IMPACT OF SECTORAL ALLOCATION OF BANKS' CREDIT ON ECONOMIC GROWTH IN NIGERIA

Stephen Alaba John
Rodiat Yetunde Lawal
Department of Finance
Faculty of Management Sciences
University of Ilorin, Ilorin, Nigeria.

Abstract

Sectoral allocation of credit is a vital function of the banking sector as it enhances economic growth and development. However, contributions of credits by Banks to various sectors in Nigeria are not sufficient to the growth of the Nigerian economy in spite of the various reforms and development in the banking sector. Hence, this study examines the impact of sectoral allocation of banks' credit on economic growth in Nigeria. The study uses annual time series data obtained from the Central bank of Nigeria (CBN) statistical bulletins and National Bureau of Statistics (NBS) annual reports covering the period of thirty years (1986-2015). The data were analysed using Augmented Dickey Fuller (ADF) unit root test, Johansen co-integration test, vector error correction model (VECM) and fully modified Ordinary Least Square (FMOLS) regression. The findings of this study reveal that a long-run relationship exists between economic growth and the explanatory variables. The results of the regression revealed that credit allocated to productive sector and broad money supply have a significant positive influence on economic growth in Nigeria at 1% level of significance, while credit allocated to general commerce, credit allocated to service sector and credit allocated to other sectors have a negatively significant effect on economic growth in Nigeria at 1% level of significance. Based on these findings, the study concludes that sectoral allocation of banks' credit has a significant impact on economic growth in Nigeria. Therefore, the study recommends that policy makers such as the Central Bank of Nigeria (CBN), the Nigerian Deposit Insurance Corporation (NDIC), Securities and Exchange Commission (SEC), amongst others should fashion out appropriate policies through the establishment of infrastructures that will enhance the bidirectional flow between the banking sectors from where investible funds are sourced, and the priority sectors where goods and services are produced.

Keywords: Deposit money banks, Economic growth, Sectoral allocation credit, CBN

Introduction

The role of credits in various economies has been recognized as several economic agents to meet capital and current expenditures needs (Nwanyanwu, 2008). In tandem, Financial Stability Review (2006) asserted that credit needs of each sector basically depend on the structure of the business (such as intensity of factor inputs, payment cycle, ratio of variable to fixed costs, product type, among others). Accordingly, the Central Bank of Nigeria (CBN) has designed policies to suit each business structure so as to enhance credit impact on the business and ultimately on the economy. Lemo (2005) opined that the Central Bank of Nigeria (CBN) has designed policies that will enable the banking sector to develop the necessary tools needed to perform its financial intermediation roles efficiently. Insightfully, in developing economies like Nigeria, bank credit is a major source of finance for a number of valuable productive investments due to prevalence weaknesses in the structure of their capital markets (Ngai, 2005). Thus, deposit money banks in their intermediation roles act as agents of growth

by channeling funds from surplus units for on-lending to the non-surplus units for viable investment opportunities in the economy and stimulate high level of specialization and economies of scale (Ningi & Dutse, 2013; Sanusi, 2011; and Yakubu & Affoi, 2013).

Nigeria economy is known to be well endowed in terms of natural and mineral resources when compared with other developing nations, but still experienced a dawdling growth. This could be ascribed to epileptic flow of bank funds to different sectors in the economy (Aliyu, Sani & Muhammed, 2013). The Structural Adjustment Programme in 1986 led to the introduction of financial sector reform. According to Hassan (2016), the reform was meant to correct the imbalances in the structure of the economy, promote deregulation and liberalise the banking system, but did not accomplish the projected outcomes.

Isa, Jimoh and Achuenu (2013) also stressed that a careful assessment of developments in the Nigerian economy showed that production and service sectors contribute over 60% to GDP but attracts only about 40% of total banking sector credit. Another source of concern is the agricultural sector which contributes over 40% to real income but attracts less than 2% of total banks credit. Apparently, there is need to evaluate whether the development of the banking sector through various reforms and policies especially have succeeded.

Several studies have examined the effect of sectoral allocation of Deposit Money Banks (DMBs) credit on the growth of Nigerian economy. However, most of the studies focused on one sector or subsector. For instance, Olajide, Akinlabi and Tijani (2012); and Kareem, Osisanya, and Isiaq (2017) focused on the agricultural sector; Olanrewaju, Aremo, and Aiyegbusi (2015); Obamuyi, Edun and Kayode (2012); and Akujuobi and Chima (2012) focused on the manufacturing sector; Awoyemi and Dada (2015) focused on the financial sector; Aliyu and Kabiru (2013) focused on the power sector; while Isa, et al. (2013); and Adeagbo (2014) focused on real estate and construction sector. Others included a combination of two or more sectors (Bada, 2017; Agbanike, Onwuka and Eyoghasim, 2016; and Ningi 2013). In Nigeria, however, the impact of DMB's credit allocated to the productive sectors, general commerce, service sector and other sectors have been given adequate attention. Therefore, this study evaluates the impact of DMBs credit allocated to the production, general commerce, service sector and other sectors (which include government, personal and professional and miscellaneous) on Economic growth in Nigeria.

Literature Review
Credit Allocation: Classifications and Importance of DMBs Credit
The 1990 Prudential Guidelines of the Nigerian Deposit Insurance Corporation (NDIC) and the 2010 Monetary Circular of the CBN defines bank credit as the combination of all loans, advances, guarantee, overdraft, lease, commercial papers, bills discounted and banker acceptance. According to Pearce (1992) and Adenugba (2015), it is the process of accessing fund from financially able firm such as government, individuals and banks.

Agbanike, Onwuka and Eyoghasim (2016) defined credit allocation as the channel through which resources are transferred for viable investment activities in terms of capital formation which lead to growth in the output of different priority sectors of the economy. It is the total amount of credit available to a group of businesses in the same or different sectors of a national economy from a banking institution. Credit allocation describes how banks divide their financial resources to different

processes, people, projects and industrial sectors. Figure 2.1 (see appendix1) shows the allocation of DMBs credits to various subsectors in Nigeria.

According to the Financial Stability Report (2015), Nigerian economy witnessed a low growth in total banks credit to the private sector by 4.2% to N13804.2 billion at end of the first half of the year. This is 2.7% lower than the record of second half of 2014. In terms of total loans outstanding, the oil and gas sub-sector garnered the highest share of the credit (23.78%), next are manufacturing (13.98%) and general commerce (13.84%). Agriculture had 0.1% point lower than the record of second half of 2014 (appendix 1).

Empirical Review: Credit allocation and Economic Growth
Leitao (2012) examined the bank lending and economic growth in European Union spanning from 1990 to 2010. The study used dynamic panel General Moment of Method estimator. The results revealed that savings promote economic growth while inflation and bank credit have negative effect on the growth in European Union.

Similarly, Were, Nzomoi and Rutto (2012) evaluated the impact of bank credit on the economic performance in Kenya using sectoral panel data and pooled Ordinary Least Square (OLS) regression. The study found that bank credit has a positive significant impact on sectoral GDP. Aurang (2012) investigated the link between banking sector on economic growth in Pakistan. The study adopted OLS and Granger-Causality test. The findings revealed that deposits, investments, advances, profitability and interest earnings had significant positive impact on growth. Also, it was found that a bidirectional relationship exist between deposit advances and economic growth. Likewise, Korkmaz (2015) evaluated the effect of credit of the bank on economic growth in Turkey for the period between 2006-2012 using randomly selected European countries. The study employed panel data regression as a method of analysis. The result showed that domestic credits did not affect inflation but affect economic growth.

In Nigeria, Onuorah and Ozurumba (2013) investigated the effect of bank credit on economic growth in Nigeria covering the period 1980 to 2011. The study used Co-integration, Vector Autoregressive (VAR) model and Causality test to analyse the data. It was found that there is a unidirectional relationship between GDP and bank credit measures. More so, there exist a short relationship between bank credit measures and GDP.

In tandem, Modebe, Ugwuegbe and Ugwuoke (2014) examined the impact of bank credit on economic growth in Nigeria from 1986-2012. The study analysed the data using OLS and Johansen Co-integration Test. It found that there exist a long run relationship between bank credit and growth. Also, total bank credit to private sector has a significant negative impact on economic growth.

Toby and Peterside (2014) assessed the role of banks in financing the manufacturing and agricultural sectors in Nigeria covering 1981 to 2010. Multiple regression analysis was used to analysed the data. It found that the banks are more active to lend to manufacturing sector even though credit to agricultural sector has an effect on GDP.

Ogege and Bolorupremo (2014) evaluated the intermediation role of banks on economic growth in Nigeria. OLS was employed to analysed the data. The finding indicated that credit to production sector has a significant positive impact on growth.

Iwedi, Okey-Nwala and Wachukwu (2015) examined the causality between the bank credit and economic growth using Pairwise Granger causality test spanning form 1980-2013. There exist a unidirectional relationship between GDP to private sector credit and credit to government sector. However, there was bidirectional causality between contingent liability and GDP.

Fapetu and Obadele (2015) assessed the effect of sectoral allocation of bank's loans and advances on economic growth in Nigeria during intensive, deregulation and guided deregulation regimes. The study employed OLS method of data analysis. The findings reveal that credit to other sector has a positive significant effect on economic growth during the intensive regulation.

Bada (2016) investigated the impact of bank credit on agricultural and manufacturing outputs in Nigeria covering a period of thirty-one years (1984-2014). VAR model, Vector Error Correction test and Causality test were used to analyse the data. There was a significant impact between bank credit and outputss of manufacturing and agricultural sectors. In the same vein, Sogules and Nkoro (2016) assessed the impact of bank credits to manufacturing and agricultural sectors on economic growth in Nigeria from 1970 to 2013. Co-integration test and Error Correction Model (ECM) were used for the analysis. The study showed that there is a long run relationship between bank credit to these sectors and economic growth. ECM results revealed that bank credit to agricultural sector has an insignificant impact on growth while there was a significant negative relationship between credits to manufacturing sectors and economic growth.

Alabbadi (2017) looked into the long-run relationship between bank credit and economic growth across the sectors in the Saudi economy using panel data from 1970 to 2016. The analysis was carried out using panel cointegration and causality techniques controlling for the presence of cross-sectional dependence. The variables are determined to be panel I (1) and co-integrated. A uni-causal link from economic growth to bank credit can be deduced from Panel Granger causality tests. While further examination of long-run dynamics reveals a narrow causal link from bank credit to economic growth in the commerce sector.

Kolapo, Ojo, and Olaniyan (2018) scrutinized deposit money banks' credit to private-public sectors and its nexus with economic development in Nigeria over the period 1970-2016. The study adopts Ng-Perron and Augmented Dickey Fuller Breakpoint Unit Root Tests. The result showed that bank credits to government sectors and lending interest rates were stationary. Similarly, the feedback hypothesis establishes that banks' credit and economic development granger cause each other.

Theoretical Discussion and Methodology
Theoretical Discussion and Hypothesis Development
This study is guided by the theory of Bank financial intermediation and Harrod–Domar model.

Theory of Financial Intermediation
This was developed by Gurley and Shaw (1955) in order to solve the shortcomings that were discovered in the direct financing method. It explains the importance of the intermediation process of credit allocation in the economy as a whole. The theory is based on the assumption that financial intermediation causes more funds to be available to the productive sector of the economy which will increase production, then lead to eventual growth in the economy. Consequently, efficient allocation of credit has the potential to cause high level of employment generation and income which invariably

enhances the level of economic development (Nwite, 2014). Thus, the key factor in the growth process of any economy is investible funds.

The relevance of this theory to the study is that DMBs are indispensable elements in the economic systems since they are major providers of finance and facilitators to flow of credit.

Based on these, the theory suggests three important roles credit play in economic growth (Levine, 1999 and Watchel, 2001). First, it improves the screening of fund seekers and the monitoring of the recipients of funds. This improves the allocation of resources. Second, it encourages the mobilization of savings by providing attractive instruments and saving vehicles. Finally, it provides opportunities for risk management and liquidity. These therefore promote the development of both credit markets and the use of credit instruments with attractive characteristics that enable risk sharing. Moreover, Greenwood and Jovanovic (1990) asserted that efficient credit allocation and development of banks contribute immensely to the growth of the economy by intermediating between the savers and investors. This implies that the banking sector is an indispensable element in the economic systems. Therefore, the development of the financial system plays a role in the economic well-being of any nation (Agu, 1988; Venkati, 2016).

Harrod–Domar Model
The model was developed by Roy Harrod (1939) and Evsy Domar (1946) to explain economic growth in terms of level of savings and capital productivity. It was based on the assumption that the impact of money supply in an economy depends on its ability to influence interest rate on loan (that is loan to deposit ratio). The rate of interest in turn influences the rate of investment which in turn influences national income. The model postulates that changes in national income depend linearly on change in capital stock or investment. The assumption is that investment is a function of savings.

Theoretically therefore, savings is seen as positively impacting on the growth of the economy because of its positive influence on capital formation. The implication of the model is that the emphasis laid on savings pre-empts a conclusion that deposit money bank credit allocation function influences the growth of the economy. McKinnon-Shaw hypothesis buttressed this, that economic growth is dependent on credit allocation. The important role banks play in growth can be confirmed by comparing repressed financial systems and liberalized ones.

According to Akujuobi (2006), the Harrod-Domar Model suggests that customers' deposit provide the finance, which are loaned for investment activities. Therefore, this model concludes that economic growth will proceed at the rate which society can mobilize savings coupled with the productivity of investment (Levine, 1997; Azege, 2009; Masha, et al, 2004). Hence, the need for allocation of credit for investment in an economy desiring economic growth is highly projected.

Based on the theories above, the following hypotheses were derived:
H_{01}: credit allocated by banks to productive sector does not significantly affect economic growth in Nigeria;
H_{02}: There is no statistical significant relationship between credit allocated to general commerce and growth of the Nigerian economy;
H_{03}: credit allocated by banks to service sector does not significantly affect economic growth in Nigeria;

H_{04}: credit allocated by banks to other sectors (which include government; personal and professional; and miscellaneous) does not significantly affect growth of the Nigerian economy; and

H_{05}: Long-run causal relationship does not exist between the explanatory variables and economic growth in Nigeria.

Methodology

Research Design, Population and Sample of the Study
Ex-post facto research design was adopted for the study. The population of this study comprises of all the sectors in the Nigeria economy as categorised by the CBN, spanning from 1986 to 2015. Similarly, the period was chosen due to paucity of data. As at the time of research, 2016 data cannot be assessed.

These sectors were chosen because the output of the Nigerian economy comes from three main sectors namely; production, general commerce and service sectors. Agriculture, Forestry and fishery, manufacturing, mining and quarrying, real estate and construction are classified as production sector. Whereas, general commerce sectors are domestic trade, exports and imports. The service sector includes financial institutions, public utilities, transport and communication while other sector consists of government, personal, professional and miscellaneous.

Method of Data Collection and Estimation Procedure
The study employs secondary time series data obtained from CBN's Statistical Bulletin and National Bureau of Statistics (NBS) annual reports.

The study employs annual time series data obtained from Central Bank of Nigeria's (CBN) Statistical Bulletin and National Bureau of Statistics (NBS) annual reports. The data collected were analysed using fully modified OLS regression test to assess the impact of sectoral allocation of bank's credit on economic growth in Nigeria. Also, the preliminary analysis tests such as Augmented Dickey Fuller Unit Root test and Johansen Con-integration were adopted to test for non-stationarity and to establish long run relationship amongst variables. Vector Error Correction Model was used to measure the speed of adjustment.

Model Specification

This study adopts the work used by Onuorah and Ozurumba (2013) in their study on "The relationship between bank credit and economic growth in Nigeria"; and Ogege and Boloupremo (2014) in their study on "Deposit Money Banks and Economic Growth in Nigeria". This is specified as follows:

$$RGDPt = 0 + 1PRODt + 2COMMt + 3SERVt + 4OTHEt + \mu t \quad \ldots\ldots\ldots\ldots\ldots(1)$$

Where; RGDP is the real gross domestic product. Then PROD is the credit to production sector; COMM is credit to general commerce; SERV is credit to service sector; while OTHE is credit to other sector.

However, this study differs from other works (Onuorah & Ozurumba, 2013 and Ogege & Boloupremo, 2014) mentioned above, while the duo limited their studies to the finance allocations to different sectors in the economy, this study further inspects the impact of broad money supply (M2) and loan-to-deposit ratio on economic growth; and then controlled for the number of DMBs branches existing in Nigeria as at the date reviewed. Broad money supply (M2) represents the total amount of monetary assets (such as time and savings deposits, demand deposits) available in the economy while loan-to-deposit ratio measures the percentage of deposits made available for loanable funds to the economy.

Thus, the model is modified to suit this study and provide support for financial intermediation theory. This is presented as follows:

$$EG = f(PRD, COM, SER, OTH, BMS, LDR, NBB)$$

When expanded it becomes:

$$EG = \beta_0 + \beta_1 PRD_t + \beta_2 COM_t + \beta_3 SER_t + \beta_4 OTH_t + \beta_5 BMS_t + \beta_6 LDR_t + \beta_7 NBB_t + \mu_t \ldots\ldots\ldots(2)$$

Where;

EG = Economic growth proxy for Real GDP

PRD   = Aggregate of total DMBs loans to production sector

COM   = Aggregate of total DMBs loans to general commerce

SER   = Aggregate of total DMBs loans to service sector

OTH   = Aggregate of total DMBs loans to other sector

BMS   = Aggregate of total broad money supply

LDR   = Aggregate of total Loan to deposit ratio

NBB   = Total number of bank branches in Nigeria

μ = error term

β_0 = constant term

β_{1-7} = explanatory variables coefficients

The reason for the modification was because this study focused on assessing the relationship between sectoral allocation of DMBs credits and economic growth in Nigeria; hence relevant variables are included in the model. Thus, the total amount of money available in the economy was used to capture broad money supply. While loan-to-deposit ratio captures the percentage of deposits DMBs made available as loanable funds to the economy. However, the study employs data on the number of DMBs' branches in Nigeria as an explanatory variable (to capture accessibility to external financing) mediating the relationship between economic growth and sectoral allocation of deposit money bank credits. The choice of the control variables is motivated by existing empirical work in literature as found in Alwell (2016).

A priori Expectation

Positive effect is expected between the independent variables and economic growth as well as the control variables except for loan to deposit ratio. A negative relationship is expected for this variable. The signs of the coefficients are thus expected to be greater than zero (i.e. β_{1-5}; $\beta_7 > 0$ and $\beta_6 < 0$). That is, a unit increase in all the independent variables will cause an upward movement in economic growth but a unit increase in loan to deposit ratio will cause a downward movement in economic growth.

Data Presentation and Results
Table 1 Descriptive statistics

	GDP (₦ billion)	PROD (₦ billion)	GCOM (₦ billion)	SERV (₦ billion)	OTH (₦ billion)	BMS (₦ billion)	LDR (%)	NBB
Mean	20780	1985	662	2.30	5.13	4283	0.65	3262
Med.	6804	274	28	0.35	5.83	1074	0.67	2407
Max.	94145	19679	9642	9.32	9.53	18901	0.86	5809
Min.	135	9.35	2.75	0.00	0.59	23.81	0.38	1367
S. Dev.	29362	4418	1943	3.47	2.92	5950	0.12	1495
Obs.	30	30	30	30	30	30	30	30

Source: Author's Computations, (2017)

During the periods under review, Table 4.1 revealed that the average GDP was ₦20.780 trillion with maximum of N94.145 trillion and minimum of N135 billion. In the same vein, the average credits allocated by deposit money banks to the production sector was ₦1.985 trillion with maximum of ₦19.679 trillion and minimum of ₦9.35 billion, general commerce was ₦662 billion with maximum of ₦9.642 trillion and minimum of ₦2.75 billion, service sector was ₦2.30 billion with maximum of ₦9.32 billion; and other sectors was ₦5.13 billion with maximum of ₦9.53 billion and minimum of ₦590 million. On the other hand, it was also revealed that the average money supplied to the economy by monetary authorities was ₦4.283 trillion during the periods under review with maximum of ₦18.901 trillion and minimum of ₦23.81 billion. However, the average loan to deposit ratio was 65% with maximum of 86% and minimum of 38%. This implies that 65% of total deposits were allocated (in form of loanable funds) by deposit money banks to the various priority sectors in the economy with maximum of 86% and minimum of 38%. Lastly during the periods under review, there were averagely 3262 deposit money bank branches in the economy with maximum of 5809 and minimum of 1367 bank branches in Nigeria.

Augmented Dickey-Fuller (ADF) Unit Root Test
This is a pre-requisite for confirming the order of integration for time series data. In this study, application of this test is to determine the order of integration, stationarity and non-stationarity of variables.

Table 2: Augmented Dickey-Fuller (ADF) Unit Root Test

Variables	Level			First Difference		
	t-stat	5% Critical Value	Status	t-stat	5% Critical Value	Status
EG	-2.842	-2.989	Non-Stationary	-3.845*	-2.989	I(1)
p-value	0.4028			0.0025		
PROD	-2.513	-2.989	Non-Stationary	-3.980*	-2.989	I(1)
p-value	0.6328			0.0368		
GCOM	-2.535	-2.989	Non-Stationary	-3.167*	-2.989	I(1)
p-value	0.7843			0.0424		
SERV	-2.095	-2.989	Non-Stationary	-5.336*	-2.989	I(1)
p-value	0.7988			0.0000		
OTH	-0.099	-2.989	Non-Stationary	-7.985*	-2.989	I(1)
p-value	0.3496			0.0000		
BMS	-2.061	-2.989	Non-Stationary	-4.004*	-2.989	I(1)
p-value	0.3991			0.0051		
LDR	-2.002	-2.989	Non-Stationary	-4.559*	-2.989	I(1)
p-value	0.0347			0.0002		
NBB	-0.254	-2.989	Non-Stationary	-4.023*	-2.989	I(1)
p-value	0.9317			0.0013		
Note: The ADF test is generated by a model with intercept, trend and intercept and none for level test, first difference and second difference. The (*) indicate the rejection of null hypothesis at the 5% of level of significance. If p-value is <0.05 reject H0 and if p-value > 0.05 we cannot reject the H0.						

Source: Author's Computations, (2017)

From table 2, the test indicates that DMBs credit to PROD (production sector), GCOM (general commerce), SERV (service sector), OTH (other sector) were stationary at first difference. In tandem, BMS (Broad money supply), LDR (loan deposit ratio) and NBB (number of bank branches) were all stationary at first difference.

Cointegration Test

The study employ the cointegration test established by Johasen and Juselius (1990) and Johansen (1991) to investigate the existence of a long relationship between bank credits and economic growth. This was after the order of integration has been established.

Table 3: Johansen Test for Cointegration

Series: EG PROD GCOM SERV OTH MON LDR NBB				
Lags interval (in first differences): No lags				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5% Critical Value	1% Critical Value
None *	0.9980	431.29	159.52	171.09
At most 1 *	0.9848	250.36	125.61	135.97
At most 2 *	0.8263	128.95	95.75	104.96
At most 3 *	0.7574	78.20	69.82	77.82
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5% Critical Value	1% Critical Value
None *	0.9980	180.93	52.362	58.668
At most 1 *	0.9848	121.40	46.231	52.308
At most 2 *	0.8263	50.756	40.077	45.869
At most 3 *	0.7574	41.072	33.876	39.370

Source: Author's Computations, (2017)

Table 3 shows the trace statistic values are greater than the critical value at 1% and 5% level, suggesting that at least there one cointegration relationship among the variables. This indicates that the economy of Nigeria under examination is stationary at least in one direction and therefore, stable. Hence, this ruled out spurious correlations and implied that at least one direction effect could be established among the variables.

Furthermore, the maximum eigenvalue test depicts more conclusive evidence on the number of vectors in the system. The results again confirm that there is at least one cointegrating vector. It can be concluded that there is at least one common factor driving economic growth in Nigeria. As a result, the null hypothesis that there is no cointegration is rejected at 1% and 5% level respectively. Thus, in the long run, the variables move together.

Vector Error Correction Model (VECM)
After cointegration test, VECM reveals the presence of the long run relationship among selected variable. VECM adjusts to both short run modification in variable sand the deviation from equilibrium when a set of variables are found to have one or more cointegrating vectors.

Table 4: Vector Error Correction Estimates

Type of causality									Long-run
	Short-run								
Variable	$\Delta\Delta lnEG_{t-1}$	$\Delta\Delta lnPROD_{t-1}$	$\Delta\Delta lnGCOM_{t-1}$	$\Delta\Delta lnSERV_{t-1}$	$\Delta\Delta lnOTH_{t-1}$	$\Delta\Delta lnBMS_{t-1}$	$\Delta\Delta lnLDR_{t-1}$	$\Delta\Delta lnNBB_{t-1}$	ECT_{t-1}
	Coefficient								
$\Delta lnEG_t$	-	0.0354	0.0160	0.0115	0.0337	0.0032	-0.0001*	-0.0326**	-0.4698
p-values	-	0.553	0.501	0.804	0.619	0.709	0.057	0.013	0.000
$\Delta lnPRD_t$	-5.58	-	-0.7681	-2.0761	-3.8306	-2.914***	-0.0002	-0.6039	-0.4169
p-values	0.031	-	0.422	0.265	0.160	0.000	0.406	0.249	0.000
$\Delta lnGCO_t$	12.77	-8.589***	-	-5.704***	-8.379***	0.3373	-0.0003	0.6146	-0.2786
p-values	0.000	0.000	-	0.003	0.002	0.337	0.175	0.247	0.000
$\Delta lnSER_t$	23.11	25.57***	9.726***	-	26.81***	6.097***	0.0008**	-0.2301	-0.3413
p-values	0.000	0.000	0.000	-	0.000	0.000	0.021	0.794	0.000
$\Delta lnOTH_t$	0.8425	2.8458***	0.935***	2.153***	-	1.589***	0.0002*	0.2437	-0.4284
p-values	0.374	0.001	0.008	0.002	-	0.000	0.056	0.204	0.000
$\Delta lnBMS_t$	-0.6874	-3.9100	-1.567***	-2.472***	-4.065***	-	-0.0001	0.4882	-0.2504
p-values	0.475	0.000	0.000	0.000	0.000	-	0.330	0.012	0.000
$\Delta lnLDR_t$	3955.2	5003.27*	1993**	3756*	5220*	308.34	-	-95.96	-0.1064
p-values	0.162	0.056	0.016	0.065	0.079	0.416	-	0.867	0.027
$\Delta lnNBB_t$	2.71**	1.0267	0.3829	1.0981	0.0874	0.1519	0.00015	-	-0.0128
p-values	0.015	0.321	0.353	0.172	0.941	0.310	0.870	-	0.697
	R-squared = 0.8864			F-statistic = 15.61					
	Adj. R-squared = 0.8296			Prob(F-statistic) = 0.0000					
	*Note: t-stats are significant @ ***1%, **5% and *10%*								

Source: Author's Computations, (2017)

The table 4 reveals that the coefficients of the error-correction terms (ECTs) have negative signs and are all significant statistically in all VECMs at 1% and 5% critical levels except for NBB. This means that there is bidirectional relationship between the selected variables. This cued form the results of Granger causality within the VECM framework. This implies that long run causality runs from the independent variables (PRD, GCOM, SERV, OTH, BMS, LDR and NBB) to economic growth in Nigeria. Hence, increase in credits to priority sectors, broad money supply, loan to deposit ratio and access to credits generate more than proportionate increase in GDP and vice versa. In addition to that, the significant level exhibited implies that exposure of the Nigerian economic system to shock or fluctuation will converge the long run equilibrium at a speed of 46.98% for EG, 41.69% for PRD, 27.86% for GCOM, 34.13% for SERV, 42.84% for OTH, 25% for M2, and 10.64% for LDR respectively in each period. That is, between 46.98% and 10.64% of the disequilibrium in the previous year will automatically correct itself in the current year in the Nigerian economy. This evidence revealed that the Nigerian economic system though stable, is still narrow, hence its ability to respond to temporary shock is frail.

Regression Results and Hypothesis Testing

Table 5: OLS Regression Estimates

Variables	Level Model I		Variables	First Difference Data Model II	
	Coefficient	Prob.		Coefficient	Prob.
C	3119.422	0.6274	C	-173.016	0.8908
PROD	16.7918***	0.0005	DPROD	0.42572**	0.0325
GCOM	-11.7655***	0.0052	DGCOM	-1.42417	0.4318
SERV	-11.8616***	0.0004	DSERV	-1995.39**	0.0175
OTH	-4.34185***	0.0072	DOTH	-755.333	0.6035
BMS	3.35449***	0.0005	DBMS	6.81778***	0.0004
LDR	-4436.629	0.5209	DLDR	-9996.088	0.2828
NBB	0.07150	0.9691	DNBB	-0.36616	0.9143
R-Squared = 0.8875			R-Squared = 0.5460		
Adj. R-Squared = 0.8533			Adj. R-Squared = 0.4016		
F-Stats = 349.96			F-Stats = 3.7803		
F-Stats (prob.) = 0.0000			F-Stats (prob.) = 0.0077		
Durbin-Watson stat = 2.0862			Durbin Watson stat = 2.1242		
*Note: t-stats are significant @ ***1%, **5% and *10%*					

Source: Author's Computations, (2017)

Table 5 reveals the results of the OLS regression estimates. Two models were used. Model I used the level data to reveal the nature of the data while model II used first differenced data in order to tackle the problem of multicollinearity detected in model I as a result of high R-squared. Evidence from model I revealed that credit allocated by deposit money banks to the production sector is positively significant at 1% level while credit allocated by deposit money banks to general commerce, service sector and other sectors indicated a significant but negative relationship with economic growth at 1% level. Furthermore, broad money supply showed a significantly positive relationship with economic growth at 1% level while loan to deposit ratio (LDR) has insignificant negative relationship with growth of the economy, however total number of bank branches is positively related to economic growth in Nigeria but not significant.

Moreover, Table 4.5 revealed that the coefficients of determination (R^2) for model I stood at 88.75%. This indicates that 88.75% of the variation in GDP is explained by the changes in the independent variables as well as the control variable. Similarly, the result reveals that model 1 is at 1% statistically significant when economic growth (EG) is proxied by real GDP as indicated by the probability value of 0.0000. This indicates that model 1 is jointly significant when explanatory variables are taken together with the explained variable (EG). Lastly, there is absence of serial correlation as indicated by Durbin-Watson statistic value of 2.0862.

Discussion of Findings: Short-Run Causality (VECM) and OLS regression
VECM results showed that there exist short run bidirectional causality between the total number of bank branches and economic growth at 5% level of significance. Hence, access to DMBs credits generates a favourable economic condition in Nigeria. While at 5%, 1% and 1% level of significance, a unidirectional causality runs from credit allocated by deposit money banks to the production sector, general commerce and service sector to economic growth respectively.

The results as displayed in Table 5 for Model 1 showed that credit allocated by deposit money banks to the production sector is positively significant at 1% level. This means that credit allocated to the production sector contributes positively to economic growth in Nigeria. Thus, increase in credits allocated to the production sectors generate more than proportionate increase in GDP. This result is in line with the findings of Fapetu and Obadele (2015) and provides evidence to validate the theory of financial intermediation. Hence, DMBs in Nigeria should be encouraged to extend more credits to the production sectors.

In contrast, credit allocated by deposit money banks to general commerce, service sector and other sectors indicated a significant but negative relationship with economic growth at 1% level. This implies that credit allocated to general commerce does not contribute positively to the growth of the Nigerian economy. This finding does not provide evidence to support the theory of financial intermediation. This may be as a result of epileptic flow of banks credit to the commercial sector or government influence. However, this result is consistent with the findings of Ihemeje & Chinedu (2016) and Fapetu & Obadele (2015).

Similarly, the negative but significant impact of credit allocated to the service sector is consistent with the findings of Fapetu and Obadele (2015). This shows that credit allocated to the service sector does not lead to increase in GDP. This finding does not provide evidence to support the theory of financial intermediation. This may be due to the influence of government, hence privatisation of public enterprises is recommended in order for the sector to contribute positively to GDP in Nigeria.

Lastly, the negative but significant impact of credit allocated to the other sector contradicts the findings of Fapetu and Obadele (2015). Also, the finding does not provide evidence to support the theory of financial intermediation. This plainly points to the failure of implementation of policy prescriptions by the banking regulators on the part of deposit money banks and that banking reforms have not translated to economic growth in Nigeria.

In addition, there exist a significant positive relationship between broad money supply and economic growth at 1% critical level. This means that the higher the volume of money in circulation the better the growth of the Nigerian economy. Hence, an increase in or injection of money supply in to the wider economy will result in the economic growth in Nigeria. This is consistent with the findings of Modebe et. al (2014); Anyanwu and Kalu (2014). This finding, also provide evidence to substantiate the Harrod–Domar model. Thus, government through the functions of monetary authorities should monitor and control the volume of currency in circulation in order to determine the quantity per time and be able to control the level of inflation in the Nigerian economy.

However, loan to deposit ratio (LDR) has an insignificant negative relationship with economic growth while number of bank branches is positively related to economic growth in Nigeria but not significant.

This implies that the higher the ratio of loan to deposits the less the impact on economic growth. This finding does not provide evidence to validate the Harrod–Domar model. Hence, there is the need for bank regulators to strike a balance between saving and lending rate in order to keep interest rate within reasonable limit, stimulate deposit mobilisation and ultimately lending activities. The negative sign of LDR is consistent with apriori expectation and the findings of Toby and Peterside (2014).

Evidence from model II using the differenced data, shows that both credit allocated to the production sector and broad money supply are positively significant at 5% and 1% critical level respectively while credit to the service sector is significant and negative at 5% level. These findings provide evidence to corroborate the theory of financial intermediation and Harrod-Domar model.

Conclusion and Recommendations

This study concludes that sectoral allocation of credits by deposit money banks to the productive sector, general commerce, services and other sectors are determining factors for the growth of Nigerian economy. Hence, the performance of these sectors is vital to economic growth and consequently requires sufficient investment funds to quicken their operations and enhance productivity of the economy. In addition, findings revealed that broad money supply is a factor to reckon with in the allocation process due to its positive effect on the economic growth in Nigeria

Based on findings and conclusion, the study recommends the followings measures:
1. DMBs in Nigeria should maximise the enormous opportunities existing in both the urban and rural areas to increase mobilisation of deposits; access to credits and ultimately profits by establishing more branches and expanding their operations.
2. Monetary authorities should come up with resolute efforts to bridge the gap between loan to deposit ratios in order to keep interest rate within reasonable limit. As this will encourage bank customers to save funds needed for investment opportunities.
3. Banks should channel funds into productive investments as this will enhance the growth of the economy and boost the returns on investment (ROI) of banks in Nigeria.
4. An appropriate policy should be fashioned out by the policy makers through establishment of financial infrastructures which will encourage the bidirectional flow of funds between the banks (providers of investible funds) and the priority sectors which need these credits.
5. Monetary authorities should regulate the activities of banks strictly to ensure that they further the growth of credits to private sectors by examining such factor as lending rate which can possibly undermine lending to these sectors.

References

Adeagbo, A. (2014). Overview of the building and construction sector in the Nigerian Economy. *Nigerian Institute of Social and Economic Research*, 349-366.

Adenugba, A. A. (2015). Banking system credit as an instrument of economic growth in Nigeria *European Journal of Business, Economics and Accountancy, 3*(7), 1-23.

Agu, C. C. (1988). *Nigerian banking structure and performance: the banking system's contribution to economic development.* African-Fep Publishers.

Agbanike, T. F., Onwuka, K. O., & Eyoghasim, M. (2016). Bank lending and output growth in Nigeria. *Journal of Economics and Sustainable Development, 7*(7), 30-37.

Akujuobi, A. B., & Chima, C. C. (2012). The production sector credit and economic development of Nigeria, a cointegration analysis. *International Journal of Event Management Research, 2*(11), 1-17.

Alabbadi A (2017). Commercial bank credit and sectoral economic growth: Granger causality analysis. SAMA Working Paper, WP/17/3.

Aliyu, M., & Kabiru, S. A. (2013). Effect of 2004 banking reforms on loan financing of small and medium scale industries in Nigeria. *International Journal of Small Business and Entrepreneurship Research, 1*(3), 44-53.

Antwi, S., Mills, E. F., & Zhao, X. (2013). Impact of macroeconomic factors on economic growth in Ghana: A Cointegration Analysis. *International Journal of Academic Research in Accounting, Finance and Management Sciences, 3*(1), 35-45.

Anyanwu, U., & Kalu, A. O. (2014). The effect of Central Bank of Nigeria money supply management on commercial bank loans and advances and output. *Singaporean Journal of Business Economics and Management Studies, 2*(12), 1-10.

Aurang, Z. (2012). Contributions of banking sector in economic growth: a case of Pakistan. *Economics and Finance Review, 2*(6), 45–54.

Azege, M. (2007). *The impact of financial intermediation on economic growth: The Nigerian Perspective.* Research Paper, Department of Economics, Lagos State University.

Bada, O. T. (2016). The effect of banks' credits on the development of manufacturing and agricultural sectors of Nigeria's. Economy. *International Journal of Advanced Studies in Economics and Public Sector Management,5*(1), 114-130.

Bencivenga, V., & Smith, B. (1991). Financial intermediation and endogenous growth. *The Review of Economic Studies, 58*(2), 195-209.

Central Bank of Nigeria (2011). *Annual report and statement of accounts.* Abuja: Central Bank of Nigeria.

Chinweoke, N., Egwu, C. C., & Nwabeke, E. C. (2015). Impact of commercial banks' loans and advances to agriculture and manufacturing sectors on the economic growth of Nigeria: *International Journal of Arts and Sciences, 8*(5), 29–36.

Domar, E. (1946). Capital expansion, rate of growth, and employment. *Econometrica. 14*(2), 137–147.

Fapetu, O., & Obalade, A. A. (2015). Sectoral allocation of banks' credit and economic growth in Nigeria. *International Journal of Academic Research in Business and Social Sciences, 5*(6), 161-169.

Greenwood, J., & Jovanovic, B. (1990). Financial development, growth, and the distribution of income, *Journal of Political Economy, 98*(5), 1076-1107.

Gurley, J., & Shaw, E. (1967). Financial structure and economic development. *Economic Development and Cultural Change, 15*(3), 257-268.

Hassan, O. M. (2016). Implications of commercial bank loans on economic growth in Nigeria. *Journal of Emerging Trends in Economics and Management Sciences, 7*(3), 124-136.

Harrod, R. F. (1939). An Essay in Dynamic Theory. *The Economic Journal.* 49(193) 14–33.

Ihemeje, C. J., & Chinedu, I. H. (2016). Sectoral distribution of deposit money banks credits and economic growth in Nigeria. *International Journal of Innovative Research & Development. 5*(1), 51-57.

Isa, R. B., Jimoh, R. A., & Achuenu, E. (2013). An overview of contribution of construction sector to sustainable development in Nigeria. *Journal of Business Management, 1*(1), 1-6.

Iwedi, M., Okey-Nwala, P. O., & Wachukwu, I. P. (2015). Causality Modelling of the banking sector credits and economic growth in Nigeria. *IIARD International Journal of Banking and Finance Research. 1*(1), 1-12.

Johansen S., & Juselius, K. (1992). Some structural hypothesis in a multivariate co-integration analysis of purchasing power parity and uncovered interest parity for the U.K. *Journal of Economics. 4*(53), 211-244.

Kanu, S. I., & Ozurumba, B. A. (2013). Migrant remittances and economic growth in sub-Saharan Africa. *Interdisciplinary Journal of Contemporary Research in Business, 4*(10), 534-550.

Kareem R. O., Osisanya, S. O., & Isiaq, T. S. (2017). Commercial bank financing and agricultural sector output in Nigeria. *Journal of Research in Business, Economics and Management. 8*(1), 1302-1310.

Kolapo, F. T., Ojo, M. O., & Olaniyan, T. O. (2018). Deposit Money Banks' Credit To Private-Public Sectors And Economic Development Nexus: Nigeria In Focus. International Journal Of Academic Research In Business And Social Sciences, 8(5), 215–233.

Korkmaz, S. (2015). Impact of bank credits on economic growth and inflation" *Journal of Applied Finance and Banking, 5*(1), 57-69.

Leitao, N. C. (2012). Bank credit and economic growth: a dynamic panel data analysis", T*he Economic Research Guardian, 2*(2), 256-267.

Lemo, T. (2005). *Regulatory oversight and stakeholder protection, a paper presented at BGL merger and acquisition interaction seminar,* held at Eko Hotel and Suit, V.I, Lagos, Nigeria.

Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature, 35,* 688-726.

Masha, S. N., Essien, M. L., Musa, D. B., & Abeng, M. O. (2004). Theoretical issues in financial intermediation, financial markets, macroeconomic management and monetary policy in Nigeria.

Marlyse, L. N., & Bakang, M. (2014). Effects of financial deepening on economic growth in Kenya. *International Journal of Business and Commerce, 4*(1), 1-50.

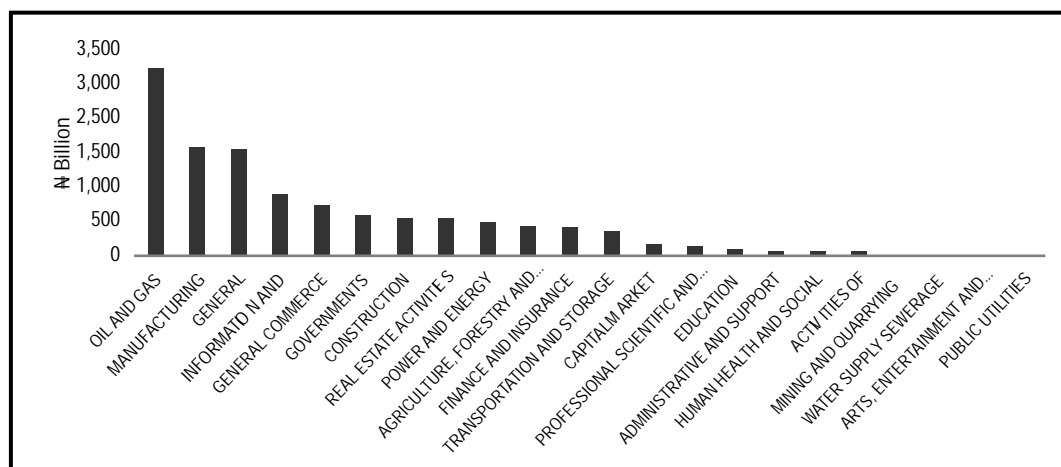McKinnon, R. (1973). *Money and capital in economic development.* Washington: The Brookings Institute.

Modebe, N. J., Ugwuegbe, S. U. & Ugwuoke, R. O. (2014). The impact of bank credit on the growth of Nigerian Economy: a cointegration approach. *Research Journal of Finance and Accounting, 5*(10), 323-335.

Ngai, H. (2005). *Bank credit and economic growth in Macao,* Monetary Authority of Macao.

Nigerian Deposit Insurance Corporation, (1990). *Prudential regulations and guidelines for banks,* Lagos.

Ningi, S. I. (2013). Analysis of the effects of the banking sector consolidation on the real sector of the Nigerian economy. *IOSR Journal of Business and Management, 13*(6), 08-13.

Nwakanma, P. C., Nnamdi, I. S., & Omojefe, G. O. (2014). Bank Credits to the private sector: potency and relevance in Nigeria's economic growth process. *Accounting and Finance Research, 3(*2), 23-35.

Nwanyanwu, O. J. (2008). An analysis of banks' credits on the Nigerian economic growth, *Journal of Economics, 4*(1), 43-58.

Nwite, C. S. (2014). Determinants of financial intermediation and its implications on economic growth in Nigeria. *British Journal of Marketing Studies. 3*(9), 49-56.

Obamuyi, T. M., Edun, T. A, & Kayode, O. F. (2011). Bank lending, economic growth and the performance of the manufacturing sector in Nigeria. *European Scientific Journal, 8*(3), 1-14.

Ogege, S., & Boloupremo, T. (2014). Deposit money banks and economic growth in Nigeria. *Financial Asset and Investing Journal, 1,* 41-50.

Olajide, O. T., Akinlabi, B. H., & Tijani, A. A. (2012). agricultural resource and economic growth in Nigeria. *European Scientific Journal, 8*(26), 103–115.

Olanrewaju, O. G., Aremo, A. G., & Aiyegbusi, O. O. (2015). Banking sector reforms and output growth of manufacturing sector in Nigeria.. *Journal of Economics and International Finance, 7*(8), 183-191.

Oni, O., Akinlo, E. A., & Oladepo, E. D. (2014). Impact of bank credit on the real sector: evidence from Nigeria. *Global Journal of Business Research, 8*(3), 39-47.

Onuorah, A. C., & Ozurumba, B.A. (2013). Bank credits: an aid to economic growth in Nigeria. *Information and Knowledge Management, 3*(3), 91-95.

Pandey, I. M. (2006). *Financial management: credit policy.* 9th Edition, New Delhi, Vikas Publishing House PVT LTD.

Sanusi, L.S. (2012). *Banking reforms and its impact on the Nigerian economy.* A paper delivered at the University of Warwick's Economic Summit, UK.

Sogules, I. W., & Nkoro E. (2016). The impact of bank credits to agricultural and manufacturing sectors on economic Growth in Nigeria. *International Journal of Economics and Financial Research, 2*(4), 74-78.

Toby, J. A., & Peter-side D. B. (2014). Analysis of the role of Bank in ?nancing the agricultural and manufacturing Sectors in Nigeria. *International Journal Research in Business Management,* .*2*(2), 9-22.

Venkati, P. (2016). Impact of Banks deposit mobilization and credit financing on capital formation. *International Research Journal of Marketing and Economics, 3*(6), 67-87.

Wachtel, P. (2001). Growth and Finance: What do we know and how do we know it?, *International Finance, 4*(3), 335-362.

Were, M., Nzomoi J., & Rutto N. (2012). Assessing the impact of private sector credit on economic performance: Evidence from sectoral panel data for Kenya. *International Journal of Economics and Finance, 4*(3), 182-190.

World Bank, (1996). *Financial systems and development.* World Development Report, New York, Oxford University Press.

Yakubu, Z. & Affoi, A. Y. (2014). An analysis of commercial banks' credit on economic growth in Nigeria. *Current Research Journal of Economics Theory, 6*(2), 11-15.
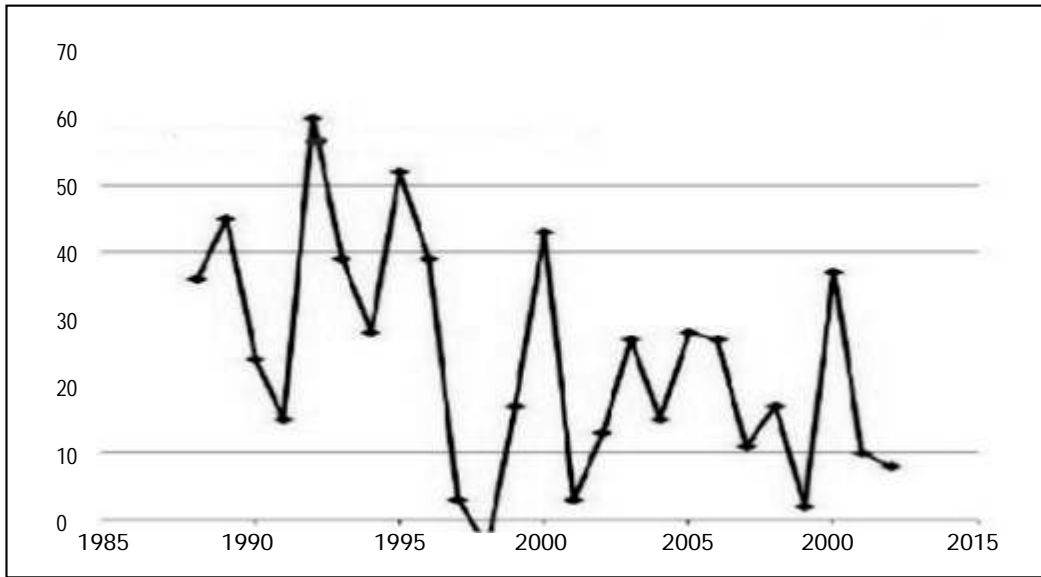
Appendices
Appendix 1

Source: CBN Financial Stability Report, 2015
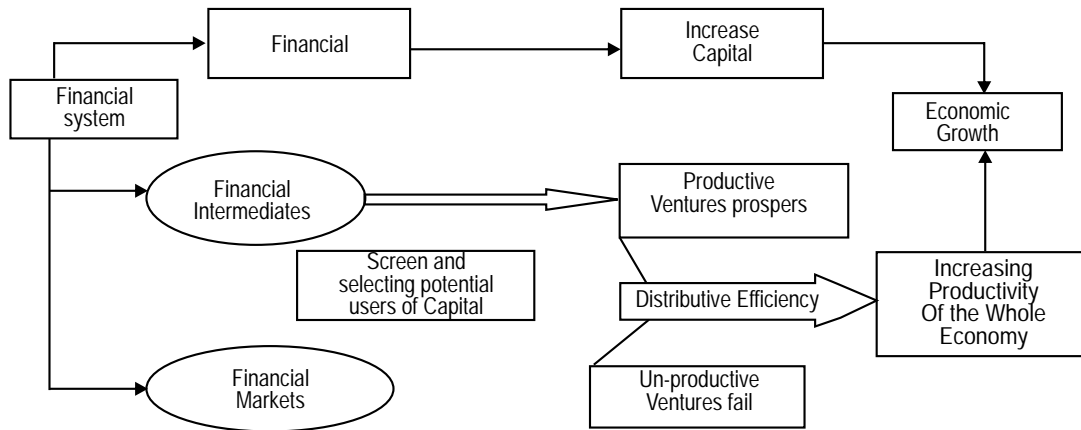Fig. 2.1: Deposit Money Bank Credit

Appendix 2

Source: CBN researcher's computation from Statistical bulletins
Fig. 2.2: GDP Growth rate in Nigeria

Appendix 3

Source: Adapted from Abdul Waheed (2009)
Fig. 2.3: Linkages between Credit allocation and Economic growth