Investigating the Expenditure-Economic Growth Nexus in Nigeria the Presence of Structural Breaks: A Nonlinear ARDL Cointegration Approach

Yusuf Shamsuddeen Nadabo[1]* and Suleiman Maigari Salisu[2]

[1]*Department of Economics, Maryam Abacha American University of Niger*
[2]*Department of Economics, Umaru Musa Yar'adua University, Katsina*
*Corresponding Author **

Abstract: **The performance of Nigeria's economy has not been satisfactory despite the remarkable increase in government spending (expenditure) over the years. This development warrants re-examination of the relationship between government expenditure and economic growth in the presence of structural breaks. The main objective of this study is to re-evaluate the expenditure and growth nexus in Nigeria using the Nonlinear Autoregressive Distributed Lag cointegration approach on annual time series data from 1970-2019. The cointegration result revealed asymmetric cointegration between government spending and economic growth (long-run nonlinear relationship). The results also illustrated that a positive change in government spending has a positive and statistically significant effect on economic growth while a negative change has no significant impact on economic growth during the study period. In addition, in support of the Keynesian hypothesis, the study found unidirectional causality running from government expenditure to economic growth. Thus, the paper concludes that Nigeria's economic growth is more responsive to a positive change in government spending than a negative change. Following these findings, the paper recommended increasing government spending to be channeled to provide critical physical infrastructure, human development, Research, and Development (R&D).**

Key Words: **Economic growth, Government spending, and Nonlinear ARDL Cointegration.**

I. INTRODUCTION

Wagner (1893) proposed a tendency for public expenditure to grow in response to national income (economic growth) in the long run. This proposition, popularly referred to as Wagner law in the literature, implies a positive relationship between public sector growth and national income. More specifically, Wagner's law assumes that a relative growth of public expenditure accompanies economic growth and that the direction of the causality runs from economic growth to government expenditure.

The policy implication law is that government expenditure does not play any significant role in economic growth. Therefore it is not a suitable policy instrument while the causality runs from economic growth to government spending (expenditure). Conversely, Keynes (1936) opines that government spending is an important policy tool in promoting growth and that the causality runs from government spending to economic growth.

According to Iyoboyi (2018), researchers interpreted Wagner's law differently by researchers, the sequel to the absence of any concrete or precise meaning of the phrase 'expanding scale' used by Wagner to develop his hypothesis. In addition, Musgrave (1969) opines that Wagner's law does not clearly explain whether the expanding scale refers to the share of government expenditure: Does it represent as a percentage of national income, or does it refer to the absolute level of government spending?

Furthermore, Dutt and Ghosh (1997) maintain that Wagner's law did not provide any mathematical model to represent his law (hypothesis), making it difficult for the researchers to evaluate its validity. These developments led to different versions of Wagner's hypothesis in the literature (Peacock and Wiseman, 1961; Gupta,1961; Goffman, 1968; Musgrave,1969; Mann,1980). Expectedly, the empirical results on the validity of Wagner's hypothesis depend on the version of Wagner's law and the methodology adopted by researchers worldwide. For example, Wagner and Weber (2007), Chimobi (2009), Afzal and Abbas(2010) did not find any evidence to indicate the presence of a causal relationship between economic growth and government spending. On the contrary, Sideris (2007), Kalam and Aziz (2009), Omoke (2009), Abdullah and Marmor, 2010) revealed the presence of a unidirectional relationship running from economic growth to government expenditure.

Because of the initial mixed and conflicting results, the main objective of this study is to evaluate the government expenditure and economic growth nexus in the presence of structural breaks in Nigeria while the specific objectives are:

(i) To examine the effect of government spending on national income (economic growth)
(ii) To explore the causal relationship between government spending and economic growth in Nigeria.

The study applies a nonlinear ARDL cointegration approach on annual time series data from 1970 -2019.

II. LITERATURE REVIEW

Several studies have explored the validity of Wagner's law both in developed and developing economies. The results of such studies are mixed and inconclusive, a sequel to applications of different methodology and sample period periods by researchers (Iyoboyi, 2018). By and large, they are divided into four categories in the literature. First, which is referred to as the Wagnerian hypothesis, belongs to the studies which found unidirectional causality running from economic growth to government spending (e.g., Al-Faris, 2002; Chang, 2002; Aregbeyen, 2006; Sideris, 2007; Kalam and Aziz, 2009; Omoke, 2009; Abdullah and Maamor, 2010). Second, it deals with the studies that established a unidirectional causality running from government spending to economic growth, supporting the Keynesian hypothesis (e.g., Dogan and Tang, 2006; Babatunde, 2007; Govindaraju et al., 2010). The third set, known as the feedback hypothesis, comprises of the results which illustrated the presence of bidirectional causality between GDP and government expenditure (see Abu-Bader and Abu-Qarn, 2003); Narayan et al.,2008; Ziramba (2009); Ghgorbani and Zarea, 2009). Finally, fourth is the neutrality hypothesis, in which studies found no causality between government spending and gross domestic product (e.g., Wagner and Weber, 2007; Chimobi, 2009; Afzal and Abbas, 2010).

In Nigeria, several studies have been conducted to explore the relationship between government spending and economic growth, but the results are also diverse (see Babatunde,2008; Igahodaro and Oriakhi,2010; Ele et al. 2014) found that Wagner law is not valid in Nigeria. On the other hand, Ogbonna (2012), Dada and Adewale (2013) deduce that Wagner's law is valid. In addition, Dada and Adewale (2013) investigated the applicability or otherwise of Wagner's law in Nigeria for 1961-2011. The results supported Wagner's law in the long run. Furthermore, Kasimu and Aggreh (2014) examined the applicability of Wagner's law in Nigeria by employing the Johansen cointegration test on annual time series data from 1960 to 2012. The result indicated that government expenditure and gross domestic product have a long-run equilibrium relationship.

Contrarily, some studies have failed to support the validity of Wagner's hypothesis valid in Nigeria. For example, Essien (1997) did not find a long-run relationship and causality between public spending and real income. Similarly, Babatunde (2008) used the bounds testing approach to cointegration to investigate the validity of Wagner's law on Nigeria over 1970 – 2006 but did not find any support for the law. Omoke (2009) did not find a long-run relationship between government spending and national income in Nigeria between 1970 and 2005.

Similarly, Omoke (2009) employed the cointegration approach and Granger Causality tests to examine the validity of Wagner's law from 1970 to 2005. The results indicated that government expenditure and national income have no long-run relationship in Nigeria. The author, however, found a one-way causality running from government spending to national income.

Ekpung et al. (2012) used Ordinary Least Squares (OLS) to analyse public expenditure growth on infrastructure in Nigeria from 1970 to 2016. The finding indicated that public expenditure in infrastructure had stimulated economic growth in Nigeria.

Okoro (2013) Using 32-year time-series data from 1980 to 2011, researchers looked into the impact of government spending on economic growth in Nigeria., employing the Granger Causality test, Johansen Cointegration test, and Error Correction Mechanism. The result shows that there exists a long-run relationship between government expenditure and economic growth in Nigeria.

Chinweoke et al. (2014) examined the impact of government spending on Nigeria's economic growth for the periods 1992-2011 period, using the OLS technique. This study shows that the Federal Government Expenditure has a positive and insignificant impact on the economic growth of Nigeria for the period under study.

Chukwuemeka, Nyew, and Ugondah (2013) Using the OLS method evaluated the effect of public spending on transportation infrastructure and economic growth in Nigeria from 1981 to 2010. The outcomes reveal that public spending on transport infrastructure is negatively related to economic growth and is statistically insignificant.

Fasoranti (2012) Using OLS, examined the impact of government infrastructure spending on Nigerian economic growth from 1977 to 2009. The findings revealed a long-run relationship between the growth of the economy and government expenditures in education, environment and housing, health services, water resources, inflation rate, agriculture, security, transport, and communication.

Nasiru (2012) Using cointegration analysis and causality testing, examine the relationship between government spending and economic growth in Nigeria from 1961 to 2010. The findings show that in Nigeria, there is no long-run relationship between government spending and economic growth. However, the causality result reveals that government capital expenditure granger causes economic growth.

In addition, Zoran (2015) explored the effect of public education spending on the economic growth of the European Union and BRICS between 2002 to 2011. The author revealed a positive correlation between public spending on education and the value of the country's GDP.

Oni and Ozemhoka (2014) assessed the impact of public expenditure on the growth of the Nigerian economy, it covered the period of 1981-2011, and the OLS method of econometric technique was used. The result indicates that there is a positive relationship between public spending and economic growth.

Kolawole (2016) Using the Autoregressive Distributed Lag (ARDL) bound testing technique to examine the relationship between government spending and inclusive growth in Nigeria from the periods 1995 to 2014. the author found that in the long run, government expenditure on health, economic freedom, public resource use, and real GDP growth rate had a significant positive effect on inclusive growth. however, only real GDP had a significant impact on inclusive growth in the short run while other variables were insignificant in causing inclusive growth.

Idris and Bakar (2017) explore the link between government expenditure and economic growth in Nigeria from 1980 to 2015, using the ARDL bounds cointegration approach. The result reveals a positive and significant link between public spending on economic growth in Nigeria.

Egbetunde and Fasanya (2013) employed the bound testing (ARDL) approach to analyze the impact of public expenditure on economic growth in Nigeria during the period 1970 to 2010 using annual time series data. The author's findings indicate the effect of total public spending on growth to be negative.

Egbo et al. (2016) explored the connection between government disaggregated expenditures and economic growth in Nigeria from 1970 to 2014 using OLS, ECM, Granger causality, and Johansen cointegration methods of estimations. The study discovered that the variables used had equilibrium or long-run relationships.

Wang, Peculea, and Xu (2016) examined the link between public expenditure and economic growth in Romania between 1991-2014 using the ARDL model to test for the validity of Wagner's law and Keynesian hypothesis. The result reveals a unidirectional long-run relationship between government expenditure and economic growth in Romania, which means the growth could affect government expenditure.

Ifarajimi and Ola (2017) evaluated the effect of government spending on growth in Nigeria from 1981 to 2015, using Dynamic Ordinary Least Squares. The results obtained from the long run Dynamic OLS showed that government spending on administration, government spending on economic services, and the nominal exchange rate was significant and had the expected signs except government spending on economic services. The result further indicated that the ECM was negative and statistically significant at 5%.

Kimaro, Keong, and Sea (2017) assessed the effect of government expenditure and efficiency on the economic growth of SSA low-income countries, using panel data of 25 SSA low-income countries spanning from 2002 to 2015. Generalized Methods of Moments (GMM) is applied. The results demonstrated that increasing government expenditure accelerates the economic growth of low-income countries in SSA.

Debekeme and Briggs (2017) explored the connection between expenditure patterns and economic growth in Nigeria from 1990 to 2014 using the OLS method. The results show a positive and moderating connection between government expenditure patterns and economic growth in Nigeria.

Akinlo and Jemiluyi (2018) examine the relationship between government expenditure and economic growth, using nonlinear ARDL, and the results indicate that there is cointegration and a nonlinear relationship between the two in both the long and short run.

Hanif and Ahmed (2018) explore the relationship between public expenditure and economic growth in sub-Saharan African Countries using panel cointegration and causality tests from 2005-2014. The study found a long-run relationship between public expenditure and proxies variable used for national income.

Pula and Elshani (2018) investigate the link between public expenditure and economic growth in Kosovo using Johansen Cointegration and Granger causality tests from quarterly data from 2004-2016. The study confirms that there is a unidirectional causality between government expenditure and economic growth in Kosovo.

Ekiran Joseph and Ogungbenle (2019) tested for the validity of Wagner law in Nigeria between 2007-2016 using Vector Error Correction Model. The results confirm the validity of Keynes law in Nigeria.

Karahan & Colak (2019) examine the relationship between public expenditures and growth using ARDL for Turkey's economy from 1998-2016. The findings supported the "Keynesian Hypothesis," which advocates a one-way causality between public expenditure and national output.

Aydin and Esen (2019) investigates the link between government size and economic growth, and determine the optimal level of government expenditure to maximize economic growth. . They evaluate the threshold effect of government spending in 26 transition economies from 1993 to 2016 using dynamic panel data analysis based on a threshold model. The results indicate that a government size beyond the threshold level of government spending has a negative effect on economic growth, whereas a government size below the threshold level has a positive effect.

Literature review shows that although few studies investigated Wagner's hypothesis in Nigeria using the nonlinear ARDL cointegration technique (Akinlo & Jemiluye, 2018), Therefore the technique provides robust results even with a small sample,

III. METHODOLOGY

3.1 Theoretical framework

The Peacock-Wiseman (1961) version of the Wagner law provides the theoretical base for this study. Its functional relationship is as follows:

$$GDP_t = f(GS) \quad (1)$$

Where:

GDP = real gross domestic product

GS = real government spending

3.2 Data Sources

This study uses the data sourced from the World Development Indicators. In addition, the study used time series annual data from 1970 to 2019. The data include; data on Gross Domestic Product (GDP), real government spending (GS), all sourced from the World Bank data portal (2020).

3.3 Model Specification

Following Keynes (1930), the mathematical form of the baseline model of this study can be represented as follows:

$$GDP_t = \beta_0 + \beta_1 GS_t \quad (2)$$

Where: t = time.

Furthermore, by taking the natural log of the variables of interest, equation (2) can be represented in a stochastic or econometric model as follow:

$$\ln gdp_t = \beta_0 + \beta_1 \ln gs_t + \mu_t \quad (3)$$

Ln means the natural log while the variables in the model have earlier been defined; t stands for time and is the disturbance term assumed to be white noise.

Equation (3) considers the log of real gross domestic product (lngdp) as the dependent variable. In contrast, real government spending (lngs) is an independent variable, while the relationship between the two variables is linear. The apriori theoretical expectation is that β_1 it should be positive. Furthermore, following Shin, Yu, and Greenwood-Nimmo's (2014) approach, equation (4) is transformed to a nonlinear autoregressive distributed lag (NARDL) form. This task involves separating the variable of interest, government spending (lngs), into positive and negative partial sum processes as follows:

$$\ln gs\_p_t = \sum_{i=1}^{t} \Delta \ln gs\_p_i = \sum_{i=1}^{t} \max(\Delta \ln gs\_p_i, 0) \quad (5)$$

$$\ln gs\_n_t = \sum_{i=1}^{t} \Delta \ln gs\_n_i = \sum_{i=1}^{t} \min(\Delta \ln gs\_p_i, 0) \quad (6)$$

Replacing the partial sums as defined in equations (5) and (6) with the lngs series in equation (4) and introducing the dummy variable(dum) to represent structural breaks during the period of the study, we arrive at the following nonlinear ARDL model:

$$\ln gdp_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \ln gdp_{t-i} + \sum_{i=0}^{q} \beta_2 \ln gdp\_p_{t-i} + \sum_{i=0}^{r} \beta_3 \ln gdp\_n_{t-i} + \sum_{i=0}^{r} \beta_4 dum_{t-i} + \phi_1 \ln gdp_{t-1} + \phi_2 \ln gs\_p_{t-1} + \phi_3 \ln gs\_n_{t-1} + \phi_4 dum_{t-1} \varepsilon_t \quad (7)$$

Where: β_0 is the coefficient of the constant term; β_1 β_2 and β_3 are the short-run coefficients while ϕ_1 the long-run coefficients are estimated.

Our model estimates in equation (7) represent our unrestricted NARDL model used to examine Nigeria's government spending and economic growth nexus from 1970-2019. As per the theory, the long-run coefficient on positive change in government spending and the negative change in government spending is positive and negative. Lastly, upon establishing the existence of cointegration between government spending and gross domestic product, the study specifies the following error correction model (ECM) as follows:

$$\Delta \ln gdp_t = \gamma_0 + \sum_{i=1}^{p} \gamma_1 \Delta \ln gdp_{t-i} + \sum_{i=0}^{q} \gamma_2 \Delta \ln gs\_p_{t-i} + \sum_{i=0}^{r} \gamma_3 \Delta \ln gs\_n_{t-i} + \varphi ECT_{t-1} + \xi_t \quad (8)$$

The constant term is the constant term; the short-run coefficients are the coefficient on the one period lagged error correction term, ECT($_{t-1}$). The estimates of the ECM specified in equation (8) are also used to evaluate both the short-run and long-run asymmetric effects, if any, arising from positive and negative changes in the government spending on real GDP (economic growth) in Nigeria period of the study. In particular, the a priori expectation is that the ECT (-1) coefficient value should be negative and statistically significant. It also measures the speed of adjustment in the gross domestic product (economics) towards the long-run equilibrium arising from short-run changes (positive and negative) in government expenditure.

3.4 Empirical Techniques

This study implements a five-step strategy to examine the asymmetric relationship between government expenditure and economic growth in Nigeria. The first step involved testing for the integrating properties of the variables (government spending and gross domestic product) by conducting the conventional Augmented Dickey-Fuller (ADF) and Phillip-Peron (PP) unit root tests. This ensures that none of our variables of interest integrate order 2 or I(2), a precondition for deploying the NARDL cointegration framework. Next, we conduct the Wald test to establish the presence or otherwise cointegration or long-run relationship between government expenditure and gross domestic product in the second step. The test is based on the computed or estimated

F-statistic value, compared with the critical values (lower and upper), as provided by the Eview10. The decision to reject or accept the null hypothesis (no cointegration) is contingent upon the following:

(i) The null hypothesis of no cointegration is rejected; if the computed F-statistics is greater than the critical value for the upper bound, I(1), Which implies cointegration between the series of interests.
(ii) If the computed F-statistics is less than the critical value for the lower bound, I(0), then the null hypothesis of no cointegration cannot be rejected, meaning no cointegration exists between the series of interests.

Once cointegration is established, we then proceed to obtain the estimates of the long-run coefficients of the optimal NARDL model as well as to investigate the presence or otherwise of the long run and short-run asymmetric effects of changes (positive and negative) in government spending on the real gross domestic product (GDP). The fourth step involves estimating the short-run dynamic error correction (ECM) model. At the same time, the fifth relates to the conduct of the conventional post-diagnostic tests (normality, serial correlation, heteroskedasticity, Ramsey-Reset test for misspecification error) and stability tests.

IV. RESULTS AND DISCUSSIONS

4.1. Results of the Unit root tests

The ADF and PP tests reveal that the natural logarithms of government spending(lngs) and gross domestic product (lngdp) have unit roots at the level. Nevertheless, they became stationary at the first difference, thereby suggesting that the series are integrated of order one, that is, I (1). This implies that none of our series of interests is integrated of order 2, I(2); hence the justification for applying the nonlinear ARDL cointegration approach in this study.

Table 1. Results of ADF and PP Unit Root Tests

Test	ADF Test		PP test		
Variables	Level	First Difference	Level	First Difference	Decision
Lngdp	-0.879	-5.521***	0.644	-5.626***	I(1)
Lngs	-0.255	-5.227***	-0.289***	-5.523***	I(1)

Notes: *** denotes significance at a 1% significance level. Schwarz Infomation criterion is used to conduct ADF tests with a maximum of 4lags.

4.2. Result of cointegration test

The result of the Wald test for cointegration test in Table 2 indicates that the value (6.594) of the calculated F-statistic for the Nonlinear ARDL model is greater than the upper bound critical value (6.36) at a 1% significance level [as provided by the EVIEWS; Case III: Unrestricted intercept and no trend]. This outcome implies a strong cointegration or long-run relationship between government spending and real GDP in Nigeria from 1970 to 2019.

Table 2. Results of ARDL bounds Test for cointegration.

Test Statistic	Value	k
F-statistic	6.594***	3
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	2.873	3.973
5%	3.5	4.7
1%	4.865	6.36

Notes: *** signifies statistical significance 1% level

4.3. Estimates of Short run/Error Correction(ECM)and Long-run Models

4.3.1 Estimates of the Shortrun /ECM

Upon establishing the presence of cointegration between the variables of interest, we estimated and obtained the estimates of the short-run/ECM, which are reported in Panel A of Table 4.3, which shows that the coefficient of the lagged error correction term [ECT(-1)] carries a negative sign and is statistically significant at the 1% significant level. This outcome has three implications. First, it is in line with a priori expectation, thus confirming a stable and robust asymmetric long-run relationship between gross domestic product and economic growth as previously established by the result of the Wald test for cointegration in Table3. Second, the value (-0.254) implies that about 25% of the short run's disequilibrium arising from the previous year's changes (positive and negative) in the government spending are corrected within the current year. Third, the negative sign and the statistical significance of the coefficient of the ECT(-1) indicated the presence of a one-way or unidirectional causality, which runs from government spending to gross domestic product in the long run in line with the Keynesian hypothesis. Lastly, the dummy variable is statistically 10% significance level.

Table 3. Estimates of Short run/Error Correction(ECM) and Long-run

Panel A: Short-run coefficients [NARDL Model]

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.730	1.446	5.346	0.000
D(DUM)	0.099	0.054	1.834703	0.074
CointEq(-1)	-0.254	0.0476	-5.325	0.000
Panel B: Estimates of Long run coefficients				
LGS_POS	0.059	0.020	2.995	0.005
LGS_NEG	0.159	0.584	0.272	0.787
DUM	0.852	0.140	6.101	0.000

Panel C: Result of Diagnostic tests

R^2	AjdR^2	F-stat	D.W	JB	BG	BPG	RESET	Cumsum	Cumsum SQ	WLRS
0.989	0.988	721.9	1.88	2.015	0.191	8.734	0.794	Stable	Stable	0.469
-	-	(0.00)	-	(0.36)	(0.92)	(0.12)	(0.38)	-	-	(0.50)

*Notes:(i) ** and *** denote significance at 5% and 1% significance levels, respectively.* (ii) *JB is the Jacque-Bera test for normality* (iii)*BP is the LM (Lagrange Multiplier) test for serial autocorrelation.* (iv) *BPG is the Bruesh-Pagan-Gofrey test for heteroscadasticity.* (v) *RESET represents Ramsey- RESET test for specification error.* (vi) *WLRS denotes the Wald test for long-run symmetry.* (vii) *Figures in brackets represent probability values* (viii) *Cumsum and Cumsum represent recursive residuals of Cumulative Sum and Cumulative Sum of Squares, respectively.*

Panel B shows that the coefficient of long-run positive change in government spending is positive and statistically significant at 1%. In contrast, the coefficient on the long-run negative change in government spending is not statistically significant. This means that a 1% increase in government spending will cause an increase of about 0.06% increase economic growth, in the long run, ceteris -paribus. In addition, the coefficient on the dummy variable is positive and statistically significant 1% level. This suggests that the observed structural break revealed by the Chow test has strongly impacted the Nigerian economy's performance during the study, other things being equal.

4.4.3. Results of Post Diagnostic Tests

The results in Panel C of Table 3reveal that the optimal model has passed all the conventional and stability tests. Specifically, the probability values of 0.36; 0.92, and 0.12 for the Jacque-Bera (JB) test for normality, the Lagrange Multiplier (LM) test for serial correlation, and the Brush-Pagan-Godfrey (BFG)test for heteroskedasticity, respectively, are all greater than 5%; thus implying that the residuals are normally distributed; they are not serially correlated and are homoskedastic. Similarly, the p-value,0.429, for Ramsey's Reset test is more than 5%, implying that the long-run NARDL model is free from specification error. Furthermore, the plots of the cumulative sum (Cum SUM) and cumulative sum squared (Cum SUMSQ) respectively, as shown in figures 1A and 1B respectively, are within the critical bounds at a 5% significance level, thus implying that the parameters of the optimal model are stable during the study period. Lastly, the probability value 0.50 for the Wald test demonstrates the absence of long-run asymmetry.

Figure 1A: Plot of Cumulative Sum

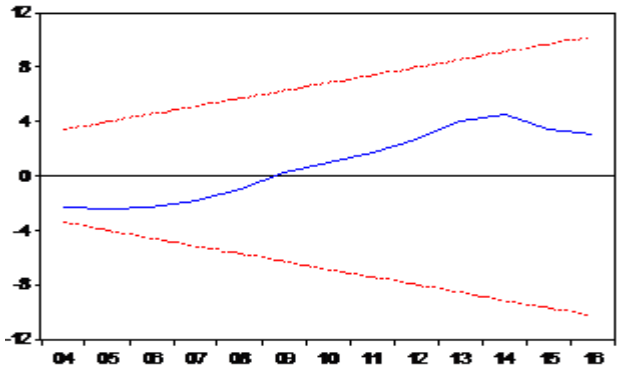
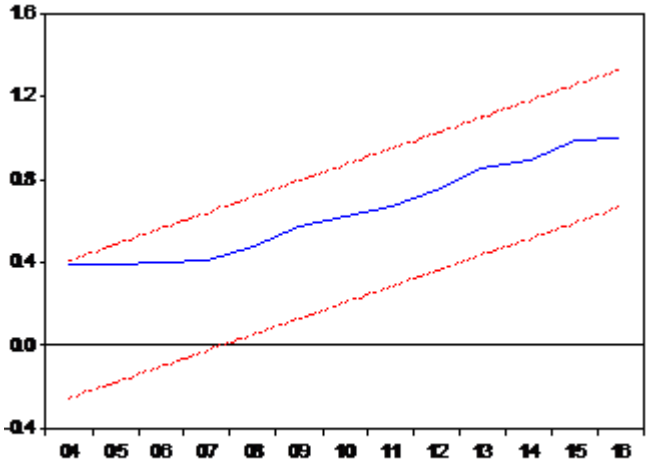


Figure 1B: Plot of Cumulative Sum Squares



V. CONCLUSION AND RECOMMENDATION

This study re-examines Nigeria's expenditure and growth nexus using the Nonlinear Autoregressive Distributed Lag (NARDL) cointegration framework on annual time series data from 1970-2019. The result of cointegration showed that government spending, dummy variable (representing a structural break period), and gross domestic product (proxy of economic growth) have asymmetric cointegration (long-run nonlinear relationship). The results also illustrate that a positive change in government expenditure has a positive and statistically significant impact on economic growth. In contrast, a negative change has no significant impact on economic growth during the study. In addition, the study revealed the presence of unidirectional causality running from government expenditure to economic growth in support of the Keynesian hypothesis. The paper concludes that Nigeria's economic growth is more responsive to a positive change in government spending than an adverse change. Following these findings, the paper, therefore, recommends an increase in public spending to be channeled towards critical infrastructure, human development, Research, and Development (R&D), to mention a few.

REFERENCES

[1] Abdullah, H., and Maamor, S. (2010). "Relationship between national product and Malaysian government development expenditure: Wagner's law validity application." *International Journal of Business and Management* 5(1), 88-97.

[2] Abizadeh, S. and Yousefi, M. (1998)."An Empirical Analysis of South Korea's Economic Development and Public Expenditure Growth." *The Journal of Socio-Economics* 27(6), 687-694.

[3] Abu-Bader S., and Abu-Qarn A.S. (2003). "Government Expenditures, Military Spending, and Economic Growth: Causality Evidence from Egypt, Israel, and Syria .'"*Journal of Policy Modeling* 25(6-7), 567-583.

[4] Afzal, M., and Abbas, Q. (2010). "Wagner's law in Pakistan: Another look." *Journal of Economics and International Finance* 2(1), 12-19.

[5] Ahmed, E. M., & Hanif, C. M. (2018). Sub-Saharan African Countries Public Expenditure and Economic Growth: Wagner's Panel Cointegration and Causality Applications.

[6] Aigbokhan, B.E. (1996). "Government Size and Economic Growth: The Nigerian Experience. In "Beyond Adjustment: Management of the Nigerian Economy, " Proceedings of the 1996 annual Conference of the Nigerian Economic Society.

[7] Akinlo, A. E., & Jemiluyi, O. O. (2018). Economic Growth Nexus In Nigeria: Evidence From Nonlinear Ardl And Causality Approaches. *Review of Innovation and Competitiveness: A Journal of Economic and Social Research*, *4*(2), 5-26.

[8] Al-Faris, A.F. (2002). "Public Expenditure and Economic Growth in the Gulf Cooperation Council Countries."*Applied Economics* 34(9), 1187-1195.

[9] Aydin, C., & Esen, Ö. (2019). Optimal tax revenues and economic growth in transition economies: a threshold regression approach. *Global Business and Economics Review*, *21*(2), 246-265.

[10] Aregbeyen, O. (2006). "Cointegration, causality and Wagner's law: A test for Nigeria, 1970-2003."*Central Bank of Nigeria Economic and Financial Review*, 44(2).

[11] Babatunde, M.A. (2007). "Abound testing analysis of Wagner's Law in Nigeria: 1970- 2006. Retrieved from http://www.africametrics.org/documents/conferences 08/dayl/session2/babatunde.pdf. Accessed on 03/12/2019

[12] Babatunde, M.A. (2008). "Establishing Wagner's Law in the West Africa Monetary Zone. (WAMZ): Investigation Using the Bounds Test." *The Indian Economic Journal* 56(3), 109-123. "

[13] Ben-David, D. and Papell, D. (1997), "Slowdowns and meltdowns: post-war growth evidence from 74 countries." *Review of Economics and Statistics* 28(2), pp. 561-571.

[14] Chang, T. (2002)."An Econometric Test of Wagner's Law for Six Countries, based on Cointegration and Error-Correction Modelling Techniques." *Applied Economics* 34, 1157-1 169.

[15] Chimobi, O.P. (2009). "Government expenditure and national income: A causality test for Nigeria." *European Journal of Economic and Political Studies* 2(2), 1-12.

[16] Dada, A.M.,'andAdewale, O.A. (2013). "Is Wagner's law a myth or a reality? Empirical evidence from Nigeria." *International Journal of Development and Economic Sustainability* 1(1), 123-137.

[17] Dakurah, H., Davies, S., and Sampath, R. (2001), "Defense Spending and Economic Growth in Developing Countries: A Causality Analysis."*Journal of Policy Modeling*23(6), 651-658.

[18] Dogan, E., and Tang, T.C. (2006). "Government expenditure and national income: Causality test for five Southeast Asian countries." *International Business and Economics Research Journal* 5(10), 49-58.

[19] Dutt, S.D. and Ghosh, D. (1997)."An Empirical Examination of the Public Expenditure- Economic Growth Correlations."*Southwest Oklahoma Economic Review,* 12(4), pp. 14- 26.

[20] Egbo, O., Nwankwo, E., Okoye, N. F., & ESQ, O. O. (2016). Analysis of Government Disaggregated Expenditures and Growth of Nigerian Economy. *Journal of Internet Banking and Commerce*, *21*(2), 1.

[21] Ekiran Joseph, O., & Sola, O. (2019). Testing the Wagner's Hypothesis on Public Expenditure and Output Growth Causality in Nigeria.

[22] Ele, I.E., Okon, I.E., Ibok, O.W., and Brown, I.N. (2014)."Analysis of Agricultural public capital expenditure and agricultural economic growth in Nigeria (1961 -2010)."*American Journal of Experimental Agriculture* 4(4), 443-456

[23] Essien E.A. (1997). "Public Sector Growth, An Econometric Test of Wagner's Law." *Economic and Financial Review*, 35(3).Central Bank of Nigeria.

[24] Ghorbani, M-, and Zarea, A.F. (2009)."Investigating Wagner's law in Iran's economy."*Journal of Economics and International Finance* 1(5), 115-121.

[25] Goffman, I.J. (1968). "On the Empirical Testing of Wagner's Law: A Technical Note," *Public Finance*, 23, pp. 359-364.

[26] Govindaraju, C.V., Rao, R., and Anwar, S. (2010). "Economic growth and government., spending in Malaysia: A re-examination of Wagner and Keynesian views." *Economic Change and Restructuring Finance* 3(3), 359-364.

[27] Gupta, S.P. (1967). "Public Expenditure and Economic Growth: A Time-Series Analysis," *Public Finance*, 22(4), pp. 423-461.

[28] Idris, M., & Bakar, R. (2017). Public sector spending and economic growth in Nigeria: In search of a stable relationship. *Asian Research Journal of Arts & Social Sciences*, 1-19.

[29] Ifarajimi, G. D., & Ola, K. O. (2017). Government expenditure and economic growth in Nigeria: An analysis with dynamic ordinary least squares. *International Journal of Academic Research in Business and Social Sciences*, *7*(5), 8-26.

[30] Ighodaro, C.A.U., and OriaKhi, D.E. (2010). "Does the relationship between government expenditure and economic growth follow Wagner's law in Nigeria?" *Annals of the University of Petrosani Economics* 10(2), 185-198.

[31] Johansen, S., Mosconi, R., and Nielsen, B. (2000). "Cointegration analysis in the presence of structural breaks in the deterministic trend." *Econometrics Journal* 3;' 216-249.

[32] Kalam, A.M., and Aziz, N. (2009). "Growth of government expenditure in Bangladesh: An empirical inquiry into the validity of Wagner's Law." *Global Economy Journal* 9(2),5.

[33] Karahan, Ö., & Çolak, O. (2019). Examining the validity of Wagner's law versus Keynesian hypothesis: Evidence from Turkey's economy. *Scientific Annals of Economics and Business*, *66*(1), 117-130.

[34] Kasimu, A., and Aggreh, M. (2014). "Government Expenditure and Gross Domestic Product: A Test of Wagner's Law on Nigerian Economy." *Journal of Asian Development Studies* 3(3), 6-13.

[35] Keynes, *J. M. (1936).* The General Theory of Employment., Interest, and Money. *London: Macmillan Press.*

[36] Kimaro, E. L., Keong, C. C., & Sea, L. L. (2017). Government expenditure, efficiency, and economic growth: a panel analysis of Sub Saharan African low-income countries. *African Journal of Economic Review*, *5*(2), 34-54.

[37] Liitkepohl, H., Saikkonen, P., and Trenkler, C. (2003)."Comparison of Tests for the Cointegrating Rank of a VAR Process with a Structural Shift." *Journal of Econometrics* 113(2), 201-229.

[38] Lingxiao, W. A. N. G., Peculea, A. D., & Xu, H. (2016). The relationship between public expenditure and economic growth in Romania: Does it obey Wagner's or Keynes's Law?. *Theoretical & Applied Economics*, *23*(3).

[39] Mann, A.J. (1980). "Wagner's Law: An Econometric Test for Mexico, 1925-1976." *National Tax Journal*, 33(2), pp. 189-201.

[40] Muhlis,< B, and Hakan C. (2003). "Causality between Public Expenditure and Economic Growth: The Turkish Case." *Journal of Economic and Social Research* 6(1), 53-72.

[41] Musgrave, R.A. (1969), *Fiscal systems*, Yale University Press, New Haven, and London.

[42] Narayan, P.K., Nielsen, I., and Smyth, R. (2008). "Panel data cointegration, causality and Wagner's law: Empirical evidence from Chinese provinces." *China Economic Review* 19(2), 297-307.

[43] Ogbonna, B.C. (2012). "Does Wagner's law hold for Nigeria? 1950-1008.'" *JORIND* 10(2), 290-299.

[44] Olayinka Kolawole, B. (2016). Government spending and inclusive-growth relationship in Nigeria: An empirical investigation. *Zagreb International Review of Economics & Business*, *19*(2), 33-56.

[45] Olomola, P.A. (2004). "Cointegration Analysis-Causality Testing and Wagner's Law: The Case of Nigeria, 1970-2001."*Journal of Social and Economic Development* 6(1), 76- 90.
[46] Omoke, P. (2009). "Government Expenditure and National Income: A Causality Test for Nigeria." *European Journal of Economic and Political Studies* 2, 1-11.
[47] Peacock, A.T-.and Wiseman, J. (1961). The Growth of Public Expenditure in the United Kingdom. Princeton: Princeton University Press.
[48] Pula, L., & Elshani, A. (2018). The relationship between public expenditure and economic growth in Kosovo: Findings from a Johansen co-integrated test and a Granger causality test. *Ekonomika*, *97*(1), 47-62.
[49] Saikkonen, P., and Liitkepohl, H. (2000)."Testing for the cointegrating rank of a VAR process with structural shifts." *Journal of Business and Economic Statistics* 18(4), 451 - 464.
[50] Sen. A. (2003). "On unit root tests when the alternative is a trend-break stationary process." *Journal of Business and Economic Statistics* 21(1), pp. 174-184.
[51] Sideris, D. (2007). Wagner's Law in 19th Century Greece: A cointegration and causality analysis. Bank of Greece Working Papers No. 64.
[52] Singh, B. and Sahni, B. (1984)."Causality between Public Expenditure and National Income." *The Review of Economics and Statistics*, 66, 630-644.
[53] Sinha, D. (2007). Does Wagner's law hold for Thailand? A time-series study.MPRA Paper No. 2560.
[54] Wagner. A. (1893).Grundlegung der politischenOkonomie, 3rd ed., Leipzig.
[55] Wagner, R.E., and Weber, W.E. (1977). "Wagner's Law, Fiscal Institutions and the Growth of Government." *National Tax Journal* 30, 59-68.
[56] Yay, T., and Tastan, H. (2009). "Growth of public expenditures in Turkey during the 1950- 2004 periods: An econometric analysis." *Romanian Journal of Economic Forecasting* 4, 101-118.