opinion is that an increase in the level of income will give rise to demand for public services which, on the other hand, will increase services supplied by the public sector. In the long run it will stimulate government to increase its spending on them. Furthermore, the demand for health, education, as well as transport supplied by the private sector will increase which will motive government to spend more money if per capita income is only concentrated on primary needs which are above the level of income. However this may not always be the case as increase in public income may not necessitate economic growth.

Odhiambo (2015) describes Wagner's theory as a rising in government expenses. It can also be related to the ways in which national earnings aggravate government spending. However, this means that an increase in the economy as a result of industrialisation will improve the involvement of government in total spending. It will increase political pressure for social progress which in the long run increases allowance for social consideration in the behaviour of industries. However, this can only be possible if there is an increase in managerial functions in the state by spending further on welfare services and in social function. Therefore, according to Wagner's law, government spending depends on national income flow which will result in the expansion of the public sector. The theory however emphasises the contributions of government expenditure on economic growth in the sense that as countries grow wealthier, public demand for goods such as education, healthcare and cultural services increases. Therefore this study is linked to Wagner's law because it is of the opinion that government spending has a positive relationship with economic growth.

There is much empirical evidence which relates to the role of government spending on economic growth. Some empirical findings show a support while others argue against the role that government spending has on economic growth. Mitchell (2005) argues that government spending actually displaces private sector activities in the United States. The reasoning behind is that each and every dollar that goes out of government's pockets means one less dollar in the economy of the productive sector. More so, government expenditure is being dictated by political forces on what to spend and how to spend it. In this regard, the scarce resources are not used efficiently which in the end results in less economic output.

Bleany *et al.*, (2001) carried out research on the role of government spending on economic growth using OLS and GLS systems. The results indicate that productive public spending increases economic output while non-productive public spending does not, which is in line with Baro (1990)'s predictions.

Empirical evidence provided by Gemmell and Kneller (2001) on the effect of fiscal policy on long-run for the European economy indicated that public investment spending has a great positive impact on economic output while spending on consumption and social security have no significant impact. On the hand, Agenor (2004) found a negative association between the two variables because government spends huge amounts of money which negatively affects output. In the same breath, Jaranyakui and Bratimasrene (2007) conducted a study on the financial system of Thailand by applying Granger causality analysis. They concluded that the contributions of government towards economic output are not cointegrated but that there was an undimensional relation. After recognising that most of the studies were focused on aggregate public spending, Schaltegger and Torgler (2006) focused at both the state and local level in Switzerland and they discovered a negative relationship.

After ascertaining the authority that monetary policy has over economic expansion, Olapade and Olapade (2010) came to a conclusion that there is no important connection among most of the instruments of government spending and economic development. Similarly, Abu and Abdulahi, (2010) concluded that government spending on total capital, total recurrent expenses as well as education do not have any significant effect on economic output. However, spending on transport, health and communication indicate some improvement in economic output. They recommended government should see that there is an improvement in the area of education and to make sure that money allocated for the development of these sectors is honestly utilised. It should also fight against corruption in public offices in Nigeria by spending more on anticorruption agencies.

From this discussion, it is clear that literature review on the issue of government spending and economic growth is extensive and diverse. Therefore, this paper will be an important addition to other literature on the importance of government spending on economic growth especially in developing countries such as South African.

3. METHODOLOGY

This paper employs the cointegration and VECM approach to examine the relationship between government expenditure and economic growth. Other macroeconomic variables such as exchange rate and private consumption are added to the model as control as control variables. To establish the arrangement of integration of each variable the study employed the two stationary tests in the form of Augmented Dickey-Fuller (ADF) and Phillip and Perron (PP) tests. If the series are nonstationary at levels but stationary after differencing, this shows that there is existence of cointegration between them which suggests the presence of a long-run relationship among the series. Therefore, Johansen's cointegration test was used to confirm the long-run correlation by means of two likelihood tests. The first statistics λ_{trace} test, tests if the number of cointegrating vectors is zero or one, while λ_{max} tests if cointegrating equation is sufficient or two.

Moreover, if the cointegrating vector is correct, then the test statistics can be carried out as:

$$J \text{ trace} = - T \sum_{i=r+1}^{n} \text{In } (1 - \lambda_i) \qquad (1)$$

$$J \max = - T \text{ In } (1 - \lambda_{r+1}) \qquad (2)$$

where T represents sample size and λ_i is the *ith* biggest canonical link. The trace statistics tests the null hypothesis of 'there are at most r cointegrating dealing against the option of' m cointegrating relations. However, maximum eigenvalue tests for null hypothesis of r cointegrating vectors in opposition to the alternative hypothesis of $r+1$ cointegrating vectors. The Johansen style is essentially applied in a situation where all variables in the system are I (1). Moreover, this method can be said to be the best because it appears to be more vigorous towards skewness and excess kurtosis. Most importantly, this method has more advantages over others especially when there are small samples (Sjo, 2008).

The VECM is a constrained VAR that has cointegration built in it in order to use the pattern for nonstationary sequence that are recognised to be cointegrated. However the model can only be used when there is existence of cointegration among the series which indicate that there is the presence of long term equilibrium connection among them. Therefore, in this study VECM was used in order to estimate the short run properties of the cointegrated series. Hauser (2010) describes it as categories of numerous time series model that straightforwardly estimate the rate at which the dependent variable (X) is stabilised after a change in an independent variable (Y). It was popularised by Engle and Granger to correct for disequilibrium and can be used to approximate the effect of one time series on another in the short run as well as on the long run. However, VECM can also be used as an instrument in merging the short run performance of an economic variable by using its long run behavior. Exogenous variables such as seasonal dummies or time trends can be used in a VAR method. Moreover, the two variables, x and y in a VAR would symbolize the two equations thus:

$$\gamma_t = \beta_{y0} + \beta_{yy1}\gamma_{t-1} + \ldots + \beta_{yyp}\gamma_{t-p} + \ldots \beta_{yxp} x_{t-p} + \upsilon_t \quad (3)$$

$$x_t = \beta_{x0} + \beta_{xy1}\gamma_{t-1} + \ldots + \beta_{xyp}\gamma_{t-p} + \ldots \beta_{xxx1}x_{t-1} \\ + \ldots + \beta_{xxp} x_{t-p} + \upsilon_t \qquad (4)$$

VECM can be utilised when there is cointegration among the series which indicates the existence of long term stability among them. Furthermore it can also be used to estimate the short run properties of the cointegrated series.

According to the economic theory, the relationship of government spending may be positive or negative on economic development while empirical studies with private consumption may have a negative result on economic growth. Real GDP which is a proxy for economic growth is the dependent variable while, exchange rate, private consumption and real government expenditure are the independent variables. This paper investigates the role of government spending on economic growth in South Africa from 1980 to 2014 using annual data from the South African Reserve Bank. All variables were transformed into their usual logarithms so as to avert apparent problems of heteroskedasticity except those that have already been expressed as percentages, such as government expenditure. According to Gelman (2007), it is imperative to convert variables into logarithms so as to put off a few remarks from being exceptionally influential; besides, it is obligatory because coefficients on the natural log scale are directly interpretable as approximates of proportional differences.

The estimated model is expressed as follows:

$$RGDP_t = \beta_0 + \beta_1 Exch.Rate + \beta_2 \Pr iv.Consump_t + \\ \beta_3 GovExp_t + \mu_t \qquad (5)$$

where:
RGDP = gross domestic product
Exch.Rates = exchange rates
Priv.Consump = private consumption
GovExp = government expenditure
u_t = white noise error term.

4. EMPIRICAL RESULT

The ADF results in Table 1 indicates that both government expenditure and RGDP become stationary after first difference which means that they have unit root and also the results of exchange rate and private consumption showed that there is unit root after first difference. This implies that there is a significant relationship between government spending and economic growth. Therefore it can be concluded that both government expenditure and RGDP are incorporated in order of one, I(1) at 5 percent.

Table 1. Augmented Dickey-Fuller Unit Root Test Results

Variables	Model specification	Levels	First differences	Conclusion
GovExp	Intercept & Trend	[-0.404] (-3.548)	[-4.116]** (-3.553)	I(1)
Log RGDP	Intercept & Trend	[-2.419] (-3.553)	[-12.334]*** (-3.553)	I(1)
Log Exch. R	Intercept & Trend	[-3.771]** (-3.548)	[-4.722]*** (-3.568)	I(1)
Log Priv.Con.	Intercept & Trend	[-3.337] (-3.548)	[-6.037]*** (-3.558)	I(1)

*represents 10% level, **represents 5% level and **represents 1% level
( ) represent critical values
[ ] represent statistics

Moreover, the Johansen's cointegration test was carried out so as to determine the equilibrium association between the government expenditure and RGDP. Also the lag length '2' is estimated for this study as determined by Akaike Information Criterion (AIC).

Table 2. Lag Length Measure

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-62.819	NA	0.001	4.050	4.231	4.111
1	104.242	283.497	7.19e	-5.106	-4.199*	-4.800*
2	124.074	28.846*	5.98e*	-5.338*	-3.705	-4.789

Table 3. Johansen Cointegration test results (Trace)

Hypothesised No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical Values	Probability**
None*	0.595	54.096	47.856	0.011
At most 1	0.383	25.179	29.797	0.155
At most 2	0.245	9.730	15.495	0.302
At most 3	0.022	0.716	3.841	0.397

Trace test shows 1 cointegrating eqn(s) at 0.05 level
* Denotes refusal of the hypothesis at 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Both Tables 3 and 4 results indicate at least one cointegrating equation among the variables. The results of the probabilities are another indication that there is cointegration, the probability is 0.01 which is less than 5 percent. Moreover, the critical value is less than the trace statistics which makes the null hypothesis to be unacceptable.

Nonetheless in 'at most 1', the critical value is bigger than the test statistics; this indicates that the null hypothesis can be accepted. Therefore, there is existence of at least one cointegrating equation in both the trace and maximum eigenvalue results at 5 percent level. This study however shows that there is long-run relationship between government expenditure and economic growth in South Africa during the period of study (Hjalmarsson & Osterholm, 2007).

Table 4. Johansen Unrestricted Co-integration test (Maximum Eigenvalue)

Hypothesised No. of CE(s)	Eigenvalue	Max-Eigen Statistics	0.05 Critical values	Probability**
None*	0.595	28.917	27.584	0.034
At most 1	0.383	15.449	21.132	0.259
At most 2	0.245	9.014	14.265	0.285
At most 3	0.022	0.716	3.841	0.397

Max-eigenvalue test indicates 1 cointegrating eqn(s) at 0.05 level
* Denotes rejection of the hypothesis at 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

In Table 5 a negative and significant coefficient of VECM indicates that any short term instability between the dependent and independent variables will enlarge the long run connection between them. Therefore according to the results in Table 5, it can be finalised that RGDP has an affirmative influence on government expenditure and is significant while the result of exchange rate has a positive contribution on economic development and private consumption has a negative and significant influence on economic growth.

Table 5. Vector Error Correction Model

Variables	GovExp(-1)	RGDP(-1)	Exch. Rate(-1)	Priv. Consump(-1)
Coefficient	1.000000	21.59906 (6.90442) [3.12830]	32.71906 (6.33029) [5.16865]	-35.15276 (6.37521) [-5.51398]

Error Correction:	D(GOV_EXP)	D(LOG_RGDP)	D(LOG_EXCH. R)	D(LOG_PRIV.CON)
CointEq1	-1.151 (0.399) [-2.886]	-0.005 (0.002) [-2.561]	-0.029 (0.009) [-3.355]	-0.004 (0.003) [-1.361]
R^2 = 0.662				
Adj.R^2 = 0.524				

( ) represents standard errors [ ] represents t-statistics

According to Chipaumire, et al., (2014), the error correction terms of coefficients can also mean speed of amendment to long run equilibrium. The speed of adjustment is showed by the coefficient of the error term in Table 5. In view of the outcome of the results, government spending reveals a negative

and importance which indicates that the independent variables such as RGDP, exchange rate and private consumption have a short run association with the dependent variable. This however is a clue that the independent variables have power on RGDP in the long run. In addition, both R^2 and adjusted R^2 are greater than 50 percent which is evidence that the variance in the dependent variable is explained by independent variables?

5. CONCLUSION

The aim of this paper was to examine the role of government spending on economic growth in South Africa using the cointegration approach and VECM covering the period from 1980 to 2014. The cointegration results shows the existence of long-run relationship amongst the variables while the VECM displays a positive correlation between economic growth and government expenditure in the long run. Meanwhile, the VECM results indicate that government spending has a negative link with economic growth in the short run even though the results indicate the significance of expenditure in the economy. This however may be as a result of inefficiencies of the government programmes. There is more increase in government spending than income from the economy and this validates Wagner's law in South Africa. This may be as a result of overspending of revenue on subsidies, administration and defence services. Therefore government should scrutinize all non-developmental expenditure. Therefore it is suggested that focus should be directed to macroeconomic objectives which will enable the economy to grow. There is also a need for improvement on efficiencies of public programmes so as to eliminate wastage and make use of limited economic resources. The exchange rate to economic growth is positive and significant. Government needs to improve in the area of exchange rate and to invest in productive goods in order to improve output. Moreover the relationship between private consumption and economic growth is negative and significant. Government therefore needs to focus more on private spending in order to contribute immensely to the economy of the country.

In view of this, government should deal with the way money is being spent and focus on the projects that contribute immensely to the nation's productivity. Moreover, fiscal policy will be a significant macroeconomic instrument for economic stability in South Africa. The policy makers should provide an appropriate environment conducive to oversee government spending on capital formation as well as private investment spending. Fiscal spending programmes should be employed in allocating expenditure to various sectors especially during global financial crises.

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