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BANK CREDIT, INDUSTRIAL SECTOR AND ECONOMIC GROWTH IN NIGERIA: A VAR APPROACH

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Abstract

Industrial output and economic growth in Nigeria has been lackluster and efforts have been geared towards stimulating the industrial sector with a view to accelerating economic growth. Bank credit and government expenditure have been identified as key variables that engender industrial output and hence economic growth. The study explores an empirical analysis of the interrelationships among Bank Credit, industrial output, government expenditure and economic growth in Nigeria using the methodology of vector auto-regressions (VARs). The study estimates a multivariate (4-equations) auto-regressions model using annual time-series data on real gross domestic product, industrial output, loans and advances and government expenditures for the period 1980 through 2013. The study carries out Unit roots tests for all variables and tests of cointegration. In addition, Forecast Variance Decomposition and Impulse Response Functions are carried out to examine dynamic interrelationships among the variables in the VAR system. The results show that the predominant sources of variations in the rate of economic growth are due largely to "own shocks," innovations from loans and advances and government expenditures. Consequently, it is recommended that government should increase expenditure in key infrastructure, as well as ease access to bank credit for the industrial sector with a view to spurring economic growth in Nigeria.

Keywords: Bank Domestic Credit, Gross Domestic Product, Government Expenditure, Industrial output, VARs

1. Introduction

Virtually every country that experienced rapid economic growth and improvements in living standards over the last 200 years has done so through industrialization. Countries that have successfully industrialized i.e. transformed from a predominantly, rural-primary-agricultural sector to the production of diverse manufactured goods, and took advantage of scale economies, are the ones that grew rich, be they eighteenth century Britain, or twentieth-century Korea and Japan or twenty-first century China. Yet, despite the evident gains from industrialization and the successes of many countries in achieving it, numerous other countries such as Nigeria remain unindustrialized and poor. The questions that have been asked are that what are the factors or policies that are germane for industrialization in some countries on one hand and why have they been elusive for Nigeria to industrialize on the other hand? Consequently, a combination of government intervention through the massive investment in key infrastructures such as telecommunication, roads, power, etc. and a massive monetary policy thrust have been identified as veritable factors that are germane to industrialization which would ultimately accelerate the growth process (Kevin, et al (1989), Chenery,(1986).

A seemingly general consensus in economic discussions is that at least in the short run, monetary policy can significantly influence the course of industrialization through financial intermediation in the transmission of monetary policy actions to the economy. A major channel through which monetary policy is transmitted to the real sector as validated by many economic researchers is the lending channel (Mckinnon, 1973, Shaw 1973). This channel in modern economies occurs in the form of loans and advances by banks to firms which constitute a critical proportion of total borrowings in the financial market. Accordingly, this channel of monetary policy is referred to as the 'bank channel' (Goh and Yong 2007 and Handa 2009). According to (Kashyap and Stein,

1994), a distinct lending channel of monetary policy transmission is said to exist where there are three financial assets viz- money, publicly issued bonds and intermediated 'loans'--- that differ from each other in meaningful ways and must be lucidly distinguished when analyzing the impact of monetary policy shocks. In this nexus, the banking sector can now be special in two relevant ways; in addition to creating money, it makes loans which, unlike buying bonds, the household sector cannot do.

According to Adegboye (2015), monetary perturbations can affect the level of economic activities by altering the availability of bank loans through interest rate changes. Thus a contractionary monetary shock leads to a drop in bank lending and as a result bank lending behavior has a direct bearing on the relationship between monetary policy and economic activities.

1.2 Bank Credit and Industrial Expansion

In Nigeria, the number of banks stands at 24 due to the recent consolidation exercise and over the years, the volume of credit has continued to increase. For example the volume of credit to the private sector increased from mere N6, 234.23million in 1980 to N29.21 billion in 2010. Credit to private sector as a percentage of Gross Domestic Product (GDP) increased from 12.5% in 1980 to 18.59% 1993. The figure increased to 37.78 in 2010. This credit trend is expected to augment industrial capacity and ultimately enhance economic growth. However, economic growth has remained very low except for the last four years when marginal increases were recorded. This puzzle has raised concern as to the impact of bank credit on economic growth in Nigeria. Indeed, study by Bayoumi and Melander (2008) for US macro-financial linkages showed that a 2.5% reduction in overall credit caused a reduction in the level of GDP by around 1.5 percent. In the same way, King and Levine (1993) study for 80 countries found that bank credit affected economic

growth through improvement of investment productivity (better allocation of capital) and through higher investment level. Several other studies that support this claim include De Gregorio and Guidotti (1995), Levine (2002) and Boyreau-Debray(2003).

However, the main feature of most existing studies is that they tend to focus on aggregate economic growth without looking at the components. Unfortunately, aggregate growth may veil fundamental issues in the growth process. This is particularly relevant in the case of Nigeria where oil constitutes a major share of aggregate economic growth.

There is no gainsaying the fact that oil being an enclave sector has a very little value added. Therefore, attempt at looking at the impact of bank credit to the industrial sector will provide a robust picture of economic growth. There is the need to focus on the real sector namely agriculture and manufacturing sub sectors. The real sector comprising agriculture and manufacturing constitute the soul of the economy; hence whatever happens in the real sector will have a significant effect on the entire economy. This explains the rationale for the study. Specifically, the study examines the effects of bank credit on the growth of the industrial sector. In particular, the main area of concern is the availability of credit to private investors and empirical research has shown that financial depth is generally associated with an increase in GDP (Levin, 1997).

In contrast, distorted financial markets with high macroeconomic instability, direct government involvement and weak regulation can have extremely adverse effects on industrial sector and on economic growth in Nigeria. As a result, the focus of much recent on the financial sector has been on broadening and deepening financial markets in developing countries and on improving financial sector, regulation, supervision and governance. The increasing participation of commercial banks has been one of the striking structural changes experienced by banking systems in developing

countries (Demigue-Kunt, Levine, and Min 1998, Levine, 1999, Barjar et al 2000). The rest of the paper is organized as follows: section 2 reviews the related literature. Section 3 discusses the methodology. Estimation and discussion of results are provided in section4 and section 5 concludes the study.

2. Review of Related Literature

In this section, we present a brief summary of existing literature on the effect of bank credit and economic growth. The general idea that economic growth is related to financial development dates back at least to Schumpeter (1911). He contended that financial institutions could spur innovation and growth by identifying and funding productive investments. Other authors that support this view include Gurley and Shaw (1967), Goldsmith (1969); Mckinnon (1973) and Shaw (1973) and have argued that financial development could foster economic growth by raising saving, improving allocation efficiency of loanable funds, and promote capital accumulation. It is argued that financial instruments such as credit provided by banking sector and the liabilities of the system in the economy are correlated with gross domestic product, savings, and openness trade (Leitão, 2012). Similarly, Ngai (2005), Josephine (2009) and Plamen and Khamis (2009) argued that bank credit could help in the provision of funds for productive investment. This is particularly important in developing countries where capital markets are not fully developed. Asides, they contended that bank credit availability could positively affect consumption, investment and thus aggregate output and employment. Empirically, a number of studies have shown that bank credit has positive effect on economic growth.

The study by Eatzaz and Malik (2009) for 35 developing countries analyzed the role of financial sector development on economic growth. The study using GMM approach reported that domestic

credit to the private sector led to increase per workers output and thus increased economic growth in the long run. Their finding was consistent with the findings of Levine (2004), and Franklin Qura (2004). Deyand Flaherty (2005) using two-stage regression model examined the impact of bank credit and stock market liquidity on GDP growth.

The results showed among other things that bank credit had significant effect on GDP growth for a number of countries. The study by Leitão (2010) European Union Countries and BRIC (Brazil, Russian, India and China) over the period 1980-2006 showed that domestic credit positively impacted economic growth. As in Levine et al (2000) and Beck et al. (2000), the paper adopted a dynamic panel data. The study by Murphy, et al. (2012) examined the impact of bank credit on economic growth in Ethiopia over the period 1971 –2011. The results from Johansen multivariate cointegration showed that bank credit to private sector positively impacted economic growth through its role in efficient allocation of resources and domestic capital accumulation. Other empirical studies in this area that found positive relationship between credit and firms growth were Beck et al.(2008) and Carpenter and Peterson (2002).

With respect to Nigeria, study by Onuorah (2013) for the period 1980-2012 examined the impact of bank credit on economic growth. The results from co-integration VAR and Causality showed that various measures of bank credit namely total production bank credit and total general commerce bank credit had significant positive effect on economic growth in Nigeria over the study period. In the same vein, study by Aliero et al. (2013) over the period 1974-2010 examined the impact of bank credit on economic growth. The result from Autoregressive distributed lag bound approach showed that private sector had significant positive effect on economic growth in Nigeria.

In contrast, few studies have documented negative, little or no effect of credit on economic growth. These studies include Hassan et al. (2011), Levine (1997) and Levine et al (2000). In the same way, the study by Mushin and Eric (2000) showed that the effect runs from economic growth to financial development and not otherwise.

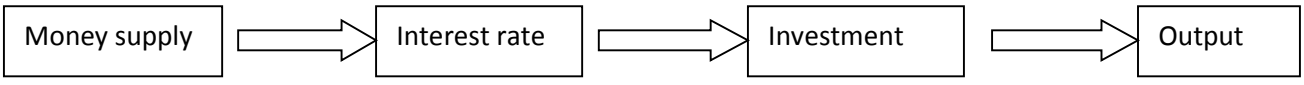
3. Theoretical Framework, Methodology and Data

3.1 Theoretical Framework

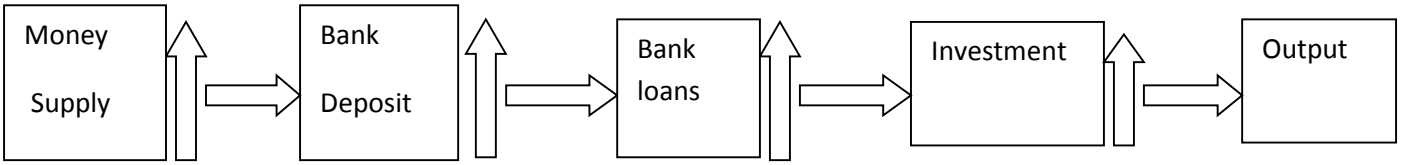
The theoretical foundation adopted in this study is the Keynesian Monetary Transmission Mechanism.

3.1.1 The Monetary Transmission Mechanism

The mechanism through which monetary policy is transmitted to the real economy is a vital subject matter in economic literature. The transmission mechanism of monetary policy refers to the ability of monetary policy to affect aggregate spending and real output. Using the standard Keynesian analysis, Iyoha (2003), asserted that the channel through which monetary policy impacts on the national economy in the closed economy is the aggregate demand via the rate of interest. To this end, quite a number of theoretical formulation have been contrived to capture the transmission pattern and the bank lending channel (loans and advances) represents the credit view of the mechanism. A general form of the monetary policy output function involving direct relationships can be seen from the simple Keynesian monetary mechanism (Adegboye, 2015).



The transmission mechanism shows that a contractionary monetary policy that raises the policy that raises the policy rate would lead to reduced capacity of the financial market to create money thereby reducing money supply and aggregate expenditure. The effect would be a decline in output growth rate. The credit view of monetary policy transmission on the other hand, posits that monetary policy works by affecting bank assets (loans) as well as banks' (liabilities). Accordingly, monetary policy not only shifts the supply of deposits but also shifts the supply of bank loans. For instance, an expansionary monetary policy that increases bank reserves and bank deposits increases the quantity of bank loans available. Where many borrowers are dependent on bank loans to finance their activities, the increases in bank loans will cause a rise in investment leading ultimately to an increase in aggregate output (Y) (Iyoha 2003, Adegboye, 2015). Below is a schematic presentation of the resulting monetary policy effects;



The schematic representation above indicates that an expansionary monetary policy (M) would lead to an increase in bank loans, thereby raising the level of aggregate investment spending, I and aggregate demand and output, Y. In this context, the response of banks to monetary policy is their lending response and not their role as deposit creators.

3.2 Model Specification

Following from the theoretical foundation above, We shall use four variables for this study. The variables are:

- Real Gross Domestic Product (RGDP)
- Government Expenditures (GOVEXP)
- Credit to Private Sector (LOANSAD)

- Industrial output (QIND)

The rationale is that a combination of a massive government intervention and a monetary policy germane to industrialization can accelerate industrial expansion (Kevin, et al (1989), Chenery et al (1986)). Government expenditures especially in critical infrastructures of the economy are a necessary condition for industrialization. A seemingly general accepted consensus in the literature is that at least in the short run, monetary policy can significantly influence the course of industrialization through financial intermediation in the transmission of monetary policy actions to the economy. A major channel through which monetary policy is transmitted to the real sector is the lending channel (McKinnon, 1973, Shaw 1973). Thus loans and advances (LOANSAD) is a critical determinant of industrial output.

3.3 The Model

.This study posits a 4-multi-equations VAR model in which real gross domestic product, Industrial output, loans and advance to industrial sector and government expenditure are simultaneously interrelated. In order to obtain more meaningful results, logarithmic transformations of the variables were utilized.

Thus, the VAR model specified is

$$LRGDP_t = \alpha_0 + \alpha_1 LRGDP_{t-1} + \alpha_2 QIND_{t-1} + \alpha_3 LLOANSAD_{t-1} + \alpha_4 LGOVEXP_{t-1} + U_{1t} \quad \text{.....(3.1)}$$

$$LQINDt = \beta_0 + \beta_1 LRGDP_{t-1} + \beta_2 QIND_{t-1} + \beta_3 LLOANSAD_{t-1} + \beta_4 LGOVEXP_{t-1} + U_{2t} \quad \text{.....(3.2)}$$

$$LLOANSADt = \delta_0 + \delta_1 LRGDP_{t-1} + \delta_2 QIND_{t-!} + \delta 3 LLOANSAD_{t-1} + \delta_4 LGOVEXP_{t-1} + U_{3t} \quad \text{.....(3.3)}$$

$$LGOVEXP_t = \phi_0 + \phi_1 LRGDP_{t-1} + \phi 2 QIND_{t-1} + \phi_3 LLOANSAD_{t-1} + \phi_4 LGOVEXP_{t-1} + U_{3t} \quad \text{.....(3.4)}$$

Explicitly, the model is specified thus

$$V_t = \alpha + \sum_{t=1} AiV_{t-1} + U_t \quad \text{.....(3.5)}$$

Where; V = (LRGDP, QIND, LOANSAD, GOVEXP), is the vector of the logarithms of real gross domestic product, industrial output, loans and advances and of government expenditure

α = intercepts

A_i = 4X4 matrix of coefficients of all the lagged endogenous variables in the model

V_{t-1} = vector of the lagged endogenous variables

u_t = vector of the stochastic error terms

4. Empirical analysis

4.1 Unit root test and Results

Since the study uses economic time-series data, it is pertinent to begin by verifying the time series properties of the variables employed. The Augmented Dickey Fuller test was used in order to test for the stationarity of variables used.

Table 4.1: Dickey-Fuller Stationarity Results

Variables	Dickey Fuller	Augmented Dickey Fuller	95% critical values	Remark
	-4.1724*	-3.5277*	-2.9627*	I(1)
DLRGDP	-4.115	-3.434	-3.5671	
	-7.7642*	-3.9343*	-2.9706*	I(1)
DLQIND	-5.6806	-3.8878	-3.576	
	-7.8205*	-3.7741*	-2.9798*	I(1)
DLLOANSAD	-7.7654	-3.8227	-3.5943	
	-7.9450*	-4.3354*	-2.9798*	I(1)
DLGOVEXP	-7.8962	-4.2686	3.5943	

*Denote Dickey-Fuller regression with an intercept but not a trend

Source: Authur's computation using MFT4.1

From the stationarity result in table 1 above, all the macro variables; real gross domestic product (RGDP), industrial output (QIND), Loans and Advances to industrial sector (LOANSAD) and government expenditure (GOVEXP) are difference stationary, that is, they are I(1) variables. This has guaranteed that the regression coefficients, as well as the estimated p-values are unbiased and efficient. Consequently, we perform the cointegration test.

4.2 Cointegration Test and Results

The cointegration test is conducted in order to determine the existence of a long run relationship among the variables. We report the results of the test of cointegration obtained by using the ADF technique to test for the stationarity of the residuals from the OLS regression of real GDP on industrial output, loans and advances and government expenditure.

Table 4.2: Cointegration Test Results

	Test Statistic	95% critical value	Remark
Dickey-Fuller	5.5643	-3.8387	Cointegrated
Augmented Dickey-Fuller	-4.5643		

Source: Aurthur's computation using MFIT4.1

The cointegration results reported in the table above reveal the existence of at least one long run relationship (determined at the points where the test Dickey-Fuller statistic is greater than the 95% critical Value) among the variables. If these variables in the study are co-integrated, a long run estimation of the series with level variables will produce reliable estimates (Greene, 2002). The

evidence of cointegration among the variables rules out spurious correlations and it implies that at least one direction of influence could be established among the variables.

4.3 VAR Estimation Results

The existence of cointegration among the variables allows us to implement the Vector Auto-regression (VAR) technique, which describes the systematic disequilibrium adjustment process and over a time series. The endogenous variables in the system include lagged variables of real industrial output ((QIND), government expenditure (GOVEXP), Loans and Advances (LOANSAD) and Real GDP. The use of lags is expected to internalize the implications of expectations among the variables. The result of the VAR is presented in the table below.

Table 4.3: VAR Output for Dynamics between Real Income and other Variables

REGRESSORs	*LRGDP*	*LGOVEXP*	*LLOANSAD*	*LQIND*
LRGDP(-1)	.92801*	1.4449	-4.0368**	.69736
LRGDP(-2)	-.24884	-.9913	5.1631**	.41588
LRGDP(-3)	-.010521	.29917	-2.6464	-1.1972**
LGOVEXP(-1)	-.0048505	.45705	.77296**	.14908**
LGOVEXP(-2)	-.062566	0.63820	-.37690**	-.098385
LGOVEXP(-3)	.01985	.58999	.18574	.029253
LLOANSAD(-1)	.016692	-.013391	.54264**	.078264
LLOANSAD(-2)	.033713	-.43654*	.19908	-.11956**
LLOANSAD(-3)	.017532	.20842	.20886	-.010977
LQIND(-1)	.16662	.35023	-1.3583	.050130
LQIND(-2)	-.10618	.53777	-.46687	.090409
LQIND(-3)	.18758	-.69811	-.89707	.12015
R-squared	.99	.98	.97	.87
F	200.30	163	79	6.54

Note: ** is significance at 5 percent; ** is significance at 1 percent*
Source: Author's computation using MFIT4.1

From the results in the table above, all the equations have very high goodness of fit statistic, judging by the R-Bar squared values. This indicates that the VAR modeling within a lag structure of (three) 3 for all the relationships could have captured the relationships properly. This is further supported by the high F statistic which shows the overall performance of the model. Since the variables are in log form, the structural coefficients of the regressors are elasticities.

In the real gross domestic product equation, only the first lag of real domestic product is significant with positive coefficient. This suggests that real output has a distributed lag structure with respect to real income. Thus increases in aggregate output in the current period would lead to increases in output in succeeding periods. In the GOVEXP equation, only the second lag of loans and advances is significant with a coefficient of 0.43654. This implies that an increase in loans and advances has two years gestation lag to manifest negative impact; with negative coefficients in the VAR output, it indicates a disequilibrium structure over time. None of the other variables is significant in the GOVEXP equation. In the Loans and advances equation, only first and second lag real income and government expenditure is significant at 1% percent level. Only first lag loans and advances is significant also at 1% percent level. The real income equation indicates that first lag of both LOANSAD and GOVEXP are significant with negative signs. This is a suggestion of the fact that loans and advances seems to respond negatively to changes in real income and government expenditure with a delay. On the other hand, first period lag of loans and advances is significant and has a positive coefficient. This suggests that loans and advances have a distributed lag structure. In the industrial sector equation, only lagged government and loans and advances are significant with a delayed negative effect. Curiously, the regression result shows that the industrial

sector is not significant. This results suggests that industrial output does not significantly contribute to real aggregate output in the economy. Consequently, policies and programmes that are germane to industrial sector expansion should be encouraged.

Due to the highly transitory nature of the VAR system, Sims (1980) and Stock and Watson (2001) have shown that the immediate output of the VAR estimation does not give results with much empirical value since the relationship appears to be merely mathematical in nature. Hence, the analysis in above is neither conclusive nor exhaustive. Next, our focus is to analyze the Impulse Response Functions and the Forecast Error Variance Decompositions as presented in the next sections.

4.4 Impulse Response Functions

The impulse Response function simulates over time the effect of a one-time shock in one equation on itself and on other equations in the entire equation system; hence it is used to detect interaction among variables. Akinbobola (2012) is of the opinion that the statistical efficiency of the coefficient estimates from the VECM cannot be guaranteed; hence most researchers are comfortable with the interpretation of the impulse response and variance decomposition. Since our study is concerned with the link among changes in economic activity, a cumulative measure is more appropriate to measure the persistence of the effects of changes to the system over time (Andrews & Chen, 1994). According to Marquess (2004), a cumulative IRF measures the amount of time it takes for a variable to converge, subsequent to a shock in the system. Results are presented in the form of the dynamic impulse responses of the economic growth variable in the VAR (i.e. RY) to an increase in each relevant variable equivalent to the sample standard deviation. These charts are designed to provide a visual presentation of the dynamic effects of shocks to the system. An examination of the graphs for LRGDP, LQIND. LLOANSAD and LGOVEXP show that their movements with respect to the identified shocks are consistent with the results of variance decomposition analysis.

Table 4.4.1 Impulse Responses to one SE in the equation for LLOANSAD

Horizon	LRGDP	LQIND	LLOANSAD	LGOVEXP
0	.0094749	.040208	.36493	-.081052
1	.021977	.025101	.042520	-.014160
2	.036103	-.010279	.022667	-.11882
3	.037369	.0035508	-.095749	-.030968
4	.038756	.013016	-.065497	-.027153
5	.019308	.6796E-3	-.15042	.0060146
6	.0012495	-.013747	-.092449	-.0014918
7	-.013246	-.026703	-.10350	.017508
8	-.022889	-.026796	-.039870	-.0099821
9	-.029052	-.021362	.0057569	-.011489
10	-.028496	-.014488	.071333	-.026121

From table above, real gross domestic product impact positively on LOANSAD from 1 to 6 period horizon and negatively from 7 to 10 horizon. The industrial sector only impact positively on LOANSAD only in the 1st and 4th period horizon. In the same vein, LOANSAD only has positive impact on itself in the 1st, 2nd 9th and 10th period horizon. GOVEXP only has positive impact on LOANSAD only in the 5th and 7th period. The strongest positive impact on LOANSAD is the innovations from itself.

Table 4.4.2 Impulse Responses to one SE shock in the equation for LQIND

Horizon	LRGDP	LQIND	LLOANSAD	LGOVEXP
0	.0096753	.070720	.20748	.0039638
1	.024206	.027122	-.019455	.037781
2	.023305	.0075720	-.059159	.004464
3	.026947	.017888	-.087200	.037546
4	.023827	.011503	-.13181	.076685
5	.0077025	.011524	-.10561	.087811
6	-.0063932	.0018816	-.072267	.10108
7	-.016695	-.010173	-.044227	.10566
8	-.021892	-.0077634	.016045	.090655
9	-.021252	-.0022259	.066532	.085476
10	-.016328	.0047153	.11430	.078400

From the table above, with respect to the response of industrial output to innovations in all the variables used in the estimation, it is clear that the innovations from industrial output has the strongest positive impact on itself with a value 7percent.

Table 4.4.3 Impulse Responses To One SE Shock In The Equation For LGOVEXP

Horizon	LRGDP	LQIND	LLOANSAD	LGOVEXP
0	.0080113	.0014000	-.14772	.20024
1	.0042309	.023947	.040374	.10556
2	-.011572	.024466	-.010269	.13222
3	-.010318	-.0011677	.072907	.13895
4	-.0079766	.0052422	.062516	.14009
5	.3735E-3	.014469	.10779	.095551
6	.0058654	.015044	.096592	.13518
7	.012978	.025323	.14889	.13032
8	.018470	.023256	.11258	.12273
9	.023376	.015898	.10178	.12453
10	.027184	.017561	.094427	.14176

From the table above, with respect to the response of government expenditures to innovations in all the variables used in the estimation, it is clear that the innovations from government has the strongest positive impact on itself with a value 20percent.

Table 4.4.4 Impulse Responses to one SE shock in the equation for LRGDP

Horizon	LRGDP	LQIND	LLOANSAD	LGOVEXP
0	.038356	.017839	.090148	.041823
1	.039869	.040932	-.097816	.079574
2	.030784	.036734	-.016220	.044206
3	.017939	.0092341	-.10243	.15021
4	.0097592	.0016507	-.050416	.10799
5	-.0021908	-.0061648	-.083817	.11232
6	-.010010	-.0068899	.0081791	.13336
7	-.015744	.0029247	.072056	.14157
8	-.016340	.0031153	.12569	.10570
9	-.011325	.4976E-3	.14912	.10119
10	.085250	.0094947	.18393	.089734

From the table above, with respect to the response of real gross domestic product to innovations in all the variables used in the estimation, government expenditure has a positive impact throughout the ten period horizons and also has the strongest impact of 15%. This suggests that the role of government expenditure in the economy cannot be overemphasized.

4.5 Forecast Error Variance Decomposition (FEVD)

Here we determine the percentage of variances in each endogenous variable that is determined by the other variables. This can help provide the amount of influence the endogenous factors exert on each other. The FEVD results are reported in table 2 below. The result clearly shows that the self perpetuating impact of each variables on itself is very high throughout the ten period horizon. This result is consistent with the analysis of the impulse response function discussed above.

Table 4.5.1 Forecast Error Variance Decomposition for variable LRGDP

Horizon	LRGDP	LQIND	LLOANSAD	LGOVEXP
0	1.00000	.063631	.061023	.043627
1	.92600	.20560	.17329	.024834
2	.77915	.23767	.36470	.041985
3	.65068	.29285	.49177	.048456
4	.53726	.30552	.57967	.046873
5	.49998	.29071	.58093	.043589
6	.49075	.28346	.55776	.045564
7	.47956	.29060	.53439	.059121
8	.45693	.30564	.52966	.084245
9	.42267	.31261	.54676	.12064
10	.38644	.30569	.56047	.16547

Table*4.5.2.*Forecast Error Variance Decomposition for variable LQIND

Horizon	LRGDP	LQIND	LLOANSAD	LGOVEXP
0	.063631	1.00000	.32325	.3919E-3
1	.26150	.75247	.29469	.075475
2	.35120	.60871	.24712	.12334
3	.34220	.61030	.23606	.11732
4	.33125	.60307	.24468	.11613

5	.31919	.58697	.23323	.12994
6	.31103	.56455	.24092	.14492
7	.28676	.52766	.27959	.18546
8	.26679	.49412	.31360	.21289
9	.25472	.47209	.33227	.22146
10	.25024	.45379	.33280	.23344

Table 4.5.3 Forecast Error Variance Decomposition for variable LGOVEXP

Horizon	LRGDP	LQIND	LLOANSAD	LGOVEXP
0	.043627	.3919E-3	.16385	1.0000
1	.14648	.026157	.12271	.92872
2	.12121	.017430	.25229	.82998
3	.27576	.024134	.18482	.74467
4	.29742	.058690	.15177	.72343
5	.33103	.095712	.13166	.67972
6	.35902	.12820	.10879	.64944
7	.38732	.15470	.093777	.62181
8	.38878	.16908	.084565	.61361
9	.38840	.17845	.077473	.61082
10	.37898	.18159	.072774	.61868

Tabl4.5.4 Forecast Error Variance Decomposition for variable LLOANSAD

Horizon	LRGDP	LQIND	LLOANSAD	LGOVEXP
0	.061023	.32325	1.00000	.16385
1	.10733	.26342	.81878	.14225
2	.10299	.26914	.77711	.13510
3	.14382	.27566	.73131	.14595
4	.13808	.32036	.66365	.14605
5	.14825	.32389	.66911	.17314
6	.14021	.32501	.66316	.19781
7	.14392	.30008	.63465	.25241
8	.18143	.27792	.59098	.27202
9	.22935	.26774	.54287	.27905
10	.28973	.27173	.49711	.27138

5. Policy Implication and Conclusion

The findings from the study validate to a large degree of interrelationship among government expenditure, industrial output, Loans and advances from the banking sector and real gross domestic

product. The empirical results shows an overwhelming impact of each of the innovations of all the variables on themselves. Remarkably the industrial sector benefits from the loans and advances from the monetary sector and also from the externalities or spillover resulting from government expenditures on infrastructures. Consequently, it is recommended that government should increase expenditure in key infrastructure, as well as ease access to bank credit for the industrial sector with a view to spurring economic growth in Nigeria.

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