

# THE IMPACT OF FINANCIAL SECTOR REFORMS ON AGRICULTURAL AND MANUFACTURING SECTORS IN NIGERIA: AN EMPIRICAL INVESTIGATION

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## Abstract

The growth finance nexus has elicited considerable debate in the academia and among policy makers. This is because, among others, the current reforms in the financial sector are based on the premise that relaxing financial constraints and deepening the financial sector is essential to promote economic growth and development. To contribute to this debate, this paper uses the variance decomposition and impulse response paradigms to test whether or not financial sector variables stimulate the growth of output in agricultural and manufacturing sectors of the Nigeria economy. The results suggest that relaxing the financial development constraints and deepening the financial sector is crucial to boost economic growth in the identified two sectors.

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**Keywords:** Reforms, Agricultural and Manufacturing Sectors, Economic growth, impulse response and variance decomposition

## 1. Introduction

Reforms, which are generally perceived as movement towards a more friendly market oriented economy has attracted considerable debate in development economics. This is because of the perception of policy-makers that the adoption of the neoclassical economic dogma is capable of propelling the economy to the path of sustained economic growth and development. In line with this conceptualization of reforms, Nigeria like most developing economies, has adopted various forms of policy and institutional reforms since independence. These range from protectionism and excessive government control of economic activity to the movement towards free market economy.

The era of free market economy started in 1986 when there was a major policy shift. Prior to the adoption of market economy, which resulted in the introduction of Structural Adjustment Programme (SAP) in early 1986, the Nigerian economy was characterized by excessive government control of production, financial intermediation processes and foreign trade variables via the administrative determination of interest rates, prices and exchange rates. The adoption of Keynesian economic doctrine was premised on the need to sustain the pace of economic growth and development within the environment of a shallow and weak entrepreneurial class. However, the country's enthusiasm with this strategy progressively lost momentum, principally because it failed to deliver its most important promise of sustained economic growth and development. This resulted to an adverse economic performance (Udah, 2011; Ndebbio and Ekpo, 1991).

SAP was introduced to reduce the adverse effects, which the interventionist policies had on economic performance. In the new paradigm, faith in government was replaced with confidence in the free market system and the creativity of the private sector. This positive direction of the new thinking was crystallized in SAP. SAP set out to reduce government intervention in setting interest rates, controlling the allocation of credits and capital market activities.

In conformity with the objectives of SAP, financial sector reforms were aimed at enhancing the efficiency of the intermediary process through greater reliance on the market forces to clear the markets. The main component of this included liberalizing the interest rates, promoting competition in market for financial services, reducing control on credits, strengthening the regulatory institutions as well as promoting the growth and deepening of the financial sector.

To further boost the domestic economy, various economic and structural reforms were introduced in 2003 under a comprehensive economic blue print (the National Economic Empowerment and Development Strategy, NEEDS). One of the objectives of NEEDS is to build and promote comprehensive and healthy financial system to support economic development. As entrenched in NEEDS, the main reforms include the adoption of universal banking from 2001; recapitalization of banks to a minimum paid up capital of 25 billion naira; issuance of new code of corporate governance for the financial sector to guide the management and staff of banks to ensure transparency and accountability in that sector among others.

During the first few years of the reform, available statistics indicate that the share of the banking system's credit to the private sector improved significantly from 34 per cent in

the 1980s on the average before the reform to about 49 per cent in the 1990s and early part of 2000. The bulk of the credit to the private sector was mainly on short term investment. The depth of the financial sector measured by M2/GDP ratio, contrary to expectation, did not improved in the initial years of the reform (1990s). It declined from 32.6 per cent on the average in the 1980s to 26 per cent in the 1990s. This seems to suggest that the growth of the financial sector lagged behind the tempo of economic activity and that the financial sector may not have been the source of growth in economic activity at the time.

Interestingly, in 2006 the financial sector deepened with an increase in M2/GDP ratio from 16.4 per cent at the end of 2005 to 16.9 per cent in 2006. The banking system capacity to finance economic activity was strengthened with a higher ratio of credit to the private sector to GDP than the preceding year. The ratio of credit to the private sector to GDP was 23.1 per cent at the end of 2006. The intermediation efficiency indicator (the ratio of currency outside banks/money supply) showed improvement over the outcome at the end of 2005.

Surprisingly, it appears this improvement in the measures of financial indicators did not translate to an improvement in agricultural and manufacturing activities' contributions to GDP or improvement in capacity utilization. Rather than resulting to a steady growth of productive activity, it generated oscillation in the business cycle. For instance, growth in agricultural sector, manufacturing and capacity utilization averaged 33.6 per cent, 5.6 per cent and 45 per cent in the 1980s; 37.9 per cent, 4.5 per cent and 35.1 per cent in the 1990s, 42 per cent, 4.0 per cent and 46.4 per cent, respectively, on the average in 2006 (CBN Statistical Bulletin 2004, 2005, 2008 issues).

This study attempts to document empirically the progress made so far in reforming the Nigerian financial system over the decades and to assess the links between these reforms and performance in the agricultural and manufacturing sectors. The intuitive question that could be raised from the foregone is which of the measures of financial indicators appear to have a significant impact on manufacturing and agricultural output and hence improve capacity utilization in the sub-sectors so that policy could be appropriately directed. This is the main objective of this paper.

Following the introduction, the rest of the paper is organized as follows. Section Two discusses the theoretical underpinnings of the paper and a survey of relevant literature; provides a brief illustration of the channels of linkages between financial sector and the entire economy. Section Three presents the model, conceptual framework and highlights the methodological issues. Section Four presents the results and summarizes major findings. The paper concludes in section five with some concluding remarks.

## 2. Theoretical Issues and Literature Review

The theoretical underpinnings of this paper is anchored on the theoretical arguments of the classical and neoclassical economic postulations, which are summarized in the studies carried out by Goldsmith (1969); McKinnon (1973); Shaw (1973) and others, who argued that financial development has a strong correlation with growth. The classical school argues that under the assumption of a well-functioning market, financial liberalization enhances efficiency in resource allocation, promotes competition which results in competitive prices for goods.

McKinnon (1973) and Shaw (1973), building on the path breaking work of Schumpeter (1911), propounded the financial liberalization thesis, arguing that government restrictions on the banking system restrain the quantity and quality of investment. Pagano (1993) had argued that endogenous growth model support the financial liberalization thesis. This is because according to the endogenous growth model financial intermediation has a positive effect on the steady-state growth and that government intervention in the financial system has a negative effect on the equilibrium growth rate (King and Levine 1993b).

The financial liberalization thesis ascribed the poor performance of investment and growth in developing countries to interest rate ceiling, high reserve requirements and quantitative restrictions in credit allocation. According to this thesis, the restrictions were sources of ‘financial repression’, and the main symptoms are low savings, credit rationing and low investment in that economy. Thus the need for financial liberalization which frees financial market from any intervention and allow the market forces of demand and supply determined the allocation of credit in an efficient manner.

The theory discourages active involvement of government in economic activity and argues that the role of government if any should be limited to the maintenance of law and order and the creation of relevant institutions for the efficient functioning of the free market system. This confirms the views of Iyoha (1995), who maintained that the adoption of economics of laissez-fair means placing a strong faith in Adam Smith’s ‘invisible hand’ and the market mechanism to efficiently allocate resources and fix prices.

Iyoha’s (1995) submission is consistent with McKinnon (1973) and Shaw (1973), who attributed the slow growth of developing countries to financial repression. They argued that liberalizing the markets results in tremendous benefits, which include increased savings and investment; increased efficiency of investment and long term economic growth. To this extent economic growth is then expected to drive the growth of the financial sector, which in

turn further stimulates and enhances the process of savings mobilization and the allocation of financial resources to productive investments.

The policy implications of these theoretical arguments are quite clear. Remove interest rate ceilings, reduce reserve requirements and abolished direct credit programmes. In simple terms, liberalize the financial markets and allow the free market to allocate credit. If the interest rate adjusts to its steady-state equilibrium and investment equilibrate savings in the money market, low yielding projects will be eliminated so that the overall efficiency of investment is enhanced.

In addition, as the real rate of interest increases, savings and the total real supply of credit increase, which induce a higher volume of investment. Economic growth in the real sectors would, therefore, be stimulated not only through the increased investment but also due to an increase in average productivity of capital. Moreover, the effects of lower reserve requirements reinforces the effects of higher savings on the supply of bank credit, while the abolition of directed credit programmes would lead to an even more efficient allocation of credit thereby stimulating further the average productivity of capital.

There are plethoras of literature on the positive correlation of measures of financial development on economic growth. Gurley and Shaw (1955); Goldsmith (1969) and McKinnon (1973) are among several economists who view financial market as central in economic activity. According to them, differences in the quantity and quality of financial services provided by financial institutions partially explain why countries grow at different rates. In particular, Gurley and Shaw (1955) emphasized the importance of financial intermediation in the credit supply process. They argued that economic development would be seriously impaired if economic agents rely heavily on self financing and do not involved financial intermediaries.

Financial intermediaries improve the efficiency of inter-temporal trade, which is an important factor influencing economic activity. Financial institutions help to reduce illiquidity that accumulates in form of direct public and private debts. This in turn lowers the pressure on the interest rates and, therefore, encourages individuals to invest. This implies that financial institutions facilitate the intermediation process by allowing certain classes of borrowers to have access to cheaper credit. Goldsmith (1969) argued that development in the financial intermediation accelerates economic growth and performance to the extent it facilitates the allocation of idle resources to optimal users.

Loayza and Ranciere (2006) maintained that the financial liberalization promote economic growth. It broadened the outside ownership of financial institutions and deepened

the financial market. Their findings are consistent with the submission of Cho (1986), who argued that competition, as a result of financial liberalization, gives rise to a more integrated financial system in terms of access and cost of capital among the various sectors.

Bekaert and Harvey (2000) in their paper argued that financial liberalization indeed stimulates economic growth in fourteen out of the nineteen developing countries that adopted various reforms in their financial system. Reinhart and Tokatlidis (2003); Aryeetey (2003); Ikhide (1997) all argued that liberalizing the financial system stimulate economic performance. The focus of Ikhide's work was on the capital market where he found that the capital market in Nigeria has grown substantially in terms of capital mobilization since reform process began in 1986. This growth was reflected in measures such as bank recapitalization, securitization and listing, sizable increases in net portfolio and direct investment among others.

Alege and Ogunrinola (2005) argued that reform policy in the financial sector has both benefits and associated costs. They submit that the associated benefits include monetary depth and the deepening of financial intermediation processes among others, while the costs are interest rate and financial asset deepening. They found no empirical evidence to support financial-development-induced economic growth.

King and Levine (1993a, b,) and DeGregorio and Guidotti (1995) investigated the relationship between financial intermediation and economic growth using cross country model. Their results indicate a positive association between measures of macroeconomic performance and financial development indicators. In addition, they share the view that a well functioning financial system is critical to sustained economic growth.

Rousseau and Wachtel (2001) found causal relationships between economic growth and financial intermediation. They found using the ratios of M1 and M2 to nominal GDP as measures of financial development for 56 countries, a close relationship between measures of financial development and real development.

Oyaromade (2005) used the cointegration and error correction methodology to investigate the impact of policy reform in mobilizing private savings in Nigeria. His findings indicate that financial sector reform resulted in higher financial deepening and savings responded positively to changes in financial variables. Adeoye and Adewuyi (2005) argued that whereas the quantity of financial resources mobilized by banks increased substantially in nominal terms during the period of the reform, no improvement in the quantity of financial services was feasible. The same conclusion could be made for the quality and efficiency of financial services provided.

Ercan (1990) investigated the impact of financial liberalization on the real sector in Turkey. His findings suggest that financial liberalization deepened the financial market in Turkey and allows the market to be more efficient in its financial intermediation function. This positively affected the manufacturing sector. In similar fashion, Maria and Juan (2002) examined the degree to which firms face credit restrictions that alter their investment decisions. The paper found empirical evidence which indicates that Columbian firms are restricted by external resources and are compelled to resort to internal sources. The paper demonstrated that financial liberalization and the greater credit availability reduced such restrictions and that financial crisis had a strong and negative effect on investment and its financing in the manufacturing sector of Columbia.

The literature surveyed on the effect of measures of financial development on economic growth revealed two important propositions. First, the growth rate of an economy depends, in part, on the degree of financial development or on financial intermediation. Second, the growth rate of money balances augurs well for economic growth.

This study is motivated by the fact that in the literature surveyed non of the Nigerian specific case studies to the best of our knowledge disaggregated GDP into sectors to isolate the relative impact of financial sector liberalization on agricultural and manufacturing output, and its impact in stimulating capacity utilization in Nigeria in the reform era (early 1980s to 2007).

The Vector Error Correction Methodology mostly used in previous studies in Nigeria may be interpreted as within-sample causality tests. They could indicate only Granger Causality of the dependent variable within the sample period and provide little evidence on the dynamic properties of the system and relative strength of the Granger-Causal chain or the degree of exogeneity among the variables.

Exogeneity in empirical analysis has to do with the problem of certain explanatory variables correlating with the error term. The implication of explanatory variables correlating with the error term is that the model ceases to be a regression equation. The coefficients so obtained are not the expected values of the explanatory variables on the dependent variable, and therefore, the interpretation of the result does not make sense in economics (Gujarati, 2004, Patterson, 1990).

On the other hand the variance decompositions adopted in this paper, by partitioning the variance of the forecast error of a certain variable into the proportions attributable to innovations (or shocks) in each variable in the system including its own, could provide an indication of these relativities. In this case, exogeneity issues are taken care of and as rightly

observed by Sims (1982), the variable that is optimally forecasted from its own lagged values will have all its forecast error variance explained by its own disturbances. For these reasons and to mitigate the shortcomings of previous studies, this paper investigates the impact of financial sector reforms on agricultural and manufacturing sectors using the Variance Decomposition and Impulse response methodology and follows the Cholesky ordering.

The Cholesky ordering imposes an ordering of the variables in the VAR and attributes all of the effect of any common component to the variable that comes first in the VAR system. Responses can change dramatically if one changes the ordering of the variables.

### 3.Channels of linkages between the Financial Sector and the Economy

The received literature argues that there are basically two channels by which finance is involved in the economy. These include the demand or consumption channel and supply or production channel. The demand channel can be presented as an aggregate consumption function where consumption (C) is a function of income (Y) and credit (FC). This relationship can be specified as

$$C = F(Y, FC) \dots\dots\dots (1)$$

Equation one postulates that an increase in income or financial resources is capable of stimulating both private and government consumption expenditure.

It follows that when the banking sector makes more credit available to consumers, the immediate effect is that effective demand will increase and thus creating an upward pressure on prices. Under the assumption of ceteris paribus, rising prices, in the long run, will stimulate existing producers to increase output and would also attract new entrants. This results in increased consumption and production in the economy.

The supply channel can be presented mathematically in a form similar to the augmented Cobb-Douglas production function. It states that output (Q) is a function of physical capital (K), labour (L) and financial resources or credit (FC). This relationship can be expressed as

$$Q = F(K, L, FC) \dots\dots\dots (2)$$

The argument in equation two is that output would increase if K, L, FC are increased. The transmission mechanism by which this process increases productive activity is via its effects on variable inputs and investment expenditure. When financial resources available to entrepreneurs are increased, part of these increased financial resources would be used to finance variable inputs or operational capital and part used in financing investment expenditures and thus increasing production capacity.



The increase in credit through the process of transfer of real assets and payments for inputs is transmitted into income, which invariably, leads to an increase in consumption demand and savings. Consequently, an increase in demand may lead to increase in prices of both consumer and capital goods. This, would however, depend on the length of the production cycle and existing stock of inventory of finished goods. The increase in savings as a result of increase in income, on the other hand, will lead to an increase in financial resources. This increased financial resource could be mobilized by the financial sector for the purpose of enhancing the financial intermediation process.

#### **4. The Model**

Based on the theoretical issues discussed and the literature surveyed, the model is build around the augmented Solow growth model whose operational framework is the Cobb-Douglas production function. The formal augmented neoclassical growth model allows the incorporation of other factors other than the traditional inputs of capital and labour. The simple neoclassical growth model is restrictive in the sense that capital and labour are the only factors of production, whose weight sum up to one. This type of production function is described as displaying constant returns to scale and this does not approximate real world situation. The real life situation is that today's productive plants tend to display increasing returns to scale. This means that it is better to stick with the augmented neoclassical model. The augmented neoclassical model adopted in this paper allows the inclusion of other variables other than capital and labour and is similar to previous efforts of Easterly and Levine (1994), Fry (1978), Ogun (1986), Easterly and Rebelo (1993), King and Levine (1993), Sinai and Stokes (1972), Schmidt-Hebbel (1994), and Wallich (1969), Ndebbio (2004).

This paper estimates three equations that capture the effects of measures of financial development and political stability or instability on the growth of output in the manufacturing, agricultural sectors and capacity utilization based on the framework of augmented neoclassical production function following Ndebbio (2004). Whereas Ndebbio (2004) used the aggregate real per capita growth as the dependent variable, in this study total output in Nigeria is disaggregated into those emanating from agricultural and manufacturing sectors. This is done to assess the relative impact of measures of financial development on the identified sectors. The model treats the four measures of financial development and the proxy for political stability or instability as factors of production. The three estimated equations are stated in equations 1-3 as follows:

$$Rxman = \alpha_0 + \alpha_1 cpgdp + \alpha_2 cubm2 + \alpha_3 m2gdp + \alpha_4 gds + \alpha_5 pol \quad \text{_____} \quad 1$$

$$\alpha_1 \alpha_2 \alpha_3 \alpha_4 \alpha_5 \geq 0; \alpha_5 \leq 0$$

$$Rxagric = \beta_0 + \beta_1 cpgdp + \beta_2 cubm2 + \beta_3 m2gdp + \beta_4 gds + \beta_5 pol \quad \text{_____} \quad 2$$

$$\beta_1 \beta_2 \beta_3 \beta_4 \beta_5 \geq 0; \beta_5 \leq 0$$

$$caput = a_0 + a_1 cpgdp + a_2 cubm2 + a_3 m2gdp + a_4 gds + a_5 pol \quad \text{_____} \quad 3$$

$$a_1 a_2 a_3 a_4 a_5 \geq 0; a_5 \leq 0$$

Where:

Rxman = manufacturing sector output; Rxagric = agricultural output; caput = capacity utilization; cpgdp = credit to the private sector as a percentage of GDP; cubm2 = the ratio of currency outside banks to broad money supply (m2); m2gdp = ratio of broad money supply to GDP; gds = ratio of gross domestic savings to GDP and pol = measure of political stability or instability (we used 1 for years of civil rule and 0 for years of military rule).

#### 4.2 Conceptual and Methodological Issues

Financial development is usually defined as a process that makes improvements in the quantity, quality and efficiency of financial intermediary services. This process involves the interaction of many activities and institutions. For this reasons, it cannot be captured by a single measure. In this paper we will employ four commonly used measures of financial development, and which the authors believe is within the control of domestic monetary authorities. For instance, the CBN could control money supply by either mopping up of excess liquidity or issuing treasury bills at a specific maturity date, or could control credit to the private sector by either increasing or reducing the monetary policy rate (MPR) or through the use of other available monetary policy instruments.

The first measure of financial development is the banking system financing of the economy measured by the ratio of the banking system credit to the private sector as a percentage of GDP (CP/GDP). The assumption here is that the private sector is more efficient in the utilization of resources than the public sector. A high ratio of domestic credit to GDP indicates a high level of domestic investment.

Second measure is M2/GDP, which shows the liquidity level. A higher liquidity ratio suggests higher intensity of the banking system. The third indicator is the gross domestic savings to GDS (GDS/GDP). This measure indicates the depth of financial intermediaries to enhance investment in productive activity. We expect financial development to benefit from higher GDS/GDP ratio, and to subsequently generate higher levels of investment. In Nigeria, like in most developing countries, financial repression and credit controls generally lead to

negative real interest rates that reduce the incentives to save. To reinforce this view, McKinnon (1973) and Shaw (1973) argued that a higher GDS resulting from a positive real interest rate stimulates investment and economic growth.

The fourth indicator is the intermediation efficiency measured as the ratio of currency outside banks to M2. This measure is used partly to indicate the extent to which electronic forms of payment, particularly Automatic Teller Machines (ATM) and other cards products, have improved the growth rate of output in agricultural and manufacturing sectors of the Nigerian economy. This is based on the assumption that most electronic withdrawals are spent on consumption expenditures. Control variables such as political stability or instability are also included in the model to measure its relative impact.

In order to determine whether or not financial liberalization promotes growth of output in the agricultural and manufacturing sectors of the economy or stimulates capacity utilization, this study will employ two methodologies. The methodologies are the co-integration technique and the vector auto-regression (VAR) techniques. In most time series analysis, the employment of co-integration and error correction is now fairly standard. Equally, the use of VAR in most empirical analysis is also widespread.

The emergence of VAR methodology in econometric analysis can be traced to the path breaking article of Sims (1980). In that article, Sims argued that decision among competing macroeconomic theories should be given by appeal to data. He further argued that prior to the development of vector auto-regression methodology; the dominant method of analysis used in modelling large-scale macroeconomic systems was primarily constructed for policy analysis and forecasting and not for data analysis. For this reason, it suffers from inherent defects when employed for data analysis.

Sims proposed an alternative methodology – VAR. It begins with the estimation of unrestricted reduced form and then proceeds to test economic hypotheses by testing the implied restrictions on the reduced form (Patterson 1990). VAR is formulated as a unified system, and variables are chosen based on how they fit into the system as a whole rather than how they contribute to a particular subsystem.

Exogeneity problem is taken care of by treating all variables as endogenous. VAR methodology takes care of expectations by allowing lags of every variable to enter the equation explaining each variable. In this way, the effects of the sequence of past states of the entire system on expectations and on the current value of a given variable are accounted for in a reduced form.

In VAR methodology, the researcher is not interested in the coefficients of VAR, because they do not make much meaning in economics; rather the focus is on the variance decomposition and the impulse response functions. What VAR does is to invert the system and then innovations are generated after decomposition, which have direct economic interpretations. The interesting thing about VAR analysis is that it allows us to decompose the variance into parts attributed to each set of the innovation or shock process.

The impulse response functions describe the response of an endogenous variable to one of the innovations. In particular, the impulse response function traces the effects on present and future values of the endogenous variable of one standard deviation shock to one of the innovations. While the impulse response function trace the effects of a shock to one endogenous variable on to the other variables in the VAR, variance decomposition separates the variation in an endogenous variable into component shocks to the VAR. Thus, variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR.

We will compute forecast error variance decomposition of agricultural output, manufacturing output and capacity utilization to see what proxy measure of financial liberalization is most important in promoting growth of output over time in the identified sectors. If a large part of forecast variance of agricultural, manufacturing and capacity utilization is explained by measures of financial development, or a large portion of forecast variance of financial development is explained by manufacturing, agricultural and capacity utilization, then this can be used as evidence of a strong causal relationship between the two variables.

### **4.3 Empirical Results and Discussion**

The results of the unit root test are reported in table 1 in the appendix. The results show that all the variables have unit root except GDS. And the variables are integrated of different order. Six of the variables are integrated of order one while two of the variables that enter the regression are integrated of order two. Given the reasoning behind co-integration tests which requires that all the variables entering the co-integration test must be I(1) process, it is therefore not necessary to proceed with the co-integration test since most of the variables are stationary at different levels.

Intuitively it is clear that we should reject the presence of co-integrating relationship among the variables. Rejecting the presence of co-integrating relationship among variables implies that there is no long-run relationship between the dependent variables and its

determinants; and therefore no need to set up an error correction model. Thus, we modelled the financial variables that determine output development in manufacturing, agriculture and capacity utilization using the Variance Decomposition approach.

The results of the vector auto regression (VAR) model are not reported because the coefficients of VAR are of no importance in economics. What we are interested in is the variance decomposition and impulse response functions emanating from the VAR model. Tables 2, 4 and 6 show the variance decomposition of the eight endogenous variables from the reduced form of the VAR. The variance decomposition tells us the proportion of forecast error attributed to its innovation and to innovations in the other endogenous variables.

Own shocks constitute the dominant source of variations in the forecast errors of agricultural and manufacturing outputs as well as capacity utilization. These variations of agricultural, manufacturing output and capacity utilization range from 100 per cent to 10 per cent, 100 per cent to 10.4 per cent and 100 per cent to 28 per cent, respectively. From a contribution of 100 per cent to variations in their forecast errors, the contribution of agricultural and manufacturing outputs fell from 32 per cent in the medium term to 10 per cent in the long term respectively. Capacity utilization falls to 82 per cent from a contribution of 100 per cent in the medium term to 51 per cent in the long term. A small fraction of the shocks were taken up by other variables, particularly the ratio of private sector credit to GDP; the liquidity ratio (M2/GDP) and intermediation efficiency indicator over the ten year horizon.

A close examination of the forecast errors variance decompositions show that agricultural and manufacturing outputs as well as capacity utilization are not the only dominant source, other variables are equally important. Therefore, the forecast error is attributed to innovations in agricultural and manufacturing output and capacity utilization; and innovations from other endogenous variables.

Tables 3, 5 and 7 show the impulse response from one standard deviation in each of the endogenous variables. A cursory perusal of the respective tables indicate that unanticipated increase in expected agricultural and manufacturing output and capacity utilization have a strong positive effect on the actual agricultural and manufacturing output and capacity utilization but no effect on other variables in the first year. The effect of unanticipated increase in agricultural output, manufacturing output and capacity utilization on the ratio of banking system credit to the private sector as a percentage of GDP (CPGDP), intermediation efficiency (CUM2), gross domestic savings, which indicates the depth of

financial intermediaries to enhance investment in productive activities (GDS), liquidity level (M2/GDP), and Pol induced a mixture of contraction and expansion in remaining four years.

As shown in tables 2 to 7, an unexpected increase in the ratio of private sector credit to GDP has a positive effect on manufacturing output, agricultural output and capacity utilization and other variables throughout the time horizon. This suggests that increasing the supply of credit to the core private sector is beneficial in the long term as it enhances domestic investments.

Tables 2 to 7 further indicate that shocks generated by unanticipated increase in the ratio of currency outside banks to broad money supply (intermediation efficiency) has a negative effect on actual agricultural output, manufacturing output, CPGDP in the first year and positive effect on CUBM2, GDS, M2/GDP, capacity utilization and Pol in the medium term; yields positive effect on agricultural, manufacturing output and capacity utilization in the long term. It generated a mixture of contraction and expansion for other variables over the time period. This indicates that the wide distribution of ATM machines by banks improves intermediation efficiency and should be sustained.

Unanticipated increase in GDS yields negative effect on capacity utilization, and a positive effect on agricultural and manufacturing output throughout the time horizon. The results suggest that savings mobilized during the period of the study by banks may not have been channelled to productive economic activities. The effect of shocks on the GDS on other variables generated a mixture of expansion and contraction over the five year period. Responses of Pol on a single shock on agricultural output and manufacturing output initially declines in the first year and then increase in the medium term and long term; whereas it response to capacity utilization was expansion in the first two years and then declines in subsequent periods. This indicates that political stability is important in growing the real sector.

## **Conclusion**

This paper attempts to investigate the impact of financial sector reforms on agricultural and manufacturing sectors. It also assesses whether or not the reforms was successful in stimulating capacity utilization using the VAR methodology. The results indicate that bank credit to the private sector as a ratio of GDP has a positive effect on manufacturing and agricultural sectors in the short run, medium term and long term. This suggests that bank credit to the private sector is a strong financial sector variable, which

could influence long run economic growth and development. For this reason therefore, policy should be directed to facilitate an accelerated growth of private sector credit in Nigeria.

The effect of currency outside banks to broad money supply ratio on the identified two sectors confirms the maintain hypothesis that reforms brought about by increase in ATM spread promotes intermediation efficiency. The results also reveal that albeit own shocks dominate as the major source of variations in the forecast errors of agricultural and manufacturing outputs, the other shares are taken up by private sector credit to GDP, liquidity ratio (M2/GDP), intermediation efficiency (CUM2) as well as political stability. Therefore, deepening the financial sector as well as intermediation efficiency is important in growing real activity.

The Findings of this study provide a strong evidence to confirm that the reforms in the financial sector succeeded in deepening the financial system, albeit the success achieved so far is below the threshold needed to spur the development of the manufacturing and agricultural sectors. However, it is important to sustain the reform efforts. This is because as rightly observed by King and Levine (1993b) predetermined components of financial sector growth are good indicator of future sustainable economic growth and development. This confirms the submission of Graff (2002), who argued that in a developing economy like Nigeria where human and natural resources are abundant, is a strong indicator of availability of huge potentials waiting to be explored. By deepening the intermediation process, the financial sector reforms would assist, not only to explore these potentials but help in addressing some of the challenges of most entrepreneurs in Nigeria. Institutionalising the reform process in the financial sector would further deepen the achievement of sustained economic growth and development.

**Appendix**

Table 1: Unit Root Result

Augmented Dickey Fuller Test

Philip Perron Test

Variables	Levels	1 <sup>st</sup> diff	2 <sup>nd</sup> diff	Decision rule	Level	1 <sup>st</sup> diff	2 <sup>nd</sup> diff	Decision rule
Agxmn	- 1.322201	- 4.717587		I(1)	- 1.394351	- 4.717587		I(1)
Cautil	- 1.878991	- 4.510767		I(1)	- 1.957137	- 4.504508		I(1)
Cpgdp	1.448125	- 2.440029	- 3.251210	I(2)	1.324938	- 2.440029	- 2.629906	I(2)
Cubm2	- 1.733054	- 4.965944		I(1)	- 1.855269	- 4.966004		I(1)
Gds	- 2.850373			I(0)	- 2.806532			I(0)
Xmn	- 1.322201	- 4.717587		I(1)	- 1.394351	- 4.717587		I(1)
Agxmn	- 1.322201	- 4.717587		I(1)	- 1.394351	- 4.717587		I(1)
M2/gdp	0.807960	- 1.965900	- 4.067512	I(2)	1.340197	- 1.995239	- 4.869504	I(2)
Pol	- 1.432701	- 4.795832		I(1)	- 1.476452	- 4.795832		I(1)

Critical Values

1% = -3.711457

5% = -2.981038

10% = -2.629906



Table 2: Variance Decomposition from the Reduced form of VAR (Equation 1)

Variable	Horizon	Agxmn	Cpgdp	Cubm2	Gds	M2/gdp	Pol
Agxmn	1	100	.00	.00	.00	.00	.00
	4	67.30	30.90	.95	.02	.43	.39
	6	32.20	19.08	7.93	.98	39.69	.10
	8	16.24	41.00	9.16	4.34	29.15	.09
	10	10.36	51.77	6.75	8.85	22.19	.07
Cpgdp	1	.28	99.71	.00	.00	.00	.00
	4	1.33	10.26	16.76	5.98	65.39	.28
	6	11.67	22.78	13.57	14.20	36.96	.82
	8	23.21	24.31	8.57	19.29	23.50	1.11
	10	39.12	22.45	5.70	13.18	14.97	4.57
Cubm2	1	9.64	58.11	32.25	.00	.00	.00
	4	13.24	53.73	29.63	.13	.42	2.85
	6	9.98	46.23	32.19	2.61	6.03	2.95
	8	10.93	43.45	31.27	4.20	7.48	2.64
	10	9.29	48.27	24.57	4.74	10.16	2.97
Gds	1	46.67	0.07	13.06	40.18	.00	.00
	4	49.27	2.80	13.58	32.93	.22	1.20
	6	24.77	1.15	20.15	11.91	41.12	.91
	8	18.18	19.56	20.15	9.36	32.06	.68
	10	15.67	28.85	17.22	9.35	27.99	.92
M2/gdp	1	1.30	.27	31.02	3.12	64.29	.00
	4	8.15	6.45	27.86	11.94	45.14	.46
	6	19.44	13.44	18.97	18.06	29.36	.73
	8	35.51	17.08	11.94	13.51	18.85	3.09
	10	60.56	9.81	6.48	7.95	10.36	4.85
Pol	1	11.58	3.93	0.04	9.36	8.12	66.95
	4	10.37	3.62	2.20	28.22	6.72	48.86
	6	11.46	2.06	12.12	16.71	22.66	34.99
	8	14.62	4.96	16.80	10.95	28.51	24.15
	10	16.57	19.03	15.25	7.32	26.55	15.28

**Table 3: Impulse Response Function**

Variable	Horizon	Agxmn	Cpgdp	Cubm2	Gds	M2/gdp	Pol
Agxmn	1	12600.7	.00	.00	.00	.00	.00
	4	14687	-13111.7	2301.183	-398.318	1545.92	1473.58
	6	17810.25	-15434.3	12853.1	-4580.63	-29160	253.70
	8	8639.28	-39048.4	-16180.7	-13554.4	-22864.3	-1550.9
	10	3285.56	-44121.1	-8604.79	-21425.3	-16987.2	-798.29
Cpgdp	1	.19384	3.61	.00	.00	.00	.00
	4	1.55	2.38	5.53	3.31	10.93	.72
	6	6.90	8.89	5.26	7.07	6.26	1.73
	8	10.46	8.32	.79	8.46	1.65	2.04
	10	16.22	8.69	-1.64	3.14	-0.46	6.45
Cubm2	1	-0.72	-1.77	1.32	0.00	.00	.00
	4	-.73	-1.07	.79	-0.10	-0.18	0.48
	6	-0.23	-0.92	1.10	-0.53	0.79	0.32
	8	0.50	-0.52	0.56	-0.48	-0.51	-0.03
	10	0.34	-1.51	-0.11	-0.48	-0.83	-0.37
Gds	1	0.05	0.00	-0.03	0.04	.00	.00
	4	0.04	-0.02	-0.02	0.02	0.00	0.00
	6	0.42	0.06	-0.06	-0.09	-0.09	0.01
	8	0.02	-0.08	-0.04	-0.02	-0.03	0.04
	10	0.02	-0.07	-0.02	-0.03	-0.03	0.01
M2/gdp	1	0.05	-0.02	0.26	0.08	0.37	.00
	4	0.22	0.19	0.32	0.26	0.36	0.05
	6	0.39	0.31	0.18	0.34	0.19	0.06
	8	0.63	0.39	0.07	0.20	0.11	0.21
	10	1.14	0.13	-0.08	0.14	-0.06	0.32
Pol	1	-0.09	0.05	-0.05	0.07	-0.07	0.21
	4	0.07	-0.41	-0.05	0.16	-0.05	0.11
	6	0.11	0.00	-0.15	0.04	-0.20	0.13
	8	0.16	-0.11	-0.18	-0.05	-0.23	0.09
	10	0.21	-0.30	-0.17	-0.06	-0.24	0.07

**Table 4: Variance Decomposition From the Reduced form of VAR (Equation 2)**

Variable	Horizon	Xmn	Cpgdp	Cubm2	Gds	M2/gdp	Pol
Xmn	1	100	.00	.00	.00	.00	.00
	4	67.30	30.90	.95	0.02	.43	.39
	6	32.19	19.08	7.93	.98	39.69	.10
	8	16.24	41.00	9.16	4.34	29.15	.09
	10	10.36	51.77	6.75	8.85	22.19	0.07
Cpgdp	1	0.29	99.72	.00	.00	.00	.00
	4	1.34	10.26	16.76	5.98	65.38	0.28
	6	11.67	22.78	13.57	14.20	36.96	0.82
	8	23.21	24.30	8.57	19.28	23.50	1.11
	10	39.12	22.47	5.70	13.18	14.97	4.57
Cubm2	1	9.63	58.10	32.25	.00	.00	.00
	4	13.23	53.72	29.63	0.13	0.42	2.85
	6	9.98	46.23	32.19	2.60	6.03	2.95
	8	10.94	43.45	31.27	4.20	7.49	2.64
	10	9.29	48.27	24.57	4.74	10.16	2.97
Gds	1	46.67	0.08	13.06	40.19	.00	.00
	4	49.27	2.80	13.58	32.92	.22	1.19
	6	24.77	1.15	20.15	11.91	41.11	.91
	8	18.18	19.56	20.15	9.36	32.05	0.68
	10	15.67	28.85	17.22	9.35	27.99	0.92
M2/gdp	1	1.20	0.27	31.01	3.12	64.29	.00
	4	8.15	6.43	27.86	11.94	45.15	.46
	6	19.44	13.44	18.97	18.05	29.36	0.73
	8	35.51	17.08	11.94	13.51	18.86	3.09
	10	60.56	9.80	6.48	7.94	10.36	4.84
Pol	1	11.57	3.93	0.04	9.36	8.13	66.95
	4	10.36	3.62	2.19	28.22	6.72	48.86
	6	11.46	2.06	12.12	16.71	22.67	34.99
	8	14.62	4.96	16.80	10.95	28.51	24.15
	10	16.56	19.03	15.25	7.32	26.55	15.28

**Table 5: Impulse Responses from the Reduced form of the VAR Model (equation 2)**

Variable	Horizon	Xmn	Cpgdp	Cubm2	Gds	M2/gdp	Pol
Xmn	1	12600.7	.00	.00	.00	.00	.00
	4	14687	-13111.7	2301	-398.32	1545.9	1473.5
	6	17810.25	-15434.3	-12853	-4580.6	-29160.7	253.7
	8	8639.29	-39048.4	-16180.7	-13554.4	-22864.3	-1550.97
	10	3285.56	-44121.1	-8604.7	-21425	-16987	-798.29
Cpgdp	1	3.62	.00	.00	.00	.00	.00
	4	1.55	2.38	5.53	3.30	10.93	0.72
	6	6.90	8.89	5.26	7.07	6.27	1.73
	8	10.46	8.32	0.79	8.46	1.65	2.04
	10	16.22	8.69	-1.64	3.14	-0.46	6.45
Cubm2	1	-0.72	-1.77	1.32	.00	.00	.00
	4	-0.73	-1.08	0.79	-0.10	-0.18	0.48
	6	-0.23	-0.92	1.10	-0.53	0.80	0.32
	8	0.50	-0.52	0.56	-0.48	-0.51	-0.03
	10	0.34	-1.51	-0.11	-0.48	-0.83	-0.38
Gds	1	0.05	0.02	-0.03	0.04	.00	.00
	4	0.03	-0.01	-0.02	0.02	0.04	0.09
	6	0.04	0.06	-0.06	-0.09	-0.09	0.01
	8	0.02	-0.08	-0.05	-0.02	-0.04	0.00
	10	0.02	-0.07	-0.02	-0.03	-0.03	0.01
M2/gdp	1	0.05	-0.02	0.26	0.08	0.37	.00
	4	0.22	0.20	0.31	0.26	0.37	0.05
	6	0.39	0.31	0.18	0.34	0.19	0.07
	8	0.63	0.38	0.07	0.20	0.11	0.21
	10	1.14	0.13	-0.08	0.14	-0.06	0.31
Pol	1	-0.09	0.05	-0.05	0.07	-0.07	0.21
	4	0.06	-0.04	-0.05	0.16	-0.05	0.11
	6	0.11	0.08	-0.15	0.04	-0.20	0.13
	8	0.16	-0.11	-0.18	-0.05	-0.23	0.09
	10	0.21	-0.31	-0.17	-0.07	-0.24	0.07

**Table 6: Variance Decomposition From the Reduced form of VAR (Equation 3)**

Variable	Horizon	Cautil	Cpgdp	Cubm2	Gds	M2/gdp	Pol
Cautil	1	100	.00	.00	.00	.00	.00
	4	95.90	0.32	0.13	0.29	2.31	1.05
	6	82.06	2.91	1.84	1.65	8.64	2.89
	8	24.62	65.73	9.05	1.71	2.98	16.20
	10	28.10	50.92	21.57	1.79	2.90	17.92
Cpgdp	1	3.46	96.54	.00	.00	.00	.00
	4	5.64	10.63	23.09	7.11	53.49	0.03
	6	3.62	30.89	25.07	22.30	18.11	0.01
	8	3.55	34.09	29.89	23.65	8.64	0.17
	10	3.22	32.33	34.14	21.05	9.09	0.16
Cubm2	1	1.51	8.31	90.17	.00	.00	.00
	4	6.80	7.17	84.44	0.00	1.27	0.30
	6	24.58	8.33	52.58	0.16	14.18	0.15
	8	30.64	10.88	44.36	1.75	12.01	0.35
	10	35.30	10.16	39.11	2.17	10.81	2.43
Gds	1	3.20	5.52	0.14	91.14	.00	.00
	4	4.82	4.52	0.37	89.78	0.25	0.25
	6	6.97	4.29	3.47	62.48	22.60	0.19
	8	7.90	16.92	5.87	51.77	17.38	0.14
	10	7.96	22.40	9.64	43.81	15.38	0.80
M2/gdp	1	3.41	0.99	26.66	6.04	62.89	.00
	4	4.53	22.07	28.40	19.93	25.05	0.01
	6	5.18	29.79	31.00	22.63	11.25	0.13
	8	4.72	30.67	34.05	20.45	9.93	0.18
	10	4.68	30.70	34.84	19.28	10.30	0.19
Pol	1	4.39	1.52	10.93	9.21	28.72	45.23
	4	13.75	0.97	11.65	52.73	9.01	11.90
	6	10.02	1.04	8.58	51.73	19.60	9.01
	8	9.36	6.13	8.42	49.56	18.28	8.25
	10	9.54	11.54	10.56	44.26	16.29	7.79

**Table 7: Impulse Responses from the reduced form of the VAR Model (equation 3)**

Variable	Horizon	Cautil	Cpgdp	Cubm2	Gds	M2/gdp	Pol
Cautil	1	15.21	.00	.00	.00	.00	.00
	4	10.83	1.08	-0.68	-1.03	2.90	-1.96
	6	6.03	3.54	-2.87	-2.58	5.67	-3.11
	8	3.62	6.41	-1.31	-3.21	7.59	-3.56
	10	1.96	10.75	1.94	-2.19	6.59	-3.52
Cpgdp	1	0.68	3.60	.00	.00	.00	.00
	4	3.66	3.63	7.53	4.18	11.47	0.29
	6	4.76	16.92	14.02	14.42	7.18	0.22
	8	7.47	24.00	22.92	19.76	6.50	-2.04
	10	8.17	26.69	30.19	20.64	14.99	-1.94
Cubm2	1	0.24	-0.58	1.92	.00	.00	.00
	4	0.54	-0.18	0.85	0.03	-0.26	0.13
	6	1.48	-0.70	1.01	0.13	1.18	-0.08
	8	1.15	0.71	0.38	0.45	-0.21	-0.17
	10	1.09	0.30	0.16	-0.30	0.19	-0.55
Gds	1	-0.02	0.02	-0.00	0.08	.00	.00
	4	-0.01	-0.05	0.00	0.04	0.00	0.00
	6	-0.02	0.01	-0.02	0.02	-0.06	-0.01
	8	-0.02	-0.05	-0.02	-0.03	0.00	0.00
	10	-0.02	-0.04	-0.03	-0.02	0.01	0.02
M2/gdp	1	0.09	0.05	0.26	0.12	0.40	.00
	4	.22	0.53	0.54	0.49	0.39	0.01
	6	0.39	0.96	0.94	0.81	0.37	-0.07
	8	0.45	1.22	1.32	0.94	0.65	-0.11
	10	0.64	1.65	1.78	1.27	0.97	-0.14
Pol	1	0.04	0.02	0.06	0.06	-0.11	0.13
	4	0.15	0.03	0.13	0.30	-0.07	0.05
	6	-0.03	0.03	0.03	0.19	-0.19	0.04
	8	-0.02	-0.12	-0.04	0.08	-0.04	0.02
	10	-0.06	-0.14	-0.09	0.02	-0.05	0.04

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