Government Spending and Economic Growth: Keynes or Wagner for Cameroon? ARDL/T-Y-VAR Approach

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Abstract

This study had as primordial objective, to empirically investigate the nature of the link between government expenditure and economic growth in Cameroon from 1977-2018. To realise this objective, data were collected from the World Bank World Development Indicators and the ARDL technique was employed to examine the short and long run effects of government expenditure on economic growth in Cameroon. Then the VAR model, following the Toda-Yamamoto (1995) specification which is an ameliorated version of the traditional VAR model developed by Sims (1980) and Granger (1969) were employed to examine the nature of the link between the variables. The outcome from the ARDL model indicates that there is short run significant negative effect of government expenditure on economic growth while in the long run, there is a positive and insignificant effect. The result from the VAR model shows that there is a unidirectional causal relationship from growth to government expenditure. This result supports the Wagner's law of expanding state activities for Cameroon. The findings suggest that instead of involving in increased spending as a means to guarantee sustainable growth, government should focus on policies that would create the enabling environment for growth to thrive like control of corruption and reforms in the financial sector to attract more private investment and the strengthening of state institutions.

Keywords: government spending, economic growth, ARDL, VAR approach

1. Introduction

There exist many instruments at the disposal of policy makers to control economic activities within an economy. These policy instruments include taxation, correcting market failures and expenditure on the provision of a wide range of public goods such as state security, roads and street lighting (Esen & et al., 2022; Egbetunde & Fasanya 2013; Shkodra & et al., 2022 & Alshammary & et al., 2022). Amongst these policies, this study focuses on government expenditures which are crucial instrument at the disposal of policy makers in developing and emerging economies with Cameroon not being an exemption. After Cameroon's independence in 1961, the government put in place instruments for building the Cameroonian nation and promoting economic development. In this light, the government introduced a series of five years development plans which started in 1961. These different plans had different policy objectives to attain. This policy continued until the implementation of the Structural Adjustment Programme (SAP) in the 1990s (Amin, 2002).

A total of six successive five years development plans where implemented between 1961 and 1990. Up to

mid-1980s, there was steady and significant increase in Cameroon's Gross Domestic Product (GDP), with a relatively high level of state intervention. During this period there was the creation of many state corporations like, among others, the Cameroon Development Corporation (CDC) for a variety of agricultural produce, SODECOTON for cotton, SEMRY, UNVDA and SODERIM for rice and SODECAO for cocoa (Amin, 2002). The mid 1980s to the early 1990s witnessed a fall in the country's GDP due to a fall in the prices of most of its major exports (oil and agricultural produce) in the world market. This exposed many structural weaknesses, plunging the country into a deep crisis. The government responded by lunching the austerity and structural adjustment programs of the IMF and the World Bank. These programs where instituted by the Britton Woods institutions as recovery measures for countries that were unable to service their debts in a sustainable manner (Sanyal & et al., 1990 & Amin, 2002).

The Cameroon government embarked on these programs by reducing salaries and cutting subsidies in order to bring down government budgetary deficits in the short run. Public enterprises and parastatals were restructured and rationalized, while some were privatised. The government went further to liberalise its external trade while improving the exchange rate and providing incentives to the external sector. Equally, this period saw a reduction in state intervention and the encouragement of private investment. The mid 1990s till date can be seen as the period of recovery in Cameroon after the crises of the late 80s and early 90s. This period saw the adoption of the Heavily Indebted Poor Countries Initiative (HIPCI) and the Poverty Reduction Strategy (PRS). This period in Cameroon was associated with poverty alleviation as more emphasis was placed on the social sector programs, particularly education, health and basic infrastructures as well as the state public-private partnership program. The country steadily and gradually returned to her growth path (Amin, 2002 & Forgha, 2011).

Despite the different efforts made and policies put in place by the state (government) for the country to move towards an integrated global economy, the role of the state which is a major determinant of growth remains questionable in Cameroon. Thus, this study has two objectives it seeks realise:

The first is to examine the short and long run effects of government expenditure on economic growth, while the second is to have a thorough look at how government spending and economic growth are linked in Cameroon. Before answering these questions, this work will first review some existing literature in this domain. Then it will proceed to present the methodology and results of the study.

2. Literature Review

2.1 Theoretical Literature

The role of government expenditure on economic growth has been a subject for theoretical exchanges among various economic opinions for several decades. This review will begin with the propositions of economists that see no causal link between these two macroeconomic variables before examining those asserting causality between the variables.

The Classical View, with Smith (1776) and Ricardo (1821) as front liners, holds that countries would experience lower economic growth if they witness higher government expenditure. Economists of the classical leaning, therefore, opted for a free economy in which state activities should be extremely limited. To them, government interference in the free economy would hinder economic progress. To support this view, Peacock and Wiseman (1961) argued that increase in public sector expenditure is caused by social crises and hence expenditure is not growth driven.

Moreover, Solow (1956) viewed in his neo-classical/exogenous growth model that the rate of economic growth is hardly the outcome of government expenditures. In other words, long-run growth of output cannot be brought about by fiscal policies. Rather, as suggested by Neo-classical economists three parameters that drive the long run growth rate, and which are exogenously determined, are population growth, the rate of labour force growth, and the rate of technological progress. Backing up this contention, the neoclassical counter-revolution school of the 1980s suggests that the pace of economic growth is slowed down by state intervention in economic activity.

The classical economists believe that increase in government expenditures, unless financed by money creation and thus changes in monetary policy, would affect neither employment nor price level (Ju-huang, 2006). Equally, an increase in government spending, with a constant money supply, would lead to an increase in income but this will only substitute private business investment with public programs (Froyen, 2008). As such, the classical economists do not see any causal effect of increased government expenditure on economic growth.

Generally, as to what concerns the nature of the link between government expenditure and economic growth, recent studies have analysed the Law of expanding state role (or the Wagner's law) and the Keynesian macroeconomic framework for development theory. Looking at Wagner's law of increasing state activities, Sinha (1998) reported that "Adolph Wagner was probably the first scholar to recognise a positive correlation between economic growth and the growth of state activities".

Equally, Henrekson (1993) pointed out, from Wagner's law, three main reasons for the increase in government's role in an economy. Firstly, modernisation and industrialisation would lead to the substitution of public for private activities and result in increasing government expenditure on law and order as well as on contractual enforcement. Secondly, an increase in real income will lead to an expansion of the income elasticity "culture and welfare" expenditures. Wagner cited two areas which are education and culture in which the government could be a better provider than the private sector. Thirdly, natural monopolies such as railroads had to be controlled by the government due to the high running cost of such huge investment, and also the inability of private sectors to raise such capitals to finance these activities. As such, Wagner's law is interpreted generally as government expenditure being a consequence of a growing economy.

In economic literature, there are different interpretations of Wagner's hypothesis, which broadly results into six formulations. The alternative versions of Wagner's Law and variables used to explain state expenditure and growth are presented on table 1 below.

Table 1. Versions of Wagner's law

Version	Variables
1. Peacock-Wiseman Traditional Version [1961]	E = f [GDP]
2. Pryor Version [1969]	C = f [GDP]
3. Goffman Version [1968]	E = f [GDP/P]
4 Musgrave Version [1969]	E/GDP = f [GDP/P]
5. Gupta-Mitches Version [1967]	E/P = f [GDP/P]
6. Mann version [1980]	E/GDP = f [GDP]
Source: Authors' summary from theory. Where, E = Government total expenditure P = Population C = Government consumption expenditure GDP = Gross Domestic Product.	

The differences in the above formulations lies on the different methods that government expenditures and growth are captured and interpreted. The government expenditure variables used are total expenditure, consumption expenditure, per capita total expenditure and ratio of expenditure to GDP. The growth variables used in the above models are total GDP and per capita GDP.

Keynes (1936), in his macroeconomic framework for development theory, highlighted the idea that during depression, economic activities are improved by the use of fiscal policies, emphasis being laid on the positive impact of an autonomous public spending on economic growth. The standard effective demand theory suggests that governments need to make use of a proactive fiscal policy as an important instrument to stimulate economic activities and economic growth. Thus, followers the Keynesian tradition believe that a Keynesian-type fiscal stimulus is what an economy needs to apply temporarily in periods of recession by an active government (Arestis, 2011).

In addition to viewing government expenditure as an instrument for the achievement of short term stability and higher long run growth rate, the Keynesian economists, in their macroeconomics model, suggest that public expenditure of all sort, be it recurrent or non recurrent, can contribute positively to economic growth. This happens through the multiplier effects on aggregate demand and on income level in the economy.

Poot (2000), on his part, justified that the "Keynesian Hypothesis" was valid, making use of three reasons. First, considering that pure public goods that constitute a sizeable component of the aggregate demand are supplied by government, the latter may own or operate enterprises and institutions that provide quasi-public or private goods, whereas she imposes controls and regulations to facilitate the protection of property rights and enhance allocative efficiency in the presence of externalities. Second, income distribution is affected by income tax and transfer payments affect which create a more equitable society. Third, governments often act as a facilitator in markets with asymmetric and imperfect information. As such, in the view point of the Keynesians and new Keynesians, causality runs from government spending to growth.

This view point is equally supported by the endogenous growth models of Romer (1986), Barro (1990) and Rebelo (1991) who explain the key role that government plays in an economy's process of growth. The models put across a proposition that output in unambiguously reduced by higher taxation, but add that proceeds for

productive spending items may be used to losses may be offset any resultant losses. The models proceed to recommend that, through direct and indirect investments in infrastructure, human capital formation (education), and Research and Development (R&D), public policy should play an active role in promoting economic development.

These theoretical literatures review shows the different arguments raised by different authors on the relationship between government spending and economic growth. This study will examine the view point of the Keynesians and the Wagner's hypothesis in order to establish the direction of causality between these variables in Cameroon and equally appraise the effect of government expenditure on growth.

2.2 Empirical Literature

Onifase *et al.* (2020) investigated the impact of public expenditures on economic growth in Nigeria from 1981 to 2017 using the ARDL technique. The results showed that recurrent expenditure has a negative impact on economic growth meanwhile public capital expenditure was found to be positive but insignificant. Meanwhile the granger causality test employed indicated a bi-directional relationship between growth and variables of public expenditure. Equally, Egbetunde and Fasanya (2013) using data in Nigeria from 1970-2010 concluded that government total expenditure has a negative impact on economic with recurrent expenditure showing some positive impact.

Olugbenga and Owoye (2007) examined the effect government expenditure on economic growth in 30 selected OECD countries, making use of yearly data covering the period from 1970 to 2005. They used Granger causality and co-integration tests on two variables of concern, namely Total Government Expenditure (TGE) and Gross Domestic Product (GDP). According to the results of the study government expenditure had a long run relationship economic growth. Furthermore, while the authors observed a unidirectional causality between government expenditure and growth in 16 countries, the results showed the existence of a bidirectional causality direction between government expenditure and economic growth, as observed by Wagner's law in 10 OECD countries and 4 countries. While analysing the effect of government expenditure for countries of south east Europe, Shkodra et al. (2022) concluded that government expenditure has a positive significant effect on economic growth. This outcome is line with that obtained by Alshammary et al., (2022) for a panel of 20 Middle East and North Africa (MENA).

Jalles (2019) investigated the validity of the Wagner's law in a sample of 61 advanced and emerging Markets between 1995 and 2015. The evidence from the panel data analyses showed that the Wagner's law seems more prevalent in advanced economy and when countries are growing above potential. In the same light, Paparas et al. (2018) examine the Wagner's law in the United kingdom from 1850-2010. The result indicated the presence of a long run relationship between national income and government spending, while the causality is bidirectional.

Error-correction model was used by Payne and Ewing (1996) to test for Wagner's law on a sample of 22 randomly selected countries. Evidence of Wagner's Law was seen only for Australia, Colombia, Germany, Malaysia, Pakistan and the Philippines. Bi-directional causality was found for India, Peru, Sweden, Switzerland, UK, U.S.A and Venezuela, and Granger causality was absent in Chile, Finland, Greece, Honduras, Italy and Japan.

Jamshaid et al. (2010) examined the nature and the direction of causality between public expenditure and national income alongside various selected components of public expenditure, development expenditures, administration expenditures, debt servicing and defence service in Pakistan. Their study applied the Toda-Yamamoto causality test on yearly data for the period between 1971 and 2006 inclusive, and the conclusion was the existence of a unidirectional causality between GDP and government expenditure, an outcome which supported Wagner's Law. However, when disaggregated, the effect of GDP was felt only on administrative expenditure whereas development, debt servicing and defence expenditures were not affected. Samuel and Oruta (2021) use disaggregate data on government expenditure and employed the autoregressive distributive lag model and concluded that recurrent expenditures on agriculture, health and education has a short run negative effect while all he variables are positively significant in the long run. There was no evidence of the Wagner's and Keynesian hypothesis.

Muhlis and Hakan (2003) examined Wagner's law on the relationship between public expenditure and GDP for the Turkish case over the period of 1965-2000 using co-integration test and granger causality test. They empirically found a bi-directional relationship between public spending and GDP growth, showing evidence of both the Keynesians and Wagnerian hypotheses. Equally, Mohsen et al. (2013) took the case of Iran for which they examined the existence and nature of causality between government recurrent expenditure and economic growth using yearly data for the period 1970 to 2010. They applied the Gregory-Hansen (1996) Cointegration technique to give room for likely breaks in data and equally used the granger causality test to verify the existence and nature of any long run relationship between these two variables. Their result showed that economic growth

had a unidirectional relationship with government recurrent expenditure.

Kojo and Yemane (2013) used the bounds test approach to Cointegration to study the relationship between government expenditure and economic growth in Ethiopia. They found reliable proof of existence of not only a long-run relationship between government expenditure and GDP but also supporting evidence of the Wagnerian hypothesis of an expanding public sector as established by a unidirectional causality observed between GDP and government expenditure.

Meanwhile, Kofi and Grace (2015) used the vector autoregressive/Granger causality analysis developed by Sims (1980) and Granger (1969) to empirically study the causal relationship between government expenditure growth and GDP growth in Ghana from 1980 to 2010. The result from the granger causality test revealed a unidirectional relationship from GDP growth to government expenditure growth, thus, supporting the Wagner's law of expanding state activities.

This literature review in line with other studies like Granger, 1969, Jalles, 2019, reveals the inconsistency in results gotten from different countries using different econometrics technics. This shows the inconclusive nature of work done so far within this sphere. It is on the basis of this that this study seeks to know more on the nature of the link between these variables, with focus on Cameroon where little has been done this far.

3. Methodology

The methodology of this research first presents the nature and sources of data. It equally specifies the econometric model which is used to estimate and analyse the hypothesis after conducting a preliminary test of unit root. Then it ends up by looking at the techniques used in estimating the model.

3.1 Nature and Source of Data

The study makes use of data from secondary sources, particularly from the annual publication of the World Bank World Development Indicators Book (WDI, 2020). The study makes use of time series information on variables within the period 1977-2018. Microsoft Excel is used in processing the data while the data is analysed using E-views 9.

3.2 Model Specification

The econometric model used in this study to handle the first objective is the autoregressive distributive lag (ARDL) technique developed by Peseran et al. (2001) which captures both the short and long run effects of variables. This technique has some advantages which include, among others, the estimation of variables that are both stationary at level and at first differences, the ability to deal with endogeneity of variables by providing long term estimates, and finally the used of the bound test which gives desirable effects and therefore is used commonly for empirical modelling as noted by Bentzen and Engsted (2001), Afumbom et al. (2020) and Odhiambo (2009). The model used in this study is inspired from the work of Lupu and Asandului (2017) and the corresponding ARDL specification is given as:

$$\Delta GDPC = \alpha_0 + \alpha_{1i}\sum_{i=1}^{n} \Delta GDPC_{t-1} + \alpha_{2i}GXP_{t-1} + \alpha_{3i}PDINV_{t-1} + \alpha_{4i}\sum_{i=1}^{n} \Delta INF_{t-1} + \alpha_{5i}\sum_{i=1}^{n} \Delta GDS_{t-1} +$$

$$\alpha_{6i}FRENT_{t-1} + \lambda_1 GXP_{t-1} + \lambda_2 PDINV_{t-1} + \lambda_3 INF_{t-1} + \lambda_4 GDS_{t-1} + \lambda_5 FRENT_{t-1} + \xi_t \tag{1}$$

Where Δ stands for difference, α_1 to α_6 are the short run parameters while λ_1 to λ_5 stand for the long run parameters.

Meanwhile, the second objective is investigated using the Vector Autoregressive (VAR) model which is very much recommended for use when studying simultaneity between macroeconomic variables. It is advantageous on several counts, which include the fact that it is simple, it provides a possibility of estimating a system of small sizes, simulation of structural shocks and the number of constraints and economic assumptions it has are limited. It is equally applicable in empirical tests and forecasting. The estimated model is given as:

$$\begin{bmatrix} GDPC_t \\ GEX_t \end{bmatrix} = \alpha_0 + \beta_1 \begin{bmatrix} GDPC_{t-1} \\ GEX_{t-1} \end{bmatrix} + \ldots + \beta_{k+d_{max}} \begin{bmatrix} GDPC_{t-k-d} \\ GEX_{t-k-d} \end{bmatrix} + \gamma_1 PDINV_t + \gamma_2 INF_t + GDS_t$$

$$+ \gamma_4 FRENT_t + \begin{bmatrix} \epsilon_{GDPC_t} \\ \epsilon_{GEX_t} \end{bmatrix} \tag{2}$$

Where GDPC$_t$ is Gross Domestic Product Per Capita growth rate in year t, GEX$_t$ denotes Government consumption expenditure as a percentage of GDP in year t, PDINV$_t$ denotes Gross Fixed Capital Formation for private sector as a percentage of GDP at period t, INF$_t$ designates Inflation rate GDP deflator at period t, GDS$_t$ signifies Gross domestic saving as a proportion of GDP in year t, and FRENT$_t$ is forest resources rent as a percentage of GDP in year t. $\beta_{1,....,}$ $\beta_{k+d_{max}}$ are the respective coefficients of the lagged variables depending on the values of k and d$_{max}$ and α_0 is constants, t signifies the time period while t-i is the previous periods with i representing the number of lags which are determined using the information criteria and the estimation technique. ϵ_{GDP_t} and ϵ_{GE_t} are the respective error terms of the spending and growth equations.

4. Results and Discussion

4.1 Results of Unit Root Test

In order to ensure non spurious results which are inherent in the presence of I(2) variables, we perform the unit root test to verify if all the variables of the model are having order of integration strictly less than two. In this light the order of integration was determine by employing the Dickey-Fuller generalised least square (DF-GLS) unit root test. This unit root test is preferred over the traditional tests like the Philips-Perron and Dickey Fuller because these traditional tests have very poor power and size properties and hence not reliable for small sample datasets (Alimi, 2014). The results of the DF-GLS unit root test presented in table two below indicate that private domestic investment is stationary at first difference meanwhile, GDPC, GEXP, INF, GDS and FRENT are all stationary at level.

Table 2. DF-GLS unit root test

Variables	DF-GLS at levels		DF-GLS at first difference			Decision
	t-statistics	p-value	t-statistics	p-value		
GDPC	-2.7863	0.008[b]	-	-		I(0)
GEXP	-2.2575	0.030[b]	-	-		I(0)
PDINV	-1.5606	0.127	-4.9798	0.000[a]		I(1)
INF	-4.9393	0.00[a]	-	-		I(0)
GDS	-2.3038	0.027[b]	-	-		I(0)
FRENT	-1.8542	0.071[c]	-	-		I(0)

Sources: Authors' computations. [a,b,c] indicates the respective significance levels at 1%, 5% and 10%.

4.2 Cointegration and Diagnostic Test

Before proceeding to present the short and long run coefficients of our estimated model, a diagnostic test is conducted on the estimated model to ensure the relevance and pertinence of the estimated model. This is done by employing the ARDL bound test according to Pesaran et al. (2001), as seen in table 3.

Table 3. Cointegration and diagnostic test results

Description	Test statistics
Cointegration test	
Selected ARDL model: SIC	(2,4,3,3,4,0)
K	5
F statistic	7.4442

Critical values	I(0) Bound	I(1) Bound	
1%	3.41	4.68	
5%	2.62	3.79	
10%	2.26	3.35	
Diagnostic test			
Test	Statistic	p-value	
R^2			0.981
Adjusted R^2			0.956
F-statistic	39.1721	0.000[x]	
LM Test	2.4168	0.1061	
ARCH Test	0.2025	0.6555	
RESET Test	1.0281	0.4320	
Normality Test	2.1597	0.3397	

Sources: Authors' computation. [x] 1% significance level.

From the results, the F-statistics of the bound test is 7.44, which exceeds the upper critical bound (4.68) at 1% significant level. As such, the null hypothesis that no long run relationship exists between variables is rejected at the 1% significance level. For pertinence and relevance of the estimated results, diagnostic tests are performed on the estimated model. The results in table 3 indicate the rejection of the null hypothesis of autocorrelation from the Breusch-Godfrey LM test. This shows that the model is free from autocorrelation of residuals. The ARCH test results equally confirm the absence of Heteroskedasticity of residuals. Concerning normality, the Jarque-Bera normality test result confirms the failure to reject the null hypothesis on normally distributed errors, the implication being that the estimated model has normally distributed errors, and is good for inference. Also, given that the Ramsey RESET test result fails to reject the null hypothesis of correct specification, there is confirmation that that the model is well specified.

4.3 Estimated ARDL Long Run and Short Run Results

Based on the estimated results presented in Table 4, the short run coefficient of government expenditure shows that an increase in government expenditure by 1% would lead to a setback in economic growth by 1.48%. This effect is statically significant at 1%, and this is in line with the findings of Esen et al., (2022), Egbetunde and Fasanya (2013) and Onifase (2020). Meanwhile, in the long run government expenditure is positive showing that increased government spending would increase long run growth rate of the economy. But this coefficient is not significant.

Table 4. Short and long run results

Variables	Coefficients	Std. error	t-statistic	p-value
Short run				
D(GXP)	-1.4832***	0.396	-3.746	0.002
D(PDINV)	0.3705***	0.092	4.013	0.001
D(INF)	-0.2112***	0.037	-5.711	0.000
D(GDS)	0.3589***	0.106	3.376	0.004
D(FRENT)	1.7021**	0.677	2.513	0.023
ECT(-1)	-0.7070***	0.067	-10.617	0.000
Long Run				
GXP	0.713	0.837	0.851	0.407
PDINV	1.498***	0.246	6.081	0.000
INF	-0.415**	0.147	-2.834	0.012
GDS	1.086*	0.534	2.035	0.059
FRENT	2.408**	0.974	2.471	0.025
C	-61.752**	23.568	-2.620	0.019

Source: Computed by authors: ***,**,* are the respective significance levels at 1%, 5% and 10%.

From the short and long run coefficients, domestic private investment, domestic savings and forest resources rent have a positive impact on economic growth in Cameroon. This implies that a percentage increase in domestic private investment, domestic savings and forest resources rent will increase economic growth in Cameroon by 0.37%, 0.36% and 1.70% respectively in the short run meanwhile in the long run, it will lead to a respectively 1.49%, 1.08% and 2.4% increase in economic growth. Finally, inflation is found to exert a negative effect on economic growth in Cameroon both in the short and in the long run within the study period.

The coefficient of the error correction term is negative, implying that the actual value of economic growth in the previous period is less than the long run value. So, there was a forward adjustment in the value of economic growth to restore equilibrium in the next period. On a specific note, the ECT is-0.707 indicating that about 70.7% of all errors that occurred in the short run were corrected in the long run to re-establish equilibrium. The coefficient is equally significant at 1%. This means that there was a significant adjustment to the model towards long run equilibrium.
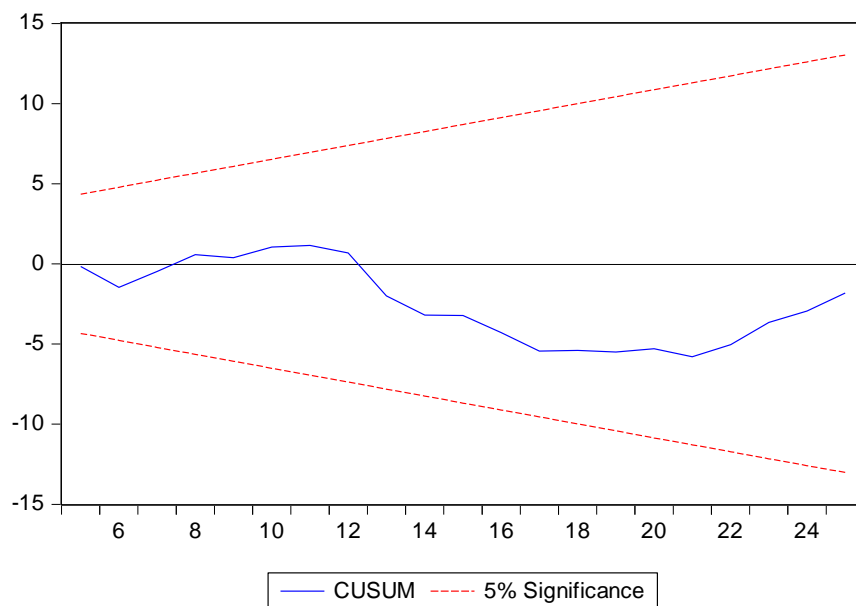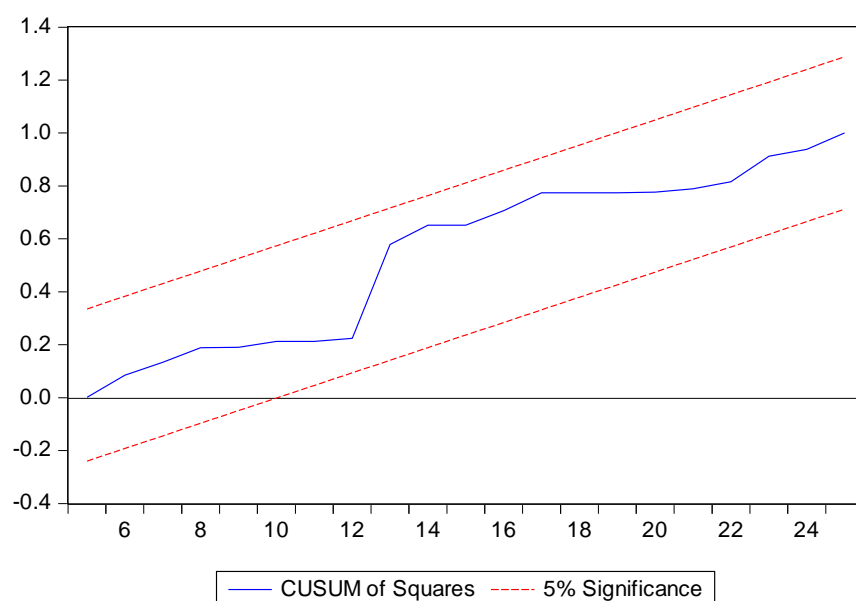

Figure 1. Cusum test

Figure 2. Cusumq test

We equally perform the Cumulative sum (CUSUM) test which helps to identify systematic changes in regression coefficients and the cumulative sum of squares (CUSUMQ) test which detects the sudden changes from the constancy of the regression coefficients. The result of the CUSUM and CUSUMQ test presented in figure 1 and 2 respectively indicates the absence of any instability of the coefficients since the plots of the CUSUM and CUSUMQ statistics fall inside the critical bounds of the 5% confidence intervals of the parameter stability. Therefore, stability of coefficients over the sample is confirmed.

4.4 Toda Yamamotto Granger Causality Test Result

In order to examine the nature of the link between economic growth and government expenditure, the study employs the Toda-Yamamotto (1995) granger causality test procedure, which is an ameliorated version of the traditional granger causality test. This test is chosen due to its simplicity, lack of complexity and its ability to improve the power of the Granger-causality test. Applying this test would equally permit us to ignore the stationarity of the variables, that is, there is no need to integrate variables that are not stationary at level during the estimation. To control for stationarity, the selected lag length is increased by one and the variables are estimated at level. Equally, this technique ignores the cointegration test. After ensuring the stability of the estimated VAR model, and ensuring goodness of fit, the granger causality test results is presented in Table 5.

Table 5. VAR granger causality /block exogenuity wald test

Null hypothesis	Chi-Square statistic	p-value
LGDPC does not granger cause LGE	25.1184	0.000
LGE does not granger cause LGGDC	1.5727	0.814
VAR diagnostic test results		
R-square	0.76-model-1	0.82-model-2
Adjusted R-square	0.65-model-1	0.73-model-2
Serial correlation LM test	3.3989	0.49
Normality test	2.001	0.368

Source: Authors' computation from Eviews 9.

The coefficient of determination and the adjusted coefficient show an average of 0.79 and 0.69 respectively for the two VAR models, hence showing the degree to which the explanatory variables explain variations in the dependent variables. The Serial correlation LM test statistics fails reject the null hypothesis of no autocorrelation and equally the normality test statistics accepts the null hypothesis of normal distribution of residuals. From the granger causality test results, there is a unidirectional relationship from economic growth to government expenditure with chi-square statistics of 25.12 which is highly significant at 1%. The result equally shows that there is no causality from government expenditure to economic growth. This outcome is in line with Kofi and Grace (2015) and shows that there is information contained in economic growth concerning the future path of government expenditure. This implication supports Wagner's law of expanding state activities.

Considering the three reasons pointed out by Henrekson (1993) from the Wagner's law that explain the increase in government's role in an economy, Cameroon over the study period has witnessed an increase in urbanisation, modernisation and population density which has led to greater public expenditure incurred on law and order, contractual reinforcement and economic regulation. Furthermore, there has been a huge demand on the government to provide more educational facilities and equitable distribution of public services over the study period which has increased welfare and cultural expenditures. Lastly, the government has been highly involved in controlling natural monopolies like rails roads. All these explain the increase in government expenditure.

5. Conclusion

This study empirically analyse the nexus between government expenditure and economic growth in Cameroon from 1977-2018. The ARDL technique was employed to examine the short and long run effects between government expenditure and economic growth while, the Toda Yamamoto VAR technique was used determine the nature of the link between the variables. The results from the ARDL model shows that there exists a short run negative and significant effect of government expenditure on economic growth meanwhile in the long run, government expenditure exert a positive and insignificant effect on economic growth. Other control variables

like private domestic investment, gross domestic saving and forest resource rent exert a positive and significant effect both in the short and in the long run meanwhile inflation is found to exert a negative effect. Equally, the results of the granger causality reveal a unidirectional effect of economic growth on government expenditure, hence confirming the Wagners' hypothesis.

As to what concern policy recommendation, the findings suggest that instead of involving in increased spending as a means to guarantee sustainable growth, government should focus on policies that would create the enabling environment for growth to thrive like control of corruption and reforms in the financial sector to attract more private investment and the strengthening of state institutions. There should be an improvement government spending efficiencies, transparency in budgetary processes, and strict monitoring of government projects.

JEL Classification: H50, C32, O40.

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