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Response of Economic Growth to the Stimuli of Government Expenditure: Evidence from Nigeria

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Abstract:
Impulse responses test found that economic growth proxied by growth responded slightly to the shocks of public expenditure in both positive and negative direction. The error correction mechanism revealed that economic growth proxied by Gross Domestic Product reinforces itself, that recurrent expenditure exerts positive and significant impact on economic growth within the period of the study, while capital expenditure impacts insignificantly at on economic growth at the same level with recurrent expenditure. The implication of this is that capital expenditure does not impact on economic growth the same year fund is expended. The pair wise granger causality test informed that recurrent expenditure has unidirectional effect with gross domestic product, whereas capital expenditure exhibits bidirectional effect with gross domestic product. The data extracted from the central bank of Nigeria statistical bulletin showed absence of multicollinearity, serial correlation within the variables. The same variables are all integrated at order one, while the model is homoscedastic. Therefore, suggested that capital projects should as much as possible be completed within the budgeted period in order to exert significant impact on the economy.

Keywords: *Recurrent expenditure, capital expenditure, GDP, impulse responses, VAR*

1. Introduction

Public expenditure and growth of Nigerian economy has occupied the attention of researchers and theorists over several decades. Historically, public expenditure could be rightly argued to be continuously increasing overtime in almost every country. The concept of public expenditure is used to refer to the expenses, which the government incurs for its own maintenance and also for the society and economy as a whole (Bhatia, 2004 and Edame, 2001).

The linkage between public expenditure and economic growth has attracted serious interest on the part of researchers both in the theoretical and empirical level. This interest is as a result of the role of public expenditure on infrastructures such as roads, ports, communication systems, public research spending, provision of basic educational and health services on the economic potential of any country (Irmen and Kuehnel, 2008; Nuruden and Usman, 2010). According to Maku (2009) the general view is that public expenditure either recurrent or capital on social or economic infrastructure can be growth-enhancing although the financing of such expenditure to provide essential infrastructural facilities-including transport, electricity, telecommunications, water and sanitation, waste disposal, education and health can be growth-retarding. Also, Afonso and Furceri (2007), Minea (2008) suggested that public spending on infrastructural facilities is widely seen as having an important role in affecting economic growth. There are two opposing views on this issue. The Keynesian approach argues that public spending is an important policy tool to be used to ensure a reasonable level of economic activities; correct short-term cyclical fluctuations in aggregate expenditure; and secure an increase in productive investment, thus providing a socially optimal direction for growth and development (Jhingan, 2004).

Government of all tiers allocated huge funds to various projects on Administration but seem not to replicate on the growth of the economy. This is despite the quantum of revenue from crude oil export and other non-oil revenues and one wonders whether government expenditure has been consistent with the recorded volume of revenue or in line with the specified objective. However, this paper empirically attempts to investigate whether public expenditure has impacted economic growth in Nigeria.

2 Review of Related Literature

Anyanwu (1977), public expenditure simply means government spending out of public revenues derived from taxes and other sources. It involves all the expenses which the government or the public sector incurs for its own maintenance, for the benefit of external bodies and other countries and for settling Nigeria's foreign and international obligations. Government Spending refers to public expenditure on goods and services and is a major component of the GDP. Government spending policies like setting up budget targets, adjusting taxation, increasing public expenditure and public works are very effective tools in influencing economic growth (NBS, 2018). Public expenditure refers to the expenses which a government incurs for its own maintenance, maintenance of the society and the economy and

helping other countries (Bhatia, 2002). In the words of Okpara (2002), public expenditure represents the funds expended by the government for its own maintenance, the maintenance of the society and the running of the economy in general. Government spending reflects the thrust of the regime in power. Once the government has decided the type and amount of goods and services to be purchased, government spending represents the cost of carrying out these policies. Njoku (2009) refers to government expenditure as all expenditures, both recurrent and capital expenditures which government incurs in the course of performing its functions. The following theories will be reviewed to enhance more understanding on relationship between structure of public expenditure and economic growth.

2.1. Wagner's law of Increasing State Activity

Wagner (1911) was a German political economist who based his law on increasing state activities and historical facts, primarily in Germany. He studied the German economy overtime and observed a correlation growth between national output and the public expenditure in the economy. He expressed the view that there was an inherent tendency for the activities of different layers of government (such as central and state governments) to increase both intensively and extensively. That is, there is a functional relationship between the growth of an economy and the growth of government activities, so that the government sector grows faster than the economy.

2.2. Keynesian Hypothesis- Economic Growth Theory

Keynes (1936) argued that these deficiencies that surround demand and the subsequent decline in production and employment could be eliminated through government intervention. This can be done by way of government expenditures on public works that will stimulate the economy to further activities through the multiplier and the accelerator. This new turn in economic event by Keynes formed the new era in economic thinking and policies. The use of fiscal policy therefore, brought into focus the government's active participation in the regulation and manipulation of aggregate economic activities.

2.3. Peacock-Wiseman Hypothesis or Displacement Effect

In their study of the U.K economy between 1890 and 1955, Peacock and Wiseman (1961) concluded that public expenditure do not increase in a smooth and continuous manner but in jerks or step-like fashion. Peacock and Wiseman's hypothesis is popularly referred to as displacement effect hypothesis. They believe that the pattern of growth of public expenditure in Britain is less regular and quite different from the corresponding pattern of growth in the size of the national output as proposed by Wagner.

Empirically, Danladi, Akomolafe and Anyadiegwu (2015) examined government expenditure and its implication for economic growth: Evidence from Nigeria. The ARDL methodology was employed to examine the relationship between the variables. From the analysis and findings, government spending significantly and positively explained the economic growth of the country. In comparing the results of the total government expenditure in the capital and recurrent expenditure, the result shows that they are positively related to economic growth however the recurrent component of expenditure significantly explained more. This study attests to the keynesian model (1936) of government intervention in the economy. Oziengbe (2013) investigated the relative impacts of federal capital and recurrent expenditures on Nigeria's economy (1980-2011). The study employed ECM model and revealed that total government expenditure had significant positive effect on Nigeria's economy in the period covered. It confirms postulation of keynesian theory and implies that Nigeria economy at its current stage of development owes much to government spending. Akanbi (2014) in his work, Government expenditure in Nigeria: Determinants and the trends employed a public choice framework and the model is estimated in the time series data from 1974 to 2012, using the Johansen estimation techniques. The results show that capital and recurrent expenditure are resilient to shocks in total government spending and, similarly, total government expenditure is found to be resilient to shocks in capital and recurrent spending. The increased per capita income was found to be in support of the Wagner's law in total and capital expenditure specifications, but this was refuted by the recurrent expenditure specification. Ditimi, Nwosa, and Ajisafe (2011) investigated the relationship between the components Segun and Adelowokan (2015) measured the impact of government spending on economic growth in Nigeria using regression equation on time series data from 1970 to 2008. Empirical finding showed that public recurrent expenditure exhibited a positive impact on growth at ten percent (10%) significance level. While public capital expenditure even though insignificant, but showed a positive impact on growth.

Tajudeen and Ismail (2013) used Auto-Regressive Distributed Lag (ARDL) approach to analyse the impact of public expenditure and economic growth from 1970-2010. Their findings indicated that the impact of public spending on growth was negative and recurrent expenditure was also found to have little significant positive impact on growth. In addition, Okoro (2013) studied the impact of government spending on the Nigerian economic growth using Granger causality test, cointegration and VECM technique on time series data spanning 1980 -2011. The result from the estimation shows that there exists a long-run equilibrium relationship between public expenditure and economic growth in Nigeria, supporting the Keynesian hypothesis. The short-run dynamics adjusts to long-run equilibrium at the rate of 60% per annum. The policy implication of this finding is that both the short-run and long-run expenditure has a significant effect on economic growth of Nigeria. In another development, similar result on the positive effects of education spending was found by Nurudeen and Usman (2010) utilised a co-integration and error correction model to estimate a disaggregated component of expenditure. Results showed that capital expenditure, recurrent expenditures, and public spending on education have negative effect on economic growth. On the contrary, increased government expenditure on health, transport and communication sector enhances the economic growth. Taiwo and Abayomi (2012) examined government expenditure and economic development: Empirical evidence from Nigeria over the last decades (1970-2008) using

econometrics model with OLS techniques. They found that there is a positive relationship between real GDP as against the recurrent and capital expenditure. Ogundipe and Oluwatobi (2012) in their paper investigated the effect of government expenditure on growth rate in Nigeria using the Johansen co-integration analysis. Evidences from the analysis spanning from 1970-2009 shows that the components of total government expenditure induced a negative (except spending on education and health) and insignificant in explaining the trend of economic growth. Dame and Akpan (2013) examined empirically the structure of government expenditure and economic growth of government of Nigeria with time series data for the period of 1970 to 2009. The OLS regression technique was employed as the main method of data estimation. The result obtained revealed that factors such as fiscal deficit, GDP, Government revenue and debt servicing are some of the factors causing growth in the government expenditure in Nigeria for the reference period. Chude and Chude (2013) investigated the effect of public expenditure in education on economic growth in Nigeria over a period from 1977 to 2012, with particular focus on disaggregated and sectoral expenditure analysis. The study used ECM and the results indicated that total expenditure on education is highly and statistically significant and have positive relationship on economic growth in Nigeria in the long run. Appah and Ateboh-Briggs (2013) investigated the co integration patterns of public expenditure and growth in Nigeria for the period 1961-2010 employed VECM and other Diagnostic tests. The results from econometric analysis revealed that pattern of public expenditure of administration, social community series, economic services and transfers affects the economic growth of Nigeria. In the study by Khalifa (1997) the empirical analysis found no consistent evidence that government spending can increase Saudi Arabia's per capital output growth. Therefore, a fiscal policy aiming the control of the budget deficit in Saudi Arabia has to consider shrinking the size of the government and limiting its role in the economy. A time series analysis was conducted with particular intention given to the causal pattern in the context of Vector Auto Regression (VAR) in Saudi Arabia. In line with the above, Komain and Brahmasrene (2007) examined the association between government expenditures and economic growth in Thailand, by employing the Granger causality test. There result revealed that government expenditures and economic growth are not co-integrated. More definitely, the result indicated a unidirectional relationship as causality runs from government expenditure to growth. Also, the results depicted that a significant positive effect of government spending on economic growth. Okanta (2009) in a study, the impact of public education expenditure on Economic growth in Nigeria (1990-2008), using simple, bivariate regressions shows that public education expenditures are statistically significant in affecting real GPD and real per capita in Nigeria. Also, that expenditure is not statistically significant in influencing economic growth using multivariate regression. Adewara and Oloni (2012) in composition of public Expenditure and Economic growth in Nigeria examined the relationship between public expenditure compositions from 1960-2008 on economic growth using the Vector Autoregressive Model (VAR). The study exposes that expenditure on education has failed to enhance economic growth due to the high rate of rent seeking in the country and high rate of unemployment.

Yusuf, Babalola, Aninka and Solako (2015) used Autoregressive Distributed Lag Model (Bound Test Approach) on Analysis of impact of sectoral Government Expenditure on Economy in Nigeria. Bound test co-integration approach revealed that public expenditures have not performed well to the expectation in promoting the economic growth. Contrarily to expectation, government expenditures on the Education, Defense and Agriculture sectors have failed to promote the economic growth.

3. Research Methodology

3.1. Sources of Data and Techniques for Analysis

We used public expenditure (Recurrent and Capital Expenditure) and economic growth (Gross Domestic Product (GDP)) data for the period of 1981-2018 obtained from Central Bank of Nigeria (CBN) Statistical Bulletin of 2018. The data will be analyzed and interpreted with the following: Descriptive Statistics, Correlation Matrix, Ordinary Least Square Method (OLS), and Augmented Dickey Fuller (ADF) unit root test, Error Correction Model (ECM), Pairwise Granger Causality Test Vector Autoregressive (VAR), Impulse responses, Variance Decomposition and other econometric tools.

3.2. Model Specification

The variables for this study can be specified in the following models

$GDP = f(REX, CEX)$ (1)

$GDP = \alpha_0+\alpha_1 REX_{t-1} + \alpha_2 CEX_{t-1}+ U_t$ (2)

$\log GDP = \alpha_0+\alpha_1 \log REX_{t-1}+ \alpha_2 \log CEX_{t-1}+ U_t$ (3)

For VAR Specification;

$GDP_t = \alpha_{01}+\alpha_{11} GDP_{t-1} + \alpha_{21} REX_{t-1}+\alpha_{31} CEX_{t-1}+ U_1$ (4)

$REX_t = \beta_{02}+\beta_{12} GDP_{t-1}+\beta_{22} REX_{t-1}+ \beta_{32} CEX_{t-1}+ U_2$ (5)

$CEX_t = \Upsilon_{03}+ \Upsilon_{13} GDP_{t-1} +\Upsilon_{23} REX_{t-1}+\Upsilon_{33} CEX_{t-1}+ U_3$ (6)

Where, GDP = Gross Domestic Product, REX = Recurrent Expenditure, CEX = Capital Expenditure, U_t = Stochastic Elements

3.3. Apriori Expectation

It is expected that GDP = f(REX, CEX), $f_1, f_2>0$. $f_{1,}\ f_{2\ are}$ the coefficients of Recurrent Expenditure and Capital Expenditure respectively. It is expected that the more expenditure government makes more the economy grows.

4. Analysis, Results and Interpretation

4.1. Descriptive Statistics Test

	GDP	REX	CEX
Mean	27569.37	1286.977	426.2259
Median	6102.422	455.6312	289.3336
Maximum	127762.5	5675.186	1682.099
Minimum	144.8312	4.750800	4.100100
Std. Dev.	37734.90	1637.927	441.8904
Skewness	1.279906	1.119582	0.901350
Kurtosis	3.322978	2.981852	2.989323
Jarque-Bera	10.54017	7.939124	5.145582
Probability	0.005143	0.018882	0.076322
Sum	1047636.	48905.14	16196.59
Sum Sq. Dev.	5.27E+10	99263783	7224884.
Observations	38	38	38

Table 1: Descriptive Statistics
Source: Authors Computation

Table 1 above shows a summary of statistics where GDP has standard deviation (SD) of 37734.9, Jarque Bera Statistic (JBS) of 10.57017 with Probability Value (P-value) of 0.005143. REX has SD of 1637.927, JBS of 7.939124 with P-value of 0.018882, which informs that GDP and REX are abnormally distributed, while CEX has SD of 441.8904, JBS of 5.145582 with P-value of 0.076322, indicating normal distribution.

4.2. Multicollinearity Test

	GDP	REX	CEX
GDP	1.000000	0.9911688	0.885440
REX	0.991168	1.000000	0.917987
CEX	0.885440	0.917987	1.000000

Table 2: Correlation Matrix
Source: Authors Computation

Table 2 above provides correlation matrix of the variables. The correlation matrix between REX and CEX is 0.917987, REX and GDP are 0.991168, whereas CEX and GDP is 0.885440. That shows that none of pairs of correlation among the variables is linearly perfectly correlated. Hence, there is no presence of multicollinearity.

4.3. Ordinary Least Square (OLS) Test

Dependent Variable: GDP Method: Least Squares Sample: 1981 2018 Included observations: 38				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
REX	26.12067	1.152889	22.65670	0.0000
CEX	-13.26784	4.273341	-3.104792	0.0038
C	-392.2445	1050.451	-0.373406	0.7111
R-squared	0.986213	Mean dependent var		27569.37
Adjusted R-squared	0.985425	S.D. dependent var		37734.90
S.E. of regression	4555.614	Akaike info criterion		19.76176
Sum squared resid	7.26E+08	Schwarz criterion		19.89105
Log likelihood	-372.4735	Hannan-Quinn criter.		19.80776
F-statistic	1251.800	Durbin-Watson stat		1.151223
Prob(F-statistic)	0.000000			

Table 3: Level Series Multiple Correlation
Source: Authors Computation

Table 3 reveals the level series multiple regression estimated model for the relationship between public expenditure and economic growth. From the table, the adjusted R-squared (R^2) is 98.54% and Durbin Watson (Dw) statistics is approximately 1.2, which shows the presence of positive autocorrelation. This is unreliable and cannot be used

for further analysis and policy formulation. This calls for further examination of the time dependent characteristics of the variables in our model.

4.4. Stationarity Test

	Lag	**Test Statistic**	**Probability**	**Critical Values**		
Variables	SCI			1%	5%	Remarks
LGDP	9	-3.180484	0.0295	-3.626784	-2.945842	@1(1)
LREX	9	-8.188467	0.0000	-3.626784	-2.945842	@1(1)
LCEX	9	-6.271950	0.0000	-3.626784	-2.945842	@1(1)

Table 4: Augmented Dickey-Fuller (Adf) Unit Root Test
Source: Authors Computation

Table 4 presents the ADF unit root test. The result shows that the variables are differenced once to be stationary, hence said to be integrated at order one (1(1)). Therefore, we proceed to testing if long run relationship exists among the variables.

4.5. Cointegration Test

Sample (adjusted): 1983 2018 **Included observations: 36 after adjustments** **Trend assumption: Linear deterministic trend** **Series: LGDP LREX LCEX** **Lags interval (in first differences): 1 to 1** **Unrestricted Cointegration Rank Test (Trace)**				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.504045	35.51346	29.79707	0.0098
At most 1	0.179086	10.26775	15.49471	0.2607
At most 2	0.084127	3.163597	3.841466	0.0753
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.504045	25.24572	21.13162	0.0124
At most 1	0.179086	7.104149	14.26460	0.4769
At most 2	0.084127	3.163597	3.841466	0.0753
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Table 5: Johansen Co integration Test
Source: Authors Computation

Table 5 above we indicate that unrestricted rank test (Trace and Maximum Eigenvalue) hasone cointegration equation at 5% level of significance among the variables. This shows that long run relationship exists between the dependent variable (GDP) and independent variables (REX, CEX).

4.6. Error Correction Mechanism (ECM)

The cointegration test result provides for short run fluctuations. Therefore, we apply error correction model to examine the interplay of the long run and short-term fluctuations in the model using the general specific approach.

Dependent Variable: D(LGDP) Method: Least Squares Sample (adjusted): 1985 2018 Included observations: 34 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP (-1))	0.358547	0.138777	2.583623	0.0158
D(LREX(-1))	0.100139	0.064107	1.562074	0.1304
D(LREX(-2))	0.237680	0.061912	3.839019	0.0007
D(LREX(-3))	0.196112	0.062833	3.121164	0.0044
D(LCEX(-1))	0.034239	0.041764	0.819816	0.4198
D(LCEX(-2))	-0.016831	0.043832	-0.383980	0.7041
D(LCEX(-3))	0.077138	0.041664	1.851443	0.0755
ECM(-1)	0.025242	0.065086	0.387827	0.7013
R-squared	0.589200	Mean dependent var		0.194703
Adjusted R-squared	0.478600	S.D. dependent var		0.103879
S.E. of regression	0.075009	Akaike info criterion		-2.140087
Sum squared resid	0.146286	Schwarz criterion		-1.780944
Log likelihood	44.38149	Hannan-Quinn criter.		-2.017609
Durbin-Watson stat	1.844464			

Table 6: Over-Parameterized ECM
Source: Authors Computation

Table 6 shows the over parameterized ECM estimate with maximum lag of three. The Dw statistic is 1.84464 and Adjusted R^2 is47.86%. That shows absence of autocorrelation. The result also indicates that GDP reinforces itself. That REX at Lag 2 and Lag 3 exerts positive and significant impact on GDP. While CEX insignificantly related to GDP

4.7. Granger Causality Test

Null Hypothesis	Obs	F-Statistic	Prob
REX does not Granger Cause GDP	36	4.45977	0.0198
GDP does not Granger Cause REX		1.57772	0.2226
CEX does not Granger Cause GDP	36	5.87022	0.0069
GDP does not Granger Cause CEX		6.64905	0.0040

Table 7: Pairwise Granger Causality
Source: Authors Computation

Table 7 above reveals that REX granger causes GDP, while GDP does not granger cause REX. On the other hand, CEX granger causes GDP, as well as GDP granger causes CEX. Therefore, REX and GDP have unidirectional effect, while, CEX and GDP have bidirectional effect. That means the drive each other.
Having established the relationship and causal effects among the variables, we then move to analyzing the model with VAR. Firstly, establishing the VAR length as seen below.

VAR Lag Order Selection Criteria Endogenous variables: LGDP LREX LCEX Exogenous variables: C Sample: 1981 2018 Included observations: 35						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-102.3169	NA	0.082457	6.018107	6.151423	6.064128
1	37.97145	248.5108	4.56e-05	-1.484083	-0.950821*	-1.300001
2	50.74506	20.43778*	3.73e-05*	-1.699718*	-0.766509	-1.377574*
3	58.91751	11.67493	4.04e-05	-1.652429	-0.319274	-1.192224
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

Table 8: VAR Lag Order Selection Criteria

The VAR lag order selection criteria on Table 8 above shows that lag length of 2is selected at 5% level based on sequential modified LR test statistic, Final prediction error (FPE), Akaike information criterion (AIC), and Hannan-Quinn

information criterion (HQ). Then move to evaluating the stationarity for policy making by employing Inverse Roots of AR Characteristics Polynomial Test as shown below.

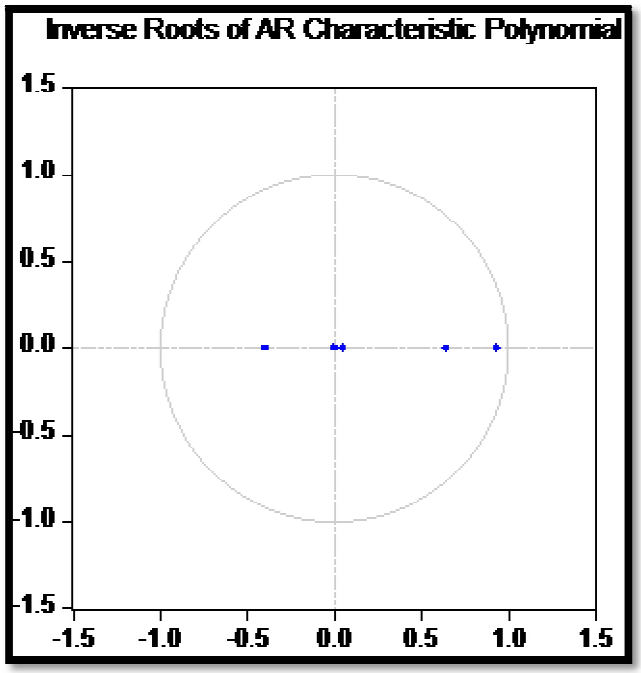

Figure 1: Inverse Roots of AR Characteristics Polynomial Test

Figure 1 above shows that all np roots of the characteristics polynomial are in circle or lie within the unit imaginary circle (modulus). Hence, all are stationary. Next is checking if the model is heteroscedastic as shown below.

VAR Residual Heteroskedasticity Tests (Levels and Squares)					
Joint test:					
Chi-sq	df	Prob.			
88.55544	72	0.0900			

Table 9: VAR Residual Heteroskedasticity Tests (Levels and Squares)

In the same vein shows that Chi-sq is 114.5785 wtih P-value of 0.1512, meaning rejection of the null hypothesis. Hence, the model is homoskedastic.Next is checking if the model has serial correlation as shown below.

VAR Residual Serial Correlation LM Tests						
Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	14.76060	9	0.0977	1.742909	(9, 61.0)	0.0985
2	16.86790	9	0.0508	2.025894	(9, 61.0)	0.0514

Table 10: VAR Residual Serial Correlation Lm Tests

The result on Table 10indicates that there is absence of serial correlation in the model.

We then proceed to checking the responses of economic growth to the variables of public expenditure stimuli.

Let's start from the response of economic growth proxied by GDP to the shock of REX associated debt as shown in Figure 2

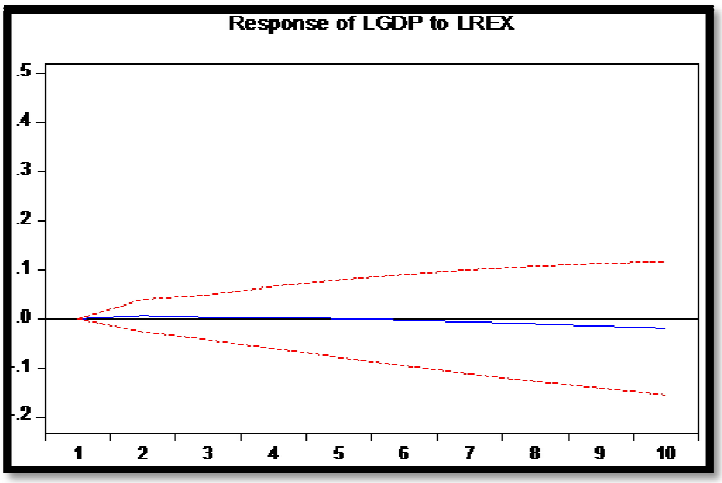

Figure 2: Response of GDP to REX

Figure 2 shows that GDP responds to a shock in REX within zero percent thresholds in first year until after sixth year, and then rises slightly on a negative direction until the tenth year. That means the shock from REX to GDP has adverse effect from the sixth year but noticeable from the first year.

To explore the relationship between GDP and CEX, the researcher presents the impulse response graph in fig. 4.3 as follows.

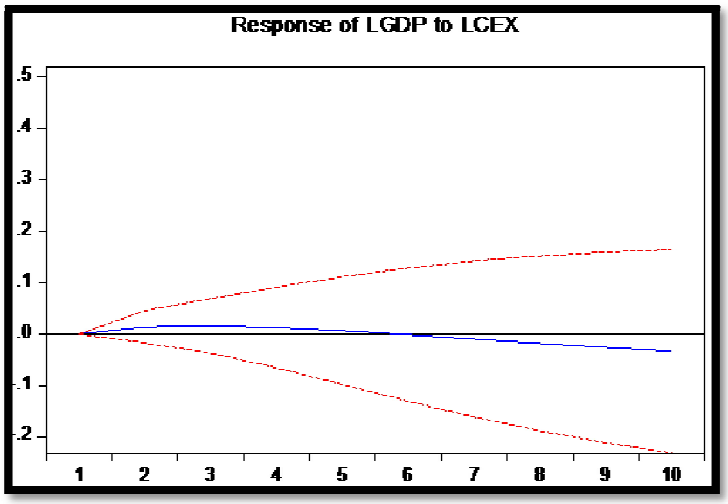

Figure 3; Response of GDP to CEX

Figure 3 shows that GDP responds slightly positive from the first year and negatively after the fifth year until the tenth year. That means shock CEX engenders positive and negative effects to the GDP. We then proceed to variance decomposition.

Period	S.E.	LGDP	LREX	LCEX
1	0.096110	100.0000	0.000000	0.000000
2	0.183488	99.25103	0.140309	0.608663
3	0.271698	99.29756	0.075793	0.626647
4	0.357011	99.45284	0.051584	0.495574
5	0.437644	99.61284	0.034452	0.352712
6	0.513189	99.71599	0.026926	0.257082
7	0.583831	99.74310	0.030940	0.225961
8	0.650058	99.69272	0.048179	0.259097
9	0.712460	99.57067	0.080304	0.349025
10	0.771632	99.38631	0.127855	0.485837

Table 11: Variance Decomposition

From the above, GDP explains 100 percent of its variations in the first period and diminishes slightly to 99.38 percent in the tenth period. In other words, "the own shock" started from 100 percent and decreased to 99.38 percent. REX fluctuated from zero percent of the variation in GDP in the first period and increased to 0.127 in the tenth year. CEX also fluctuates from zero percent in the first period to 0.485 6 percent in the tenth period.

We then move to know if short term errors can be corrected in the long run using VECM as shown below;

LGDP(-1)	1.000000		
LREX(-1)	-0.823758		
	(0.06084)		
	[-13.5388]		
LCEX(-1)	-0.167512		
	(0.07071)		
	[-2.36913]		
C	-3.129770		
Error Correction:	D(LGDP)	D(LREX)	D(LCEX)
CointEq1	-0.352282	-0.324290	0.720193
	(0.08405)	(0.28810)	(0.37067)
	[-4.19140]	[-1.12562]	[1.94297]

Table 12: Vector Error Correction Estimates

The analysis in Table 12 above shows that error correction equation (CointEq1) satisfied the condition, hence, significant. The speed of adjustment is 35.2%. That means short term errors can be corrected in the long run with annual speed of adjustment of 35.2%. Also, long run casualty flows from independent to dependent

5. Conclusions and Recommendation

In conclusion, this study observed as follows; that economic growth proxied by Gross Domestic Product (GDP) reinforces itself, that recurrent expenditure exerts positive and significant impact on economic growth within the period of the study corroborating the Wagner's Law of Increasing State Activities which stipulates that the activities of government are increasing function of the changing structure of the economy, while capital expenditure impacts insignificantly on economic growth at the same level with recurrent expenditure. The implication of this is that capital expenditure does not impact on economic growth the same year fund is expended. This study found that economic growth proxied by growth responds slightly to the shocks of public expenditure in both positive and negative direction. It was also observed that recurrent expenditure has unidirectional effect with gross domestic product, whereas capital expenditure exhibits bidirectional effect with gross domestic product. Therefore, suggested capital projects should as much as possible is completed in their budgeted period in order to have a significant impact on the economy. Again, government should be consistent with the appropriation of recurrent expenditure within the fiscal period.

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