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Public expenditure and economic growth nexus: Further evidence from Nigeria

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This paper examines the relationship between public expenditure and economic growth in Nigeria during the period 1970-2009. A disaggregated public expenditure level was employed using the Gregory-Hansen structural breaks cointegration technique. The result confirms Wagner's law in two models in the long run; there was a break in 1993 in which the political crisis that engulfed the nation was accountable. The result also shows that economic growth and development are the main objectives of government expenditure, especially investment in infrastructure and human resources all of which falls under social and community services. Based on the result, there should be efforts to maintain adequate levels of investment in social and economic infrastructure.

Key words: Public expenditure, economic growth, structural breaks, cointegration.

INTRODUCTION

The relationship between public expenditure and economic growth has been extensively treated in the theoretical and empirical literature. The theoretical foundation of this relationship can be traced as far back as of the time of Wagner (1883), to Keynes (1936), Peacock and Wiseman (1961), and later to Musgrave (1969). Two schools of thought arose on the direction of causality between public expenditure and economic growth. One is that public expenditure is a consequence of economic growth as posited by Wagner (1883) and the other is by Keynes (1936) who stated that public expenditure is a tool adopted by the government to reverse economic downturns by borrowing money from the private sector and then returning it to them through various spending programmes, hence, economic growth is an outcome of public expenditure.

This relationship is considered empirically in the context of the growing public sector and its impact on economic growth which happened universally almost immediately after the World War II in which two contending views emerged, one is that the decline in economic growth for both developed and less developed countries results from the growth of public sector as posited by Landau (1983, 1986) and the other view is that the decline in economic growth for both developed and less developed countries does not result from the growth of public sector as noted in the works of Ram (1986), Singh and Sahni (1984) and Robinson (1977).

Over the past decades, the public sector spending has been increasing in geometric term through government various activities and interactions with its Ministries, Departments and Agencies (MDA's), (Niloy et al., 2003). Although, the general view is that public expenditure either recurrent or capital expenditure, notably on social and economic infrastructure can be growth-enhancing though the financing of such expenditure to provide essential infrastructural facilities-including transport, electricity, telecommunications, water and sanitation,

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waste disposal, education and health-can be growth-retarding (for example, the negative effect associated with taxation and excessive debt). The size and structure of public expenditure will determine the pattern and form of growth in output of the economy (Taiwo and Abayomi, 2011).

Empirical works in Nigeria have been concerned with explaining the growth of public expenditure in terms of growth of national income that is testing Wagner's Law (Essien, 1997; Aregbeyen, 2006; Babatunde, 2007; Ighodaro and Oriakhi, 2010). These studies mostly used the cointegration method to determine the long-run relationship between public expenditure and economic growth except for Essien (1997) who used the two step procedure of Engle and Granger (2007) and standard causality test and also Babatunde (2007) who used the bound testing approach. The evidence emerging from these studies mostly showed no support for Wagner's law except Aregbeyen (2006) who confirmed the Wagner's law.

In view of the aformentioned, this paper considers the relationship between public expenditure and economic growth in the context of Wagner's law for the period 1970-2009 and followed Ighodaro and Oriakhi (2010). This paper, however, differs in two ways. First, the components of public expenditure and no aggregates are used and second, the cointegration method adopted allows for structural breaks in data as proposed by Gregory and Hansen (1996).

Adolph (1883), formulated a law referred to as the "Wagner's Law". The law states that there is a persistent tendency both towards an 'extensive' and an 'intensive' increase in the functions of the state. New functions are continually being undertaken and old ones are being performed more efficiently and on an extended scale that increases the spending of the government. Hence, more and more public expenditure is restored for performing these activities. Thus, social progress brought an increase in state activity which in turn meant more government expenditure (Henrekson, 1993). Wagner's law thus states that peoples' demand for services and the willingness to pay is income-elastic hence, the expansion of public economy is influenced by the greater affluence of a nation (Cameron, 1978).

The paper proceeds as follows: reviews on the empirical literature of the subject matter are discussed. Also, the variables used in the paper were described as well as the data sources. Furthermore, the econometric methodology based on cointegration with breaks, elasticity estimates and error-correction (ECM) models are lay out. The empirical findings are presented. Finally, summaries of the major findings and some concluding remarks are discussed.

REVIEW OF EMPIRICAL LITERATURE

Empirical researches on the effect of government expenditure on economic growth reported results such as: positive effect, negative effect, mixed results and those who could not establish a relationship between government expenditure and economic growth. There were also cross country studies with diverse results as well such as: Positive effect of government consumption on economic growth could be stronger in lower income countries reported by Ram (1986), government expenditures on education and defense have positive influence on economic growth, while expenditure on welfare has insignificant negative impact on economic growth as indicated by Donald and Shuanglin (1993). Abu-Bader and Abu-Qarn (2003) observed bi-directional (feedback) and long run negative relationships between government spending and economic growth while civilian government expenditures have positive effect on economic growth for two out of the three countries they considered.

Similarly, Gregoriou and Ghosh (2007) discovered that countries with large government expenditure tend to experience higher growth, but the effect varies from one country to another. Olugbenga and Owoye (2007) results show the existence of a long-run relationship between government expenditure and economic growth and a unidirectional causality from government expenditure to growth for 16 out of the 30 countries considered, 10 out of the countries confirmed Wagner's law and 4 countries had feedback relationship between government expenditure and economic growth.

Cooray (2009) results revealed that both the size and quality of the government are associated with economic growth. Also, Frimpong and Oteng-Agbaiye (2009) reported that government expenditure does not play a major role in promoting economic growth.

Some authors studied the relationship between the composition of government expenditure and economic growth in the context of Wagner's law and Keynesian notion. Singh and Sahni (1984) as far as expenditures on administration, social and development and defense are concerned upheld both the Wagnerian and Keynesian notion but Keynesian notion alone for debt servicing. Ariyo and Raheem (1991) report that the size and mix of government expenditure as a major determinant of the overall performance of an economy. Ekpo (1994) reported that capital expenditures on transportation and communication, agriculture, health and education had positive impact on economic growth. Ariyo (1996) found that the nature of government expenditure can crowd-in or crowd-out the private sector and Busari (1998) found government capital expenditure to be growth inducing.

A disaggregated approach was adopted by Niloy et al. (2003) to investigate the impact of public expenditure on economic growth for 30 developing countries. They found that government capital expenditure in GDP has a significant positive association with economic growth, but the share of government current expenditure in GDP was shown to be insignificant in explaining economic growth

while at the sectoral level, government investment and expenditure on education are the only variables that had significant effect on economic growth, especially when budget constraint and omitted variables are included. Devarajan et al. (2006) studied the relationship between the composition of government expenditure and economic growth for a group of developing countries the result show that capital expenditure has a significant negative association with growth of real GDP per capita and recurrent expenditure is positively related to real GDP per capita. Similarly, Maku (2009) investigated the link between government spending on and economic growth in Nigeria by incorporating the model that specifies the effect of government consumption and investment spending, and private investment on real gross domestic product in Nigeria and found that private and public investments have insignificant effect on economic growth during the review period. Ighodaro and Oriakhi (2010) found that increase in total government expenditure as well as specific expenditure on general administration and community and social services that propels economic growth. Adeniyi and Bashir (2011) found that governments spending on agriculture, education, defense and internal security services as well as structural adjustment programme are significant factors that influence economic growth in Nigeria. Usman et al. (2011) investigated the effect of federal government expenditure on economic growth in Nigeria by specifying an augmented Solow model in Cobb-Douglas form with public capital as one of the factors. Results of the regressions show that in the short run public spending has no impact on growth. However, Cointegration and VEC results show that there is long run relationship between public expenditure and growth. Adewara and Oloni (2012) explored the relationship between the composition of public expenditure and economic growth in Nigeria between 1960 and 2008 using the Vector Autoregressive models (VAR). Their findings shows that expenditure on education has failed to enhance economic growth due to the high rate of rent seeking in the country as well as the growing rate of unemployment. They also found that expenditure on health and agriculture contributed positively to growth.

Other studies carried out country specific study since different countries have different levels of economic development. Such studies includes that of Abdullah (2000) in Saudi Arabia, also, Albatel (2002) in Saudi Arabia, Peter (2003) for Sweden, Mitchell (2005) and Liu et al. (2008) for the U.S., Verma and Arora (2010) for India.

Empirical works that examined the relationship between government expenditure and economic growth in Nigeria include: Oyinlola (1993) who reported a posi-tive impact of defense expenditure on economic growth. Fajingbesi and Odusola (1999) observed real government capital expenditure has a significant positive influence on real output and real government recurrent expenditure affects growth only by little. Ogiogio (1995) revealed a long-term relationship between government expenditure and economic growth and also discovered recurrent expenditure exerts more influence than capital expenditure on growth. Akpan (2005) used a dis-aggregated approach to determine the components and concluded that there was no significant association between most components of government expenditure and economic growth in Nigeria. Nurudeen and Usman (2010) result show that the variables- total capital expenditure, total recurrent expenditure, and government expenditure on education have negative effect on economic growth. While government expenditure on transport and communication, and health, have positive impact on economic growth.

MEASUREMENT AND DATA SOURCES

Using the functional form that relates the share of public expenditure in GDP with real gross domestic product, this can be written in the log form as:

$$\ln GXP_t = \beta_0 + \beta_1 \ln RGDP_t + \mu_t \quad (1)$$

Since it is not only economic growth that affects public expenditure, particularly for a developing country like Nigeria, it is necessary to include other control variables. The control variables used in the models follows the models presented by Ighodaro and Oriakhi (2010). The functional form can be re-modeled as:

$$\ln GXP_t = \beta_0 + \beta_1 \ln RGDP_t + \beta_2 \ln REV + \beta_3 \ln DEBT + \mu_t \quad (2)$$

This paper uses components of public expenditure such as recurrent expenditure, capital expenditure, administrative expenses, community and social service and transfer. As a result five models were arrived at which are as follows:

$$\ln RcXP_t = \beta_0 + \beta_1 \ln RGDP_t + \beta_2 \ln REV_t + \beta_3 \ln DEBT_t + \mu_t \quad (3)$$

$$\ln CpXP_t = \beta_0 + \beta_1 \ln RGDP_t + \beta_2 \ln REV_t + \beta_3 \ln DEBT_t + \mu_t \quad (4)$$

$$\ln AdmXP_t = \beta_0 + \beta_1 \ln RGDP_t + \beta_2 \ln REV_t + \beta_3 \ln DEBT_t + \mu_t \quad (5)$$

$$\ln SCXP_t = \beta_0 + \beta_1 \ln RGDP_t + \beta_2 \ln REV_t + \beta_3 \ln DEBT_t + \mu_t \quad (6)$$

$$\ln TrXP_t = \beta_0 + \beta_1 \ln RGDP_t + \beta_2 \ln REV_t + \beta_3 \ln DEBT_t + \mu_t \quad (7)$$

where *lnRcXP, lnCpXP, lnAdmXP, lnSCXP,* and *lnTrXP,* are log of expenditure of recurrent, capital, administrative, social and community services, and transfers,

respectively. While *lnRGDP, lnREV,* and *lnDEBT* are log of real GDP, total government revenue, and total debt outstanding (domestic plus external debt), respectively.
It is expected that estimates of *lnRGDP* and *lnREV* are positive and negative for *lnDEBT*. All data used were obtained from the Central Bank of Nigeria Statistical Bulletin (2009).

THE ECONOMETRIC METHODOLOGY

Gregory and Hansen (1996a) made an important contribution in the existing literature on cointegration by proposing residual-based tests of the null of no cointegration for the listed variables with I(1) order in the presence of structural breaks against the alternative cointegration. The Gregory-Hansen (G-H henceforth) methodology is an extension of the Engle and Granger (1987) cointegration analysis and can be viewed as a multivariate extension of the endogenous break test for univariate series The test allows testing for presence of cointegration among the variables of interest given the variables to be difference stationary or integrated of order one (Singh and Pandey, 2009). G-H proposes three models with different assumptions about structural breaks in the cointegrating relationship. These are, level shift, denoted as *C*; level shift with trend, denoted as *C/T*; and regime shift (both level shift and slope coefficients can change), this can be denoted as *C/S* (Gregory and Hansen, 1996b). The single break date in these models is assumed to be endogenously determined. Using a two-variable specification, the three models can be stated as follows:

$$Y_t = \alpha_1 + \alpha_2 D_{tk} + \beta_1 X_t + \varepsilon_t \quad (8)$$

$$Y_t = \alpha_1 + \alpha_2 D_{tk} + \delta_t + \beta_1 X_t + \varepsilon_t \quad (9)$$

$$Y_t = \alpha_1 + \alpha_2 D_{tk} + \beta_1 X_t + \beta_2 X_t D_{tk} + \varepsilon_t \quad (10)$$

where Y is the dependent variable and X is the independent variable, t is a time trend, parameters α_1 and α_2 measure respectively the intercept before the break in k and the shift occurred after the break, β_1 and δ are slope coefficients attached to the cointegrating vector and time trend respectively, β_2 measures the change in the cointegrating vector after the regime shift, $_t$ is a time subscript, Ɛ is an error term, k is the break date, and D_{tk} is a dummy variable defined as

Each of these models therefore permits structural change via the dummy variable Dt which is defined as:

$$D_t = \begin{cases} 1 & if \ t > K \\ 0 & otherwise \end{cases}$$

with *k* denoting the point at which the break occurs.

This study considers the GH 4 that is the regime shift in the context of models 3 to 7 and see if they conform to Wagner's law. We therefore have models 3 to 7 rewritten as:

$$InRcXP_t = \alpha_1 + \alpha_2 D_{tk} + \beta_1 InRGDP_t + \beta_2 InRGDP_t D_{tk} + \gamma_1 InREV + \gamma_2 InREV_t D_{tk} + \psi_1 InDEBT_t + \psi_2 InDEBT_t D_{tk} + \mu_t \quad (11)$$

$$InCpXP_t = \alpha_1 + \alpha_2 D_{tk} + \beta_1 InRGDP_t + \beta_2 InRGDP_t D_{tk} + \gamma_1 InREV_t + \gamma_2 InREV_t D_{tk} + \psi_1 InDEBT_t + \psi_2 InDEBT_t D_{tk} + \mu_t \quad (12)$$

$$InAdmXP_t = \alpha_1 + \alpha_2 D_{tk} + \beta_1 InRGDP_t + \beta_2 InRGDP_t D_{tk} + \gamma_1 REV_t + \gamma_2 InREV_t D_{tk} + \psi_1 InDEBT_t + \psi_2 InDEBT_t D_{tk} + \mu_t \quad (13)$$

$$InSCXP_t = \alpha_1 + \alpha_2 D_{tk} + \beta_1 InRGDP_t + \beta_2 InRGDP_t D_{tk} + \gamma_1 REV_t + \gamma_2 InREV_t D_{tk} + \psi_1 InDEBT_t + \psi_2 InDEBT_t D_{tk} + \mu_t \quad (14)$$

$$InTrXP_t = \alpha_1 + \alpha_2 D_{tk} + \beta_1 InRGDP_t + \beta_2 InRGDP_t D_{tk} + \gamma_1 REV_t + \gamma_2 InREV_t D_{tk} + \psi_1 InDEBT_t + \psi_2 InDEBT_t D_{tk} + \mu_t \quad (15)$$

EMPIRICAL RESULT

Characteristics of the variables

Table 1 shows the summary statistics for the variables. The skewness values for most of the variables are nearly zero with five having negative signs indicating skewness to the left while the other three with positive signs are skewed to the right. The kurtosis which measures whether the data are peaked or flat relative to a normal distribution with an expected value of 3.0, shows that the real GDP variable satisfies this condition.

Variables are required to have normal distribution before they are used in any parametric statistical method. Skewness and kurtosis give indications as to the nature of distribution of variables. Skewness is a measure of symmetry or the lack of symmetry. The skewness for a normal distribution is zero and any symmetric data should have skewness near zero. The probability value of all variables are high, accepting that the normal distribution for all the variables indicating a normality of their un-conditional distributions. The Jarque-bera (JB) test is used to check hypothesis about the fact that a given sample is a sample of normal random variable with unknown mean and dispersion. JB test has the null hypothesis of normal residuals hence; its rejection requires low probability that is the probability that a Jarque-bera statistic exceeds the observed value. The mean to median ratio of each variable is within the unit proximity and standard deviations are on the low side

Table 1. Descriptive statistics of the variables.

Variable	lnRcXP	lnRGDP	lnREV	lnDEBT	lnCpXP	lnAdmXP	lnSCXP	lnTrXP
Mean	10.49	11.81	11.39	11.89	10.16	9.55	8.77	10.20
Median	10.33	12.43	11.19	12.71	9.85	9.12	8.29	10.27
Maximum	14.57	13.48	15.88	15.65	13.96	13.94	13.09	13.63
Minimum	6.57	8.35	6.45	7.13	5.16	5.32	3.45	6.24
Std. dev	2.56	1.51	2.80	2.97	2.49	2.65	2.72	2.37
Skewness	0.14	-1.13	0.10	-0.34	-0.19	0.24	-0.08	-0.08
Kurtosis	1.66	3.02	1.74	1.63	2.01	1.66	2.08	1.65
Jarque-bera	3.12	8.45	2.73	3.88	1.86	3.38	1.44	3.07
Probability	0.21	0.02	0.26	0.14	0.39	0.18	0.49	0.22
Sum	419.75	472.52	455.65	475.41	406.53	382.14	350.87	407.88
Sum sq. Dev	254.71	88.83	306.26	343.90	241.35	273.11	288.02	218.47
Observations	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00

Source: Authors' computation.

Table 2. Unit root test results for Augmented Dickey Fuller.

Variable	Level	First difference	Order of integration
lnAdmXP	0.187	8.614***	I(1)
lnCpXP	1.380	6.654***	I(1)
lnSCXP	1.017	7.130***	I(1)
lnRcXP	0.082	7.629***	I(1)
lnRGDP	2.309	5.753***	I(1)
lnDEBT	1.512	4.265***	I(1)
lnREV	1.241	6.170***	I(1)
lnTrXP	1.044	8.530***	I(1)

Source: Authors' computation; the Mackinnon critical values are -3.615, -2.941 and 2.609 at the 1, 5 and 10% levels of significance, respectively. The null hypothesis tests for no unit root I(0). *, **, ** * indicate significance at the 1, 5 and 10%, respectively.

showing small variability.

Results of unit root and cointegration test

It is important to check for the unit root properties of the individual series being time series in nature in order to avoid the problem of spurious regression. We examined the order of integration of the individual series using the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) tests of unit root with their results reported in Tables 2 and 3. The ADF and PP tests indicate presence of unit root at level but all the series are stationary at first difference.

Gregory and Hansen cointegration result

The results of the GH test are presented in Table 4. The result indicates that when there is a regime shift, models 12, 13, 14 and 15 are cointegrated as they do not fail to reject the null of no cointegration. However, model 11 fails to reject the null of no cointegration, thus, it is not cointegrated. The break dates of the cointegrated models are 1996, 1996, 1993 and 1990 for models 12, 13, 14 and 15, respectively. The decade of 1990 especially before mid 1990, can be described as a period of policy reversals and lost opportunities. The package of economic reforms embarked upon from the mid-1980s had its backlash effects on the real economy. The experimentation with deregulation and liberalization was truncated in 1994 following the prolonged political crisis that chronicled into a *palace coup* led by the late Nigeria's Head of State, Gen. Sanni Abacha.

Long run elasticity estimates

With the inclusion of other variables, the possibility of Wagner's law was verified from only two models: Models 12 and 14. Real GDP is significant and correctly signed in these two models. Table 5 specifically, a percentage

Table 3. Unit root test results for Phillips Perron.

Variable	Level	First difference	Order of integration
lnAdmXP	0.164	8.614***	I(1)
lnCpXP	1.372	6.661***	I(1)
lnSCXP	0.962	7.159***	I(1)
lnRcXP	0.058	8.082***	I(1)
lnRGDP	1.820	7.092***	I(1)
lnDEBT	1.403	4.262***	I(1)
lnREV	1.241	6.688***	I(1)
lnTrXP	0.974	10.81***	I(1)

Source: Authors' computation; the critical values are -3.615, -2.941 and 2.609 at the 1, 5 and 10% levels of significance, respectively. The null hypothesis tests for no unit root I(0). *, **, ** * indicate significance at the 1, 5 and 10%, respectively.

Table 4. Gregory and Hansen test result.

GH model	Model	Estimated breakdate	GH test	0.05 critical value	Reject H_0 of no cointegration
GH4	11	1997	-5.589	-6.00	NO
GH4	12	1996	-8.575	-6.00	YES
GH4	13	1996	-6.037	-6.00	YES
GH4	14	1993	-7.961	-6.00	YES
GH4	15	1990	-7.636	-6.00	YES

GH4 is Gregory Hansen test with regime shift.

change in real GDP will result in about 0.28 and 0.34% increase in capital expenditure and Social and community services, respectively. In addition, a percentage change in total revenue will result in about 0.83% increase in capital expenditure, while same percentage change has a greater impact of 1.07% increase in social and community services expenditure. An increase in debt however would lead to decreased expenditure in social and community services. The result of model 14 is similar to that of Ighodaro and Oriakhi (2010). Wagner's law cannot be confirmed from the results of other models (Models 11, 13 and 15). Real GDP is only significant in model 13, albeit, with negative sign, while the other two models show that real GDP is not significant. Total revenue plays a significant role in the expenditure patterns of recurrent administrative and transport expenditure in model 14, all the independent variables met *a priori* expectation. The residuals of models 12, 13, 14 and 15 are thereafter obtained to conduct the short term error correction model.

The error correction modeling

The short run ECM model is developed by using the LSE-Hendry general to specific (GETS) framework. The results of short run relationship are presented in Table 6. Just as the long-run case, Wagner's law is confirmed only for capital expenditure in the short-run. The results suggest that Wagner's Law may not be a short run phenomenon as the majority of the models failed to confirm Wagner's law.

Apparently, changes in the respective disaggregated expenditure are found to be associated with revenue in the current period of three of the four models (Models 12, 13, and 14); while, in addition, with the immediate past period in model 12. In specific terms, the coefficient of total revenue ranges from 0.42 to 0.58. This implies that a percent increase in revenue in the current period raises disaggregated expenditure by about 0.5%. The results also suggest that an increase in debt obligations raises expenditure on capital and administration in the current period. However, the capital expenditure would decline by about 0.76% with a similar increase in debt obligation in the immediate past period.

This outcome showed by real GDP in models 12, 13, 14 and 15 could be as a result of non diversification of the Nigerian economy as the nation has a potential of improving on its productive output. To check for the speed of adjustment of the model from the short run to the long run equilibrium state we consider the error correcting term (ECM_{t-1}). The greater the coefficient of the error correcting term, the faster the speed of adjustment of the model from the short run to the long run. The lagged error correction term (ECM_{t-1}) has the expected negative sign implying negative feedback mechanism in

Table 5. Elasticity estimates for models 11-15.

Model	Dependent variable	Constant	lnRGDP	lnREV	lnDEBT	R^2
11	*lnRcXP*	0.64 (1.35)	-0.08(1.19)	0.77* (15.31)	0.17 (2.90)	0.98
12	*lnCpXP*	-1.57 (-1.87)	0.28* (2.31)	0.83* (9.27)	-0.08 (-0.80)	0.96
13	*lnAdmXP*	0.30 (0.50)	-0.22* (-2.50)	0.95* (14.87)	0.08 (1.05)	0.98
14	*lnSCXP*	-4.24* (-4.76)	0.34* (2.70)	1.07* (11.28)	-0.27* (-2.44)	0.96
15	*lnTrXP*	-0.02 (-0.05)	0.09 (1.52)	0.54* (12.06)	0.25* (4.74)	0.99

Authors' computation; Figures in parentheses are t-statistic and * shows significance at the 5% level.

Table 6. Short run error correction models.

Variable	Model 12	Model 13	Model 14	Model 15
	$\Delta lnCpXP$	Δ *lnAdmXP*	$\Delta lnSCXP$	$\Delta lnTrXP$
Constant	-0.047 (0.47)	0.012 (0.11)	-0.069 (0.42)	0.021 (0.07)
$\Delta lnCpXP_{t-1}$	-0.106 (0.67)	-	-	-
$\Delta lnCpXP_{t-2}$	0.091 (0.71)	-	-	-
Δ *lnAdmXP* $_{t-1}$	-	-0.106 (0.67)	-	-
Δ *lnAdmXP* $_{t-2}$	-	0.091 (0.71)	-	-
$\Delta lnSCXP_{t-1}$	-	-	0.228 (1.12)	-
$\Delta lnSCXP_{t-2}$	-	-	0.114 (0.71)	-
$\Delta lnTrXP_{t-1}$	-	-	-	0.094 (0.12)
$\Delta lnTrXP_{t-2}$	-	-	-	0.251 (0.09)
$\Delta lnRGDP_t$	0.133 (1.93)**	-0.277 (1.88)**	0.250 (1.06)	-0.063 (0.10)
$\Delta lnREV_t$	0.419 (2.99)*	0.454 (2.80)*	0.580 (2.40)*	0.399 (0.09)
$\Delta lnREV_{t-1}$	0.702 (3.57)*	-0.019 (0.08)	0.182 (0.516)	0.177 (0.12)
$\Delta lnREV_{t-2}$	-0.054 (0.31)	-0.295 (1.46)	-0.272 (0.930)	-0.224 (0.12)
$\Delta lnDEBT_t$	0.482 (2.33)*	0.563 (2.63)*	0.182 (0.529)	0.403 (0.14)
$\Delta lnDEBT_{t-1}$	-0.765 (3.39)*	-0.304 (1.31)	0.248 (0.64)	-0.378 (0.14)
ECM_{t-1}	-0.212 (1.54)	-1.017(3.44)**	-0.954 (3.88)*	-0.882(0.18)
$\bar{R}^2$	0.43	0.38	0.39	0.59
SER	0.279	0.287	0.46	0.19
AIC	0.507	0.564	1.509	-0.277
SIC	0.943	0.999	1.944	0.159

Note: The absolute t- ratios are in the parentheses below the coefficients * and ** indicate significance at the 5% and 10% level, respectively.

the four models i.e. models 12, 13, 14 and 15 but it is significant at 10% in model 13 and 5% in models 14 and 15. If the ECM coefficient is less than unity, there is a smooth adjustment towards equilibrium; otherwise, the model will not adjust smoothly towards equilibrium. Models 12, 14 and 15 adjust smoothly towards equilibrium with coefficients of -0.21, -0.95 and -0.88 respectively. Thus if there are departures from equilibrium in the period, the departure is reduced by about 21, 95 and 88%, respectively for models 12, 14 and 15. However model 13 will deviate from equilibrium at more than 100%.

CONCLUDING REMARKS

This study covers five questions which are:

1. Does economic growth translate to growth in recurrent expenditure?
2. Does economic growth translate to growth in capital expenditure?
3. Does economic growth translate to growth in administrative expenses?
4. Does economic growth translate to growth in social and community service?
5. And does economic growth translate to growth in transfer expenditure?

The long run elasticity results showed that economic growth does not translate to growth in recurrent expenditure, administrative expenses and transfer expenditures. In contrast, economic growth leads to growth in capital expenditure as well as in Social and community

service. It is evident that Wagner's law was also validated in two out of the five models.

These findings can be explained by Wagner's law which indicates that increased government activity and the corresponding increase in government expenditure is an inevitable result of economic growth. In other words, increased friction in society causing greater demand for government services, as the society is growing richer, requires the government to provide quality goods and services and the demand for such goods and services is highly income elastic. This indicates that changes in national income can cause changes in government expenditures as government size in Nigeria has increased both in absolute and relative terms. However, the presence of a cointegrating relationship between the variables in the system suggests that a long term relationship exists between them.

The result show that since economic growth and development are the main objectives of government expenditure, especially investment in infrastructure and human resources all of which falls under social and community services, there should be efforts to maintain adequate levels of investment in social and economic infrastructure.

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