

Private Sector Financing and Economic Growth in an Emerging Market Economy: Evidence from Nigeria

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Abstract

This study investigated the impact of private sector financing by the banking sector on economic growth in Nigeria using the augmented growth model which was estimated via the Ordinary Least Square (OLS) techniques. The annual time series data employed in the estimations covered the period from 1980 to 2013. The study employed unit root tests, co-integration analysis and Error Correction Mechanism to ascertain the short run dynamics of the explained variable vis-a-vis the explanatory variables. The results revealed that there exists a positive linear relationship between private sector financing by the banking sector and economic growth in both the long run and in short run. However, only the long run relationship was significant. The results further revealed that interest rates and inflation rates in Nigeria during the study period under investigation were consistently high. The study recommends the provision of long-term investment loans through the banking sector to the productive private sector. The study further recommends financial system development to ensure it plays its intermediary role effectively. Policies that will reduce the interest rate in Nigeria should be promoted to ensure that micro, small and medium scale enterprises that constitute a greater percentage of the private sector have access to bank credit.

Keywords: Private sector financing, Banking sector, Capital Formation, Economic Growth, Emerging market economy

1.0 Introduction

The conceptual and theoretical framework of the early studies on the relationship between finance and economic growth may be traceable to Schumpeter (1934), Mckinnon (1937) and Shaw (1973). They strongly believed that finance play critical role in economic growth. Their argument is centered on the role of banks in facilitating capital accumulation and technological innovation through its intermediary role. This role according to them is performed through the process of channeling funds from the surplus units to the deficit units in the form of credit or loan for investment in productive activities. Thus, banking sector in this context is seen as the link through which resources are transferred for capital formation, to facilitate investment which enhances economic growth.

The general theme of capital formation lies at the very centre of the problem of development in developing countries. The so-called developing countries, as compares with developed countries, are less equipped with capital in relation to their population and natural resources (Odili and Ede, 2015). Gross fixed capital formation is essentially net investment. It is a component of the Expenditure method of calculating gross domestic product. To be more precise Gross fixed capital formation measures the net increase in fixed capital. Gross fixed capital formation includes spending on land improvements (Fences, ditches, drains, and so on); plant, machinery, and equipment purchases; the construction of roads, railways, private residential dwellings, and commercial and industrial buildings. Disposal of fixed assets is taken away from the total (Odili and Ede, 2015). Economic theory as well as empirical evidence confirm that the significant differences in the level of economic development and rates of economic growth among countries or in the same country over time are, to a great extent, interrelated with the differences that exist in the level and composition of the capital stock, Bakare (2011).

The preponderance of theoretical reasoning and empirical evidence suggests a positive, first-order relationship between financial development and economic growth. There is even evidence that the level of financial development can be used as a barometer for measuring future rates of economic growth, capital accumulation and technological change. Moreover, cross country, case study, industry- and firm-level analyses document extensive periods when financial development, or the lack thereof, crucially affects the speed and direction of economic growth and development (Levine, 1997).

The structure of financial systems all over the world, have undergone tremendous changes over time. In the early days the banking sector represented the only players in most financial systems and their activities particularly with respect to fund mobilization were thought to have significant impact on economic growth. However, today the financial systems in both developed and developing countries have become more complex with the development of various financial institutions, products and services. The complexity of the financial system

creates a gap between the lender and the borrower making it difficult and sometimes impossible for enterprises to have access to external funding and if the private sector does not have access to external funds for investment, the capacity to raise investment per worker, and thereby improve productivity and wages and hence economic growth is seriously impaired. This financial gap could result from inappropriate financing mechanisms such as regulatory rigidities or gaps in the legal framework. Moreover, development economists increasingly accept the proposition that, due to monitoring difficulties such as principal/agent problems (related to the shareholder-manager relationship) and asymmetric information, suppliers of finance may rationally choose to offer an array of financial services that leaves significant numbers of potential borrowers without access to credit. The complexity of the changing financial environment and the inability of the private sector to assess funds from financial institutions raises questions with regards to the impact of banking sector loans and advances to the private sector on economic growth in Nigeria.

This study therefore examined the impact of banking sector credit to the private sector on the growth of the Nigerian economy. The specific objectives of this study are therefore to: 1) Investigate the effect of banking sector credit to the private sector on the growth of Nigerian economy. 2) Examine the impact of gross fixed capital formation on economic growth in Nigeria. In line with the specific objectives, this study tested the following hypothesis: 1) Banking sector credit to the private sector has no significant effect on economic growth in Nigeria. 2) Gross fixed capital formation does not have significant impact on the level of gross domestic product (GDP) in Nigeria. The study is structured for the purposes of clarity into five sections. Section one presents introductory analysis of the paper. Section two is literature review. Section three is model specification. Section four is results and discussions while Section five is conclusion and recommendations.

2.0 LITERATURE REVIEW

General Conceptual Issues on Private Sector Financing and growth

The conceptual ideology in this study is that economic growth depends on the accumulation of input factors in the production process and technological advancement. Generally, finance has been linked primarily with the first of these sources of growth, in which capital is seen as an important input factor in production process and its accumulation is a condition for sustainable economic growth. Furthermore, finance contributes to the realisation of technical advancement to the extent that technological progress needs to be embedded in the capital stock to influence output. In periods of rapid improvement in technology, an efficient and well structured financial sector appears to be imperative in order to facilitate the embedded technical advances in capital formation and allow countries to benefit from this development in terms of increase in economic growth rate.

Growth theories assume that the interest rate plays critical role in equilibrating an economy's savings and investment. According to the neo-classical Golden Rule, the optimal growth path is equal to the real interest rate. In the presence of imperfect market conditions especially in developing and emerging market economies, the investors/borrowers and savers/lenders relationship is characterised by agency problems caused by conflicting interests. Agency problems relates to hidden action and hidden information of the borrower, who is perceived to be better informed than the lender and to be able to influence the return on investment. Coping with these agency problems would need a comprehensive agreement between lender and borrower covering all eventualities and ensuring the compatibility of individual incentives.

The role of the financial sector in private sector financing consists in reducing the transaction costs that arises from the asymmetric information in the relationship between investor/borrower and saver/lender. Financial contracts are often designed to ensure incentive compatibility between both, for instance in the choice of equity versus debt agreement, by allowing rights to monitor, or by differentiating the investment projects in stages which can be easily monitored. Furthermore, corporate statutes and public law express rules to ensure investor protection and thereby reducing the informational imbalance between borrower and lender. In principle, it is the role of the financial system to provide optimally designed agreement with comparative advantage of financial intermediaries consisting in the implementation and enforcement of these agreements.

The financial intermediaries therefore act as bridge between the different interest groups (borrowers and lenders) concerning the size of financial investment, its maturity and risk. While households usually have a preference for short-term investment at low risk and require small amounts, enterprises have divergent preferences and need large sums to finance capital investment projects.

Financial institutions, especially banks use economies of scale to transform households' savings into corporate debts. The approach linking financial institutions with asymmetric information and agency costs gives the financial system a more prominent role in accomplishing an efficient allocation of capital. Financial institutions have special knowledge in evaluating and monitoring investment projects, they have comparative advantage in evaluating risks and designing financial contracts because of consistent training and experience. In particular banks may gain information advantages from lasting relations with customers by learning from past experience, and realise economies of scale from offering payment services. Thereby, an upgrading in the efficiency of the

financial system may lead to a better understanding of the financial needs and circumstances of the customer and the business environment which will engender higher rates of economic growth.

Theoretical Underpinning

There are numerous growth models in literature. However, there is no consensus as to which strategy will achieve the best success. The achievement of sustained growth requires minimum levels of skills and literacy on the part of the population, a shift from personal or family organization to large scale unit (Nnanna, 2004). Some of these existing growth models are Two-Gap Model, Marxian Theory, Shumpeterian Theory, Harrod-Domar Theory of Growth, Neo- Classical Model of Growth and Endogenous Growth Theory. The endogenous growth theory holds that policy measures can have an impact on the long-run growth rate of an economy (Wikipedia, 2013). The growth model is one in which the long-run growth rate is determined by variables within the model, not an exogenous rate of technological advancement as in a neo-classical growth model. Jhingan (2006) explained that the endogenous growth model emphasizes technical progress resulting from the rate of investment, the size of the capital stock of human capital. In an endogenous growth model, Nnanna et al. (2004) observed that financial development can affect growth in three ways, raising the efficiency of financial intermediation, increasing the social marginal productivity of capital and influencing the private sector savings rate. This means that a financial institution can effect economic growth by efficiently carrying out its functions, among which is the provision financial resources for private sector investment.

The link between finance and economic growth may run through various transmission channels. Already a very simple growth model illustrates that there are three important connections between financial variables and economic activity. Financial development might (1) reduce the loss of resources required to allocate capital; (2) increase the savings ratio; and (3) raise capital productivity or output. The AK model is a good example of a simple growth model. It assumes only one type of goods, which is produced with capital as the only input factor. Following Pagano (1993) illustration,

$$Y_t = AK_t \text{----- Eqn. (1)}$$

With Y_t being output in period t produced by capital K_t and with A symbolising capital productivity. The capital stock in the period $t+1$ is

$$K_t = I_t + (1-d) K_{t-1} \text{----- Eqn. (2)}$$

With the saving ratio s and assuming, furthermore that the channelling of savings to investment implies the loss of a share of savings $(1-\delta)$ with $1 > \delta > 0$, the funds available for investment are $\delta * s * Y_t = I_t$ --Eqn. (3)

The growth rate g is $(Y_t/Y_{t-1}) - 1 = (K_t/K_{t-1}) - 1$ which implies a steady state of growth $g = [(A * \delta * s) - d] / (1 - A * \delta * s) [(A * \delta * s) - d]$ for realistically small values of $(A * \delta * s)$ (see Thiel, 2001). In this simple model, there are three possible transmission channels from finance to growth. An efficient financial system reduces the loss of resources $(1-\delta)$ required to allocate capital. In practice, δ reflects the transaction costs including fees to market organisations or financial intermediaries, the interest rate spread between banks' borrowing and lending rates. In a competitive environment, the amount of δ is determined by the real costs of financial intermediation. Inefficiency in the provision of financial services, the redistribution of the financial intermediaries' profits to the state by taxes, and a compensation for the risk undertaken by the intermediary furthermore influence δ .

The more efficient the transformation of savings into investment, the lower the loss of resources δ and the more savings can be used for productive investments. This does not need to be a one-time effect. Pagano (1993) and Thiel, (2001), assumed the transaction costs $(1-\delta)$ to be determined by the geographic distance between the bank and the entrepreneur. Higher economic growth raises the profit margin of financial intermediation, thereby attracting the entry of more banks and raising their specialisation. The entry reduces the average distance between bank and investment projects, thus reducing the costs of intermediation and increasing economic growth. In their model this process comes to an end, once higher wages in the banking system discourage the entrance of new banks.

According to Harrod (1960) and Domar (1946) investment creates income (demand effect) and increases the capital stock for expansion of productive activities. The model explains a long-run steady state of capital – output and savings – investment equilibrium relationship for increased output in an economy. The model holds that saving(s) mobilization and capital formation in one period (t) is the source of output (y) in the next period ($t+1$). That is, capacity of the economy for increased productivity in future (Odili and Ede, 2015).

$$I_t - Y_{t+1} > 0 \text{----- Eqn. (4)}$$

$$Y/I > 0 = \text{growth} \text{----- Eqn. (5)}$$

hange in savings – output ratio

$\Delta S / \Delta Y$ divided by a lower capital - output Ratio K or $\Delta I / \Delta Y$, increases economic growth.

In a two sector model $Y = C + I$

$$\therefore Y - C = I$$

$$\text{Also } Y = C + S$$

$$Y - C = S$$

That is, $S = I$, savings – investment identity ----- Eqn. (6)

$S/Y = I/Y$, savings – output ratio ----- Eqn. (7)

Investment (I) is defined as the change in capital stock K

$I = \Delta K$ ----- Eqn. (8)

Therefore $K/Y = I/Y = \text{capital – output Ratio } K$ ----- Eqn. (9)

But since the total stock, K, bears a direct relationship to total national income, or output Y, as expressed by the capital – output ratio K, then it follows that:

$K = K$ ----- Eqn. (10)

Dividing equation (4) by equation (6) gives the growth rate (g) of the economy

$G = s/y / k/y = s/y \times y/k = s/k$ ----- Eqn.(11)

The demand for invisible financial resources from the financial institutions is a derived demand for the production of goods and services in the economy. Savings and hence Net Investment is supposed to be proportional to changes in output of the economy.

REVIEW OF RELATED EMPIRICAL LITERATURE

Literature on the impact of private sector financing on economic growth is scanty. Overall available literature provides broad empirical evidence of a positive relationship between finance and economic growth, with the studies mainly differing in the data coverage as regards countries, time periods, the estimation methods and the variables selected.

Santha, et. al. (2005) investigated the impact of private sector financing by commercial banks on economic growth in Malaysia over the period from 1976 to 1999. The short-run and long-run relationship between commercial banks private sector financing and other conditioning variables on economic growth were estimated by using the autoregressive distributed lag (ARDL) model. The results showed that economic growth co-integrated with the regressors and that there is a significant positive relationship between commercial banks private sector financing and economic growth.

In a study carried out by Muhsin and Eric (2000) on Turkish economy, it was found that when bank deposit, private sector credit or domestic credit ratios are alternatively used as proxies for financial development; causality runs from economic growth to financial development. Their conclusion was that growth seems to lead financial sector development.

Vazakidis & Adamopoulos (2009) employed a Vector Error Correction Model (VECM) to investigate the relationship between credit market development and economic growth for Italy for the period 1965-2007 taking into account the impact of inflation rate on credit market development. The empirical results indicated that economic growth had a positive effect on credit market development, while inflation rate had a negative impact.

Mishra et al (2009) examined the direction of causality that runs between credit market development and the economic growth in India for the period 1980 to 2008. In the VAR framework the application of Granger Causality Test provided the evidence in support of the fact that credit market development increases economic growth. The empirical investigation indicated a positive effect of economic growth on credit market development of the country.

Mukhopadhyay and Pradhan (2010) examined the causal relationship between financial development and economic growth of 7 Asian developing countries (Thailand, Indonesia, Malaysia, the Philippines, China, India and Singapore) during the last 30 years, using multivariate VAR model. The study concluded that no general consensus can be made about the finance-growth relationship in the context of developing countries.

Alternative views on the private sector credit and economic growth nexus focus on the key function of financial sector in saving-investment-growth relationship. These according to Azigkpono (2003) includes acting as an effective conduit, first, for channeling funds from surplus to deficit unit by mobilizing resources and ensuring an efficient transformation of funds into real productive capital and second, financial intermediation transform maturity of the portfolio savers and investors, while producing sufficient liquidity to the system as the need arises.

The specific role of bank credit to private sector in stimulating economic growth is opined by Ngai (2005), who reported that bank credit to private sector is the most important source of financing for firms, especially in countries where capital markets are not fully developed. Bank credit according to Josephine (2009) is one of the important aspects of financial intermediation that provide funds to economic entities that can put them to the most productive investment.

Emphasizing on the relevance of bank credit to business firms, Plamen and Khamis (2009) opined that credit availability enables firms to undertake investments that they could not have otherwise made out of their own funds. They further demonstrated the macroeconomic impact of higher credit availability; as credit availability increases, consumption and investment demand also increases, and this will raise the level of output and employment.

Generally, the above review of related studies provides evidence that the effect of banking sector credit to the private sector on economic growth is still debatable in the literature. Apart from being scanty, the empirical literature is weakened by not covering the period of recent global financial crisis in the Nigerian economy. This study is an attempt to fill such gaps in the finance-growth nexus literature.

3.0 Model Specification

Bank credit is usually allocated to both the public sector and private sector of the economy. But studies (e.g. Beck et al., 2009; Boyereau-Debray, 2003; Crowley, 2008; Levine, 2002; 2003; Liang, 2007) have shown that credit to the private sector has more significant effect on economic activities than credit to public sector. In this study, therefore, the total bank credit to the private sector is taken as an appropriate means of credit to the private sector.

Similar to Khan (2000); Bolbol, Fatheldin and Mohammed (2005) and Caporale et al. (2004), this study assumed that capital stock is provided by the banking sector. This can be written as:

$$K_t = K_{bt} \text{-----Eqn. (12)}$$

K_t and K_{bt} are total capital stock and banking sector indicator, respectively. We adopted an augmented Solow production function (Solow, 1956) that makes output a function of stocks of capital, labour, and technology (see Mankiw, Romer and Weil, 1992). In a Cobb–Douglas production function framework, this is specified as:

$$Y_t = \alpha A_t, \lambda K_{bt}, \beta L_t, \gamma C_t \text{-----Eqn. (13)}$$

Y is the flow of output, L is labour, C is capital stock, and A is technology. According to Mankiw, et. al.,(1992), $A = a + \varepsilon$ in which technology is broken into constant a and country specific deviation ε . Mankiw et al. (1992) successfully dump the effect of technology into the regression error term. Taking logarithm and differentiating (Eqn. 13) results into:

$$Y_t = \alpha_t + \lambda K_{bt} + \beta l_t + \gamma c_t + u_t \text{-----Eqn. (14)}$$

Where, the lower case letters represent the growth rates of output, banking sector, labour and capital stock, and λ , β and γ are coefficients of banking sector, labour and capital stock, respectively. We are concentrating on the impact of capital on income. Therefore an adaptation is necessary. Adapting this model to focus on the relationship between bank credit to the private sector and economic growth, it has to be augmented in consonance with Beck and Levine (2004) and Levine and Zervos (1998). Hence we are left with the following equation:

$$Y_t = \alpha_t + \lambda K_{bt} + \gamma c_t + u_t \text{-----Eqn.(15)}$$

This is the simple conditioning information set as described by Beck and Levine (2004). It represents the basic elements that affect the income growth.

They are initial income (as this is not a cross sectional study, we ignore the possible effect of initial income in this study), that may increase the effect of bank credit to the private sector on the economy. Inclusion of additional variables into the policy conditioning information set should be based on how effective they can proxy technology'. In other words, instead of dumping technology entirely into the error term altogether it should be proxy by an appropriate combination of variables. With assumption that $\varepsilon = z + \mu$

$$Y_t = \alpha_t + \lambda K_{bt} + \gamma c_t + \delta z_t + U_t \text{-----Eqn.(16)}$$

Where, Z_t is vector of other important variables that include macroeconomic stability indicators such as interest rate, inflation rate, gross national savings which are employed as control variables. Since this study aimed to examine the impact of bank credit to the private sector on the growth of the Nigerian economy the functional representation for the model for this study is therefore re-specified below with modifications:

$$RGDP = f(BSP, GFCF, INT, INF, M2, GNS) \text{-----Eqn. (17)}$$

RGDP is the proxy for economic growth, BSP is banking sector credit to the private sector, GFCF is gross fixed capital formation, INT is interest rate, INF domestic inflation, M2 is broad money supply and GNS is the gross national savings. Hence the model is specified as follows;

$$\ln RGDP_t = \alpha_t + b_1 \ln BSP_t + b_2 \ln GFCF_t + b_3 \ln INT_t + b_4 \ln INF_t + b_5 \ln M2_t + b_6 \ln GNS_t + U_t \text{---}$$

$$\text{Eqn. (18)}$$

The a priori expectation:

$$b_1 > 0; b_2 > 0; b_3 < 0; b_4 < 0; b_5 > 0; b_6 > 0$$

This implies that BSP, GFCF, M2 and GNS are expected to have positive impact on RGDP. While INT and INF, are expected to have negative impact on RGDP respectively. This study made use of annual time series data from 1980 to 2013. The data are sourced from Central Bank of Nigeria (CBN) Statistical Bulletin 2005 and 2013 editions and National Bureau of Statistics Publications various issues.

4.0 Results and Discussion

Unit Root Test

In order to estimate the regression equation, a test for stationarity was carried out using Augmented Dickey-Fuller (ADF) test. The results of the unit root test using ADF test with constant and trend are reported in Table 1 for both the level data and the data at first difference. The ADF tests involve the testing of the null hypothesis that the series is non-stationary against the alternative that the series is stationary, that is no unit root exist. All the variables were stationary at first difference. Based on the findings of the unit root test, the null hypothesis of non-stationarity for all of the variables could be rejected at levels. With regards to the order of integration, it can be noted that all the variables exhibited an order of one.

Table 1: Unit Root Test Results

Variable	At level	first Difference	Order of Integration
RGDP	0.0875	0.0000*	1 (1)
BSP	0.0946	0.0123**	1 (1)
GFCF	0.3861	0.0000*	1 (1)
INT	0.0753	0.0000*	1 (1)
INF	0.5483	0.0002*	1 (1)
M2	0.1318	0.0004*	1(1)
GNS	0.2658	0.0252**	1 (1)

Source: Researchers Computation, 2015

* and ** denote significant at 1% and 5% levels respectively.

Co-integration Analysis

The Johansen co-integration test was used to test the existence or otherwise of a long run equilibrium relationship among the variables used in the study. Both the maximum eigen values and the trace statistics are reported in Tables 2 and 3 blow.

Table 2: Co-integration test (Trace)

Hypothesized No. of CE (s)	Eigen value	Trace statistic	0.05 critical value	Prob.**
None *	0.979854	164.346	126.560	0.0000
At most 1 *	0.970118	140.414	104.941	0.0000
At most 2*	0.811679	91.183	77.740	0.0000
At most 3*	0.615575	56.981	54.643	0.0000
At most 4	0.520849	30.440	34.556	0.0513
At most 5	0.508282	16.355	18.170	0.0892
At most 6	0.048681	0.442	3.760	0.6021

Source: Researchers Computation, 2015

* Denotes rejection of the hypothesis at the 0.05 level.

Table 3: Co-integration test (maximum eigen value)

Hypothesized No. of CE (s)	Eigen value	Max-eigen statistic	0.05 critical value	Prob.**
None *	0.979854	144.375	124.24	0.0000
At most 1 *	0.970118	119.747	94.150	0.0000
At most 2*	0.811679	74.354	68.520	0.0002
At most 3*	0.615575	48.670	47.210	0.0010
At most 4	0.520849	25.553	29.680	0.0542
At most 5	0.508282	14.059	15.410	0.0704
At most 6	0.048681	0.441	3.760	0.6020

Source: Researchers Computation, 2015

* Denotes rejection of the hypothesis at the 0.05 level.

Tables 2 and 3 present co-integrating results of trace test and the maximum eigenvalue revealing 4 co-integrating equations at the 5 percent level of significance respectively. This shows that economic growth is co-integrated with the explanatory variables namely BSP, GFCF, INT, INF, M2 and GNS. This implies that there exist a long-run relationship between economic growth and these variables (see, Gujarati, 2003). The model was normalized

on gross domestic product variable (GDP) in order to obtain the long run parameter estimates, all data are expressed in their natural log forms. The result of the long run estimates is presented in Table 4 below.

Table 4: Long run estimated regression results

Variable	Coefficient	Std. Error	t-statistic	Prob.
LNRGDP (-1)	-0.65742	0.1852	-3.5504	0.0024*
LNBS (-1)	2.75380	0.5848	4.7087	0.0016*
LNGFCF (-1)	1.17843	0.3745	3.1466	0.0025*
LNINT (-1)	-1.07634	0.3893	-2.7649	0.0046*
LNINF (-1)	-1.15174	0.4491	-2.5647	0.0404**
LNLM2 (-1)	1.03140	1.2757	0.8085	0.5257
GNS (-1)	0.19253	0.4917	0.3916	0.3062

Source: Researchers Computation, 2015

* indicates significant at 5% level.

Table 4, presents the long-run estimation results. The coefficient of banking sector credit was found to be positive and statistically significant at 5% with t-statistic of 4.7087 and its probability of 0.0216. This implies that 10% increase in banking sector credit to the private sector will increase real gross domestic product by 27.54%. This is in line with the findings of Santha, et.al. (2005). The elasticities of gross fixed capital formation, broad money supply and gross national savings, 1.17843, 1.03140 and 0.19253 respectively were positive as expected but only GFCF was statistically significant at 5% level. This implies that only GFCF was able to influence RGDP with a 10% increase in GFCF leading to 11.78% increase in RGDP in Nigeria. Interest rate and inflation rate expectedly presented negative and also statistically significant impact on RGDP at 5% significant level over the sample period with their coefficients of -1.07634 and -1.15174 and t-statistic of -2.7649 and -2.5647 respectively. By this, 10% increase in interest rate and inflation rate will lead to 10.76% and 11.52% reduction in real gross domestic product in Nigeria. This is an indication that interest rate and inflation rate have severe implications on real gross domestic product in Nigeria.

Short-run Dynamics Error Correction Model

The long-run model was specified with the residuals from the co- integration regression as parsimonious error correction mechanism (ECM) to capture the short-run impact of the explanatory variables BSP, GFCF, INT, INF, M2 and GNS on the behaviour of real gross domestic product within the sample period under investigation. The results are presented in Table 5 below:

Table 5: Parsimonious Short-run Error Correction Estimation Results

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	0.08154	0.02244	3.6342	0.0021*
D (LNRGDP (-1))	-0.45453	0.16467	-2.7604	0.0084*
D (LNBS (-1))	0.59100	0.93164	0.6344	0.7210
D (LNGFCF (-1))	2.18940	0.77279	2.8331	0.0032*
D (LNINT (-1))	-0.44607	0.16641	-2.6805	0.0421**
D (LNINF (-1))	-0.88965	0.32365	-2.7488	0.0305**
D (LNLM2 (-1))	0.15765	0.14765	1.0677	0.0584
D (LNGNS (-1))	0.08908	0.39910	0.2232	0.6071
ECM (-1)	-0.30934	0.06934	-4.4611	0.0004*

$R^2 = 0.924206$, Adj. $R^2 = 0.911305$

F-Statistic= 193.0125

Prob. (F-Statistic) = 0.0000

Durbin – Watson Statistic = 2.01261

Source: Researchers Computation, 2015

* and ** indicate significant at 1%, and 5% levels respectively.

Table 5 reports the short-run dynamics of the error correction mechanism. The elasticity of the banking sector credit to the private sector 0.59100 revealed a direct positive relationship with the real gross domestic product. But the t-statistic of 0.6344 is less than the critical value of 1.69 at 5%. This implies that BSP has no significant effect on RGDP in the short run in Nigeria. This is inconsistent with the findings of Santha, et. al. (2005) who

reported negative impact in the short run in the case of Malaysia. The private sector financing by banking sector (BSP) has a direct positive impact on real gross domestic product (RGDP) in the long-run. However, in the short-run, a direct positive but insignificant impact on real gross domestic product (RGDP) was observed. This indicates that, the empirical results do reveal that there is an important distinction between the short-run and long-run effect of private sector financing by the banking sector on economic growth. The reason for this could be anchored on the fact that in the short run, the capital employed in the production process has not been able to stir up economic activities needed to generate adequate output level that will drive economic growth. This is logical because private sector financing alone cannot augment economic growth as it has to be combined effectively with the other factors in the economy. In the short run if the mix of factors is such that there is too much private sector financing relative to the other economic factors, it may yield marginal returns and hence seem to have no impact on RGDP. However, in the long run, all other factors are able to vary in tandem with the increased private sector financing by commercial banks and this is reflected in the observed positive impact on RGDP. The increase in RGDP in turn may augment investors' confidence resulting in an increase in investments and hence the demand for more bank credit. This would culminate in higher interest rates. However, given the positive economic and business environment and the investors' confidence, the higher interest rates would only induce banks to offer more credit to the private sector to meet the demand, resulting in the positive relationship between private sector financing and economic growth in the long-run.

The coefficients of gross fixed capital formation, broad money supply and gross national savings, 2.18940, 0.15765 and 0.08908 respectively were positive as expected but only GFCF was statistically significant at 1% and 5% level. This implies that only GFCF was able to influence RGDP in the short run, with a 10% increase in GFCF leading to 21.78% increase in RGDP in Nigeria in the short run. This is evidence from their t-statistic values of 2.8331, 1.0677 and 0.2232 respectively compared to the critical t-value of 1.69 and 2.75 at 5% and 1% respectively.

Interest rate and inflation rate expectedly presented negative and also statistically significant impact on RGDP at 5% significant level over the sample period with their coefficients of -0.44607 and -0.88965 and t-statistic of -2.6805 and -2.7488 respectively. By this, 10% increase in interest rate and inflation rate will lead to 4.45% and 8.90% reduction in real gross domestic product in Nigeria. A significant negative short run and long run effect was observed between lending interest rate, domestic inflation rate and economic growth. When inflation rates are low, marginal increases in the price level can have a positive impact on the supply side of the economy. To this extent, Nigeria's interest rates and inflation rates during the study period have been consistently high. The empirical results in this study provide strong support that when interest rate and inflation are high investors who consider the cost of capital and the expected returns from the investment will naturally shy away from the credit market and hence low contribution to RGDP. This is the case with Nigeria and other developing and emerging markets whose interest rates and inflation rates are high. However if inflation is kept at low levels, moderate increases in the rate of inflation can have a positive effect on economic growth. This is in line with the structuralist view that inflation is essential for economic growth. More recent work on this issue by Khan and Senhadji (2001) and Malik and Chowdhury(2001), found that there is a threshold rate of inflation, that is, when inflation is fairly low, say around 5-8 percent (Khan and Senhadji, 2002) for developing countries, then moderate increases in inflation do have a positive impact on the growth of the economy. When prices increase, producers are encouraged to produce more, thus resulting in increasing the supply of goods and services thus contributing positively towards economic growth.

The error correction term (ECM) coefficient of -0.30934 which is otherwise referred to as the speed of adjustment was correctly signed and statistically significant at 1%, considering its t-statistic of -4.4611 and probability value of 0.0004. The value indicates that about 30.93% of the short run disequilibrium and inconsistencies are being corrected and adjusted into the long-run equilibrium path. This shows that any short run deviation of RGDP from equilibrium in the previous period can be restored back into the long run path. The equation of the ECM is therefore specified in line with the parsimonious error correction model as follows:

$$\begin{aligned}
 \text{RGDP}_t = & 0.08154 - 0.45453\text{RGDP}_{t-1} + 0.59100\text{BSP}_t - 1 + 2.18940\text{GFCF}_{t-1} - 0.44607\text{INT}_{t-1} - \\
 & 0.88965\text{INF}_{t-1} + 0.15765\text{M2}_{t-1} + 0.08908\text{GNS}_{t-1} - 0.30934\text{ECM}_{t-1} - \text{-----} \\
 & \text{-----Eqn. (19)}
 \end{aligned}$$

The R² of 0.924206 indicates that about 92% of total variation in the dependent variable (RGDP) is accounted for by the explanatory variables (BSP, GFCF, INT, INF, M2 and GNS). This result remains robust even after adjusting for the degrees of freedom (d.f.) as indicated by the value of the adjusted R², which is

0.911305 (91%). The regression therefore has a good fit. The F-statistic, which is a measure of the overall significance of the model, is 193.0125 with the corresponding probability value of 0.0000, is therefore statistically significant at 1%. The implication of this is that the explanatory variables have joint significant effect on the real gross domestic product to Nigeria. The Durbin-Watson statistic of 2.01261 indicates no evidence of serial autocorrelation in the residuals of the estimates.

5.0 Conclusion and recommendations

This study investigated the impact of private sector financing by the banking sector on economic growth in Nigeria using the augmented growth model which was estimated via the Ordinary Least Square (OLS) techniques. The annual time series data employed in the estimations covered the period from 1980 to 2013. The variables of interest were tested for stationarity and co-integration analysis was also carried out using the Augmented Dickey-Fuller technique. Error Correction Mechanism was used to ascertain the short run dynamics of the explained variable vis-a-vis the explanatory variables. The major findings of this study are presented below;

- The empirical results strongly suggest that there exists a positive linear relationship between private sector financing by the banking sector and the real sector in both the long run and in short run. However, only the long run relationship was significant. This implies that any shocks to the determinants will have a long-run impact on real GDP. The empirical results revealed that the level of responsiveness of the RGDP to the determinant (BSP) differ in the short-run and long-run. The RGDP is inelastic to changes in the private sector financing in the short run and elastic in the long run. A possible explanation for this is that in the long-run, banks can facilitate the reallocation of resources to entrepreneurs with high growth potential.
 - Gross fixed capital formation has positive and significant impact on the economy of Nigeria both in the long run and in the short run. This suggests that investment in real asset in the economy will provide the necessary infrastructure for the private sector and the business community in general to expand and drive the economy towards sustainable economic growth.
 - Broad money supply and gross national savings have positive relationship with RGDP both in the long run and in the short run. This relationship showed no evidence of influencing RGDP significantly. The implication of this is that national savings in Nigeria are employed into productive investments that can stir up economic activities and enhance economic growth.
 - Interest rate and inflation rate showed negative and also had statistically significant impact on RGDP in Nigeria. Interest rates and inflation rates in Nigeria during the study period were consistently high. The empirical results provided strong support that when interest rate and domestic inflation are high investors who consider the cost of capital and the expected returns from the investment in taking investment decisions', will naturally shy away from the credit market and hence low contribution to RGDP.
 - The error correction mechanism was correctly signed with negative sign. The result indicates that real gross domestic product will adjust quickly to changes in the independent variables to attain equilibrium position.
- This study in line with the findings of the research recommends the provision of long-term investment loans through the banking sector to the productive private sector. This is because private sector has been identified as one of the major sectors that have the potentials of driving the economy towards achieving sustainable economic growth in the long run. The study further recommends financial system development to ensure it plays its intermediary role effectively. This will enhance capital accumulation and ensure that the deficit unit will receive the needed funds for investment from the surplus unit. Policies that will reduce the interest rate in Nigeria should be promoted to ensure that micro, small and medium scale enterprises that constitute a greater percentage of the private sector have access to bank credit.

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