INTEREST RATE AND COMMERCIAL BANKS' LENDING OPERATIONS IN NIGERIA: A STRUCTURAL BREAK ANALYSIS USING CHOW TEST

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ABSTRACT

This study used the classical least squares method to empirically examine interest rate deregulation effect on the lending operations of Nigerian commercial banks for the period 1970 to 2013. The period was divided into two policy regime periods; the regulated interest rate era spanning 1970-1986 and the deregulated period 1987-2013. The Chow test was applied to examine if there was any significant difference in the relationship between interest rate and commercial banks' lending for the two periods. The empirical result obtained for the interest rate regulation era showed that interest rate spread and statutory liquidity ratio had negative and significant effect on the volume of commercial banks' loans, while fixed exchange rate had negative and insignificant impact on banks' loans and advances. It was found that Monetary Policy Rate (MPR) and inflation rate exert a positive and significant impact on banks' loans for the period. For the deregulation era, the result showed that MPR and the exchange rate had significant impact on banks' loans and advances. While the former exerted a negative impact, the later had a positive influence on loans and advances. Interest rate spread, statutory liquidity ratio and inflation rate were found not to have significantly impacted on commercial banks' loans and advances for the period. The chow test result confirms the impact of deregulation on volume of commercial banks loans and advances due to the deregulation of interest rate. The study submits that, there exist a relatively inelastic relationship between interest rate spread and banks' loans at the deregulated interest rate era. This was largely attributed to imperfections as well as the under-developed nature of the financial market. The study suggests that the monetary authority should evolve a guided interest rate deregulation regime with MPR increasingly used to regulate the activities of commercial banks in the area of loans and advances. In order to deepen the financial sector, there is the need to improve financial infrastructure which will enhance commercial bank operations resulting in a more competitive financial market and an improved investment climate in the country.

KEYWORDS: Interest rate, bank lending, Deregulation, chow test

INTRODUCTION

Commercial banks' role in the economic development of any nation remains paramount hence the activities of these banks are of primary concern to monetary authorities. As financial intermediaries they serve as funds mobilizers from the surplus economic units of the economy and advance same to the units with shortfall in financial resources. Little wonder they are often times referred to as the 'lubricants of the economy'. Governments the world over in an attempt to evolve an efficient banking system have tended to focus on the activities of commercial banks due to the central role they play in the development of a robust and

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sustainable economy. This is not just for effective intermediation but also for the protection of the depositors' funds, maintenance of public confidence as well as to guard against systematic risk and large scale failure of the sector.

Commercial banks' operations are highly regulated and supervised, either directly or indirectly in virtually all the countries of the world. This is in view of the inherent failure of market forces to always equilibrate the bulk of transactions in the economy. There is also the possibility of market participants taking undue risks which could impair the stability of these institutions. However, the extent and manner in which such regulatory activities are carried out varies with countries and their administrative regimes. In Nigeria, the Central Bank of Nigeria (CBN) is at the apex of the regulatory and supervisory framework with the Nigerian Deposit Insurance Corporation (NDIC) jointly sharing the responsibilities for the supervision of insured banks. The Act that instituted CBN in 1959, stipulates that every licensed bank renders a periodic statements of their assets and liabilities to the apex bank. These documents are then published on a regular basis to evaluate the extent of compliance with stipulated laws and the overall policy effects on the economy.

Between the year 1959 and 1985, the Nigerian banking sector witnessed several regulatory measures by the CBN. During this period, the Nigerian financial sector was characterized by exchange rate and interest rates rigidities. While mandatory sectorial allocation of bank credit to the private sector was also a common place. Under the administrated interest rate regime, Anyanwu and Oaikhenan (1995) opined that interest rates were largely very low, averaging 5.78%, 4.94%, 5.58% and 7.80% for minimum Rediscount Rate (MRR), Treasury bill, deposit and lending rates respectively for the period 1970-1985. As a result of this, Amassoma and Nwosa (2011) aptly added that aggregate credit to domestic economy also grew sluggishly, moving from N1.14b in 1970 to N10.78b in 1980 and N32.68b as at 1985. The oil glut of this period notwithstanding, the economy at this point was engulfed in general lull which persisted until 1986.

The Nigerian economy witnessed a major shock following the global fall in oil price in the late 1970's and early 80's. Consequent upon this, the Federal government under the supervision of the World Bank and the International Monetary Fund (IMF) adopted the Structural Adjustment Programme (SAP) in 1986. With the establishment of the second tier Foreign Exchange Market (SFEM), financial authorities began the deregulation process, with exchange rate liberalized in 1986. This was closely followed by gradual introduction of indirect monetary tools including Open Market Operation (OMO), cash reserve ratio and other selective policy measures. Commercial bank's cash reserve requirement was particularly reduced from 30% of demand deposit and call money in 1987 to 20% in 1988 before it was raised back to 30% in 1990 Anyanwu (1995).

It was against the backdrop of these events that interest rates were deregulated on the 1st of August 1987 to surmount the bottlenecks involved in financial intermediation in the country with full deregulation following in October 1996. In the last decade alone, Treasury bill rate, Monetary Policy rates (MPR) and lending rate reached a peak of 18.9%, 19.0% and 24.9% respectively in 2002. Deposit rate on the other hand had within this period been persistently low, only 4.1% at most and was lowest in 2012 at 1.75% CBN (2012).

The deregulation of interest rate translated into an immediate rise in the gap between several monetary policy targets and their actual outcomes. Between 1986 and 1994, the narrow money supply M_1 and the net credit to government fell short of their target. The outcomes of these variables for 1986 were -2.9% and -3.8% growth rates, as against their targeted values of 7.8% and 5.9% respectively. Beyond 1986, the actual outcome of narrow money supply as well as the Net credit to government outwits their target. It was 49.07% and 209.4% as against their targeted values of 13% and 10.9% respectively in 1990 and by 1993 the gulf stretched further, reaching actual value of 56.32% and 103.23% far beyond their targets of 20% and 14% respectively CBN (2012).

It follows therefore that deregulation of interest rate resulted in wide disparities in monetary policy targets with possible implications for commercial bank lending operations. Most studies focus on the effect of interest rate on economic growth (Oshikoya, 1992; Odhiambo, 2010) or on bank lending separately during regulation or deregulation periods (Amassoma, 2011; Nwakama and Mbatogu, 2004; Owolabi, 2014). There is dearth in the literature on the relationship between interest rate and commercial bank lending taking the effect of policy change into consideration Accordingly, this

research empirically examines the effect of interest rate on commercial banks' loans and advances in the regulated and deregulated periods while applying the chow test to ascertain if there is any significant difference in impact for the two periods.

2. Literature Review
2.1. Financial liberalization thesis

Financial liberalization thesis owes its origin to the seminal works of Mackinnon (1973) and Shaw (1973). Proponents of this theory lean on the supply-lending relationship between growth and development. The theory believes that when real interest rates are high, it increases the level of financial deepening and the level of savings resulting in a more efficient allocation of financial resources among productive sectors. Following Classical economics, interest rate is seen as providing the returns for choice. When interest rates are kept artificially low Shaw (1973) submits that it will result to shallow financing. The central argument of the theory is that financial repression and indiscriminate distortion of financial prices including interest rate and exchange rate will lead to both a decrease in depth of the financial sector and a loss of efficiency with which savings are intermediated. According to Mackinnon (1973) the desire to hold money relates in a positive manner with the rate of returns on capital. The shortcomings of this hypothesis is that it was developed on the premise that all investments are self-financing which is an over simplification of modern financial environment where money is by nature socially embedded. The holding of money even in the simple rural setting discussed by McKinnon is not simply driven by investment needs, the productivity of capital and real return on holding money but mostly by social obligations and other constraints

2.2. The Keynesian theory of interest rate

In his general theory of unemployment, interest rate and money, John Maynard Keynes defined interest rate as the reword for not hoarding but parting with liquidity. By this definition Keynes identified the supply of and the demand for money as the major determinants of interest rate. The model assumes that the supply of money is taken as "given", thus leaving interest rate to essentially depend on money demand. In Keynes analysis, there are three motives for holding money; namely the transaction, the precautionary and the speculative motives. Among these motives, emphasis is placed on the transaction and the speculative motives.

While the transaction motive is said to vary directly with the level of income;
$$Md_T = L_1(Y) \quad \text{---------------------- -----------} \quad (2.1)$$

The speculative demand is a decreasing function of interest rate;
$$Mds = L_2(r) \text{ ----------------------------------} \quad (2.2)$$

The Keynesians model predicts that as money supply increases, interest rates decreases "ceteris paribus", thereby yielding a negatively sloppy demand curve. However, Keynes postulated that as money supply keeps increasing, it comes to a point where further increases in money supply will not impact on the level of interest rate any longer. The economy becomes satiated with the currency in circulation, hence the notion of "liquidity trap".

2.3. Effect of interest rate on bank lending and economic growth

The literature on the economic effect of interest rate are divided into two: the ones analyzing the direct effect of interest rate on economic growth and the second strand which looks at the indirect effect and reviews interest rate impact on other variables such as bank lending. Prominent among the pioneering studies in the first group are the seminal works by McKinnon (1973) and Shaw (1973) who independently hypothesized that financial repression will reduce the real growth rate of an economy. The McKinnon-Shaw hypothesis suggested that investment responds negatively to real lending rate but positively to the growth rate. Other authors who investigated the effect of interest rate on economic growth include: Bashar et al (2007) who found a negative relationship between financial liberalization and economic growth and concluded that financial reforms in Bangladesh had failed to attract new investments for the period. In a study by Khalid (2007)on the Macroeconomic effects of financial liberalization in Pakistan, he found that interest rate liberalization has not impacted positively on economic growth in that country as most indicators of financial liberalization did not show any significant impact on savings, investment or growth. Another study by Oshikoya (1992) investigated the impact of interest rate deregulation on the economic growth of Kenya for two periods; the era of regulation and

deregulation. He found that real interest rate had a significant but negative impact on economic growth during regulation and a positive and significant relationship during the deregulation era. Also, Odhiambo (2010) investigated the dynamic relationship between interest rate reform, bank-based development and economic growth in South Africa using two models in a step-wise fashion. He found that financial development which results from interest rate reforms does not Granger-cause investment and economic growth and submitted that even though interest rate reforms impacted positively on financial development in South Africa, the causal relationship tends to take a demand following path.

The second group of studies reviews the indirect effect of interest rate on output via bank lending or operations. For instance Amassoma et al (2011) studied the relationship between interest rate deregulation, lending rate and agricultural productivity in Nigeria and found that interest rate deregulation had a positive and significant impact on agricultural productivity. They recommended a market determined interested rate that will stimulate and enhance agricultural production in the country. Also Acha and Chigozie (2011) adopted an analytical view of the impact of interest rate on banks' operations in Nigeria and the result shows that interest rate had failed to predict the variation in savings and investment in Nigeria over the years. Rather, other factors such as confidence in banking system and preference for cash and income exerted greater influence on investment. The study proved the potency of Monetary Policy Rate's (MPR) effectiveness in regulating banks loans and advances in Nigeria. In a similar study, Olokoyo (2011) investigated the determinants of commercial banks' lending behavior in Nigeria for the period 1980-2005 and used the Ordinary Least Square (OLS) method to test for a functional relationship between commercial banks' loans and volume of deposit, lending rate etc. It was found that commercial banks deposits have the greatest impact on their lending behavior. In the similar study, Nwakama and Mbatogu (2004) examined the influence of interest rate regimes on deposit money banks' credit in Nigeria from 1971-2000 and found that though intermediation of commercial banks greatly improved during the deregulation period, this has not translated into an improved standard of living. The study suggested that lending rate does not influence demand for domestic credit in

Nigeria, unlike the deposit rate. The study suggested the need for a partial deregulation of interest rate which will ensure conventional rates that will enhance a sustainable economic growth. On his part, Owolabi (2014) assessed the extent to which financial sector liberalization has affected banks performances in Nigeria and the result obtained showed that, though financial sector liberalization had effect on banks performance, it was not significant to bring about the desired economic transformation and suggested the need to provide the precondition for the efficient liberalization of the financial sector in order to harness the trickle down effect. From the above review, the motivation for this work stems firstly from the fact that apart from the work by Oshikoya (1992) which was conducted in Kenya, there is dearth in the literature in Nigeria which investigates the link between interest rates and banks' lending operations for the regulated and deregulated interest rate regimes. Secondly, interest rate spread has received considerable attention in studies on financial sector reforms across developing countries however the use of this measure has received less attention in previous studies in Nigeria and so this study explores the link between interest rate spread (in both the regulated and deregulated period) and commercial banks' loans and advances.

3.   Empirical Method
3.1   Model specification

It is evident that from the review above, commercial banks' lending is influenced by several factors both at macro and micro levels. According to Soludo (2008), these factors constitute the costs incurred by the banks in extending their services and they vary directly with interest rates. These costs include administrative costs; cash reserve ratio and liquidity ratio requirements. In testing the impact of interest rate deregulation on commercial banks' lending over the years, this study adopts and modifies the empirical model used by Punita and Somaiya (2006). Their model was used to examine the impact of monetary policy on banks' profitability in India and was specified thus:

$$P_t = \beta_0 + \beta_1 BR + \beta_2 LR + \beta_3 CRR + \beta_4 SLR + U \ldots. (3.1)$$

where: P_t is bank profitability, BR is bank rate (equivalence of MPR), LR is lending rate, CRR is cash reserve ratio and SLR is statutory Liquidity ratio

However, the model above will be modified to reflect interest rate effect on commercial banks' lending operations in Nigeria for two periods. Bank profitability (P_t) in equation (3.1) is replaced with the volume of loans and advances of commercial banks in Nigeria (LOA), given that banks' loans and advances is one ideal indicator used to measure its contribution to economic growth in a country (Crowley, 2007). The study retains Bank rate (BR) as Monetary Policy Rate (MPR) and the statutory liquidity ratio reflect the administrative cost of loans to the banks. Deposit lending rates spread (DLS) is introduced to replace lending rate (LR) as originally used. This according to Crowley is most closely related to the banking sectors ability to channel savings to its productive uses. The other explanatory variables are inflation rate and exchange rate. The inflation rate is included to reflect the notion of inflation expectation while exchange rate is meant to cover the effect of the external sector on domestic credit availability.

The model for investigating the relationship between commercial banks' loans and advances and exchange rate is specified thus;

$$LOA = f (MPR, IRS, SLR, EXR, INF)…….\quad (3.2)$$

Where:
LOA is commercial banks' loans and advances
MPR is monetary policy rate
IRS is interest rates spread (Deposit minus lending rate)
SLR is statutory Liquidity ratio
EXR is exchange rate and
INF is inflation rate

In order to provide a workable econometric equation to estimate the model, this study adopts a linear equation as stated below:

$$\ln LOA = \alpha_0 + \alpha_1 MPR + \alpha_2 IRS + \alpha_3 SLR + \alpha_4 EXR + \alpha_5 INF + U \quad …………………........ \quad (3.3)$$

Where all variables remain as defined in equation (3.2). Based on the theoretical underpinning discussed in literature review, Table 1 shows the a priori expected signs of the explanatory variables in relation to the dependent variable.

Table 1: A priori expectation of variables

Variable	Symbol	Parameter estimate	Expected sign
Intercept term	C	r_0	Positive
Monetary Policy Rate	MPR	r_1	Negative
Interest rate spread	IRS	r_2	Negative
Statutory liquidity ratio	SLR	r_3	Negative
Exchange rate	EXR	r_4	Positive/Negative
Inflation rate	INF	r_5	Positive/Negative

The double signs attributed to the parameters estimating exchange rate and inflation rate implies that there is no exact a'priori signs for their coefficients. However, Hugben and Smith (1999) in Amidu (2006) have resolved that both signs are possible outcomes depending on the stability and the equilibrium state of the economy.

3.2 Empirical Results and Discussion of findings

Findings on the effect of interest rate on commercial bank lending operations are discussed in three fold. First, the result of the regulated interest rate regime period, followed by the period of deregulation and then the pooled period. In addition, the chow test result to determine any significant difference in the result for the two periods is analysed.

Table 2: Regression result for the regulated exchange rate period (1970-1986)

Variable	Coefficient	Standard error	t-statistic
C	9.21	0.5509	16.72
MPR	0.31	0.0519	6.06
IRS	-0.28	0.0946	-3.01
SLR	-0.04	0.0069	-5.78
EXR	-0.52	0.3418	-1.54
INF	0.02	0.0093	2.54
R2 = 0.947, Adjusted R2 = 0.923			
SSR1 = 1.374, n = 17			
DW = 2.43			
F-stat = 39.40			

From the result for the first period which span from 1970 to 1986, otherwise referred to as the interest rate regulation period, the variables and their co-efficient as presented in Table 2, interest rate spread (-0.28), statutory liquidity ratio (-0.04), exchange rate (-0.52) and inflation rate (0.02) conformed to their a'priori expected signs while monetary policy rate (0.31) did not. This reveals that a unit increase in interest rate spread, liquidity ratio and exchange rate will lead to a decrease in banks loans and advances by 28%, 4% and 52% respectively. Whereas a unit increases in monetary policy rate and inflation rate will lead to a 30% and 20% increase in loans and advances respectively.

During this period, all the parameter estimates with an exception of exchange rate were statistically significant. This is so since their t-statistics were all equal to or greater than 2 in absolute terms, i.e. (t_{stats}-bj's $\geq$ 2). The model showed a good fit with a very high adjusted R^2 = 0.9231. This implies that about 92% of the total variation in commercial banks' loan and advances were jointly explained by the regressors.

Table 3: Regression result for the deregulated exchange rate period (1987-2013)

Variable	Coefficient	Standard error	t-statistic
C	12.52	0.906	13.83
MPR	-0.09	0.0442	-2.07
IRS	0.02	0.0451	0.343
SLR	-0.02	0.0165	-1.045
EXR	0.03	0.0039	7.728
INF	0.002	0.0104	0.206
R^2 = 0.914 Adjusted R^2 = 0.894			
SSR_2 = 10.501 n_2 = 27			
F-Stat = 44.869			
DW = 0.853			

However, the result for the deregulation period (table 3) shows some level of divergence both in signs and magnitudes. The monetary policy rate (-0.09), statutory liquidity ratio (-0.02), exchange rate (0.03) and inflation rate (0.002) were all consistent with the expected theoretical signs but interest rate spread (0.02) did not conform to expected sign. The result suggests that a unit increase in interest rate spread, exchange rate and inflation rate will lead to an increase in commercial banks loans by 2%, 3% and 0.2% respectively. On the other hand a unit increase in MPR and statutory liquidity ratio will lead to a reduction in banks' loan and advances by 9% and 2% respectively all through the deregulation period.

The test of signifance here shows that exchange rate and the monetary policy rate were statistically significant with t_{stats}-bj's $\geq$ 2. Others such as interest rate spread, liquidity ratio, and inflation rate were not statistically significant for the period. The model showed a good fit with an

adjusted R^2 =0.8940, that is about 89% of the variation in commercial banks loans and advances have been explained by the regressors for the period.

Both models were found to be in overall statistically significant at 5 percent significant level with high F-cal values of 39.43 and 44.87 far beyond their critical values of 3.20 and 2.68 (at 11 and 21 degrees of freedom) respectively.

The result for the pooled period (Table 4) shows that the coefficients for statutory liquidity ratio (-0.06), exchange rate (0.04) and inflation (0.004) conform to the apriori theoretical expectations while those of monetary policy rate (0.10) and interest rate spread (0.02) do not. In terms of statistical significance, monetary policy ratio, statutory lending rate and exchange rate were significant.

Table 4: Regression result for the pooled period (1970-2013)

Variable	Coefficient	Standard error	t-statistic
C	10.74	0.753	14.25
MPR	0.10	0.034	2.835
IRS	0.02	0.051	0.369
SLR	-0.06	0.012	-5.044
EXR	0.04	0.005	8.438
INF	0.004	0.011	0.328
R^2 = 0.924127 Adjusted R^2= 0.914144			
SSR_3 =31.59769, n_3 = 44			
F-stats = 92.56772			
DW = 0.844355			

3.3. The Chow test

This test is used to ascertain the structural stability of the parameters of the explanatory variables as the sample size increases up to the post-SAP era. The test is conducted with the evaluation of the chow's ratio (Gregory Chow 1960) using the formula

$$F^* = \frac{SSRr - SSRur/K}{SSRur/(n_1 + n_2 - 2K)}$$

where
SSRr = Pooled (Restricted) Sum of Squared Residual = SSR_3
SSRur = Unrestricted sum of squared residual = $(SSR_1 + SSR_2)$
K= number of parameters, n = observations .
Using the figures obtained from the calculations as shown in tables 2, 3 and 4, and substituting into the formula above,

$$F^* = \frac{31.59769 - (1.373600 + 10.50165)/6}{(1.373600 + 10.50165)/[17+27=2(6)]}$$

$$= \frac{(31.59769-11.87525)/6}{11.87525/32} \qquad = \qquad \frac{3.2871}{0.3711}$$

$$F^* = 8.8577$$

Comparing the F^* with the F_{tab} at 5 percent significant level,

where $V_1 = 6$, $V_2 = (n_1 + n_2 - 2k) = 32$
$F_{(0.05)} = 2.42$.

Here, $F^* = 8.86 > F_{(0.05)} = 2.42$, hence we reject the null hypothesis and accept the alternative hypothesis. This implies that the relationship between interest rate and commercial banks loans differ significantly for the regulated and deregulated interest rate regimes. In other word, the test indicates that policy changes in interest rate management had significantly affected commercial banks loans and advances in Nigeria. There was in fact a policy shock on bank lending activities as a result of the deregulation of interest rate.

Commercial banks' loans and advances were relatively interest-elastic under the regulated interest rate regime and this significantly affected their operations negatively. On deregulation, interest rate spread impacted positively on banks' loans and advances. This relationship was however insignificant. Before the liberalization exercise, the fixed exchange rate negatively but insignificantly affected lending operations. On liberalization the reverse was the case. The result shows that interest rate spread, and statutory liquidity ratio negatively and significantly impacted volume of loans and advances. This implies that banks loans were relatively interest elastic under the regulated interest rate regime. The wider the spread in interest rates, the lower the volume of loans and advances extended. This was largely due to lower rate of deposits at the bank and the underdeveloped state of financial market then. Monetary policy rate (MPR) and the inflation rate positively and significantly affected commercial banks loans and advances. Increases in each of these variables were associated with about 3%

and 2.3% increases in banks' loans. The fixed exchange rate before deregulation negatively affected banks' loans; however the effect of this was insignificant to cause a variation in such lending operations.

During the deregulated interest rate regime, monetary policy rate and the statutory liquidity ratio negatively affected the volumes of banks loans and advances. Moreover, while the later was insignificant, the former was significant (t=-2.0689). The implication is that the increasing administrative cost of commercial banks loans exerted an adverse impact on volume of loans. This reflects the tendencies of banks to charge higher lending rates to cover such overheads. Interest rate spread at the deregulation era exerted a positive impact on banks' loans. While this is consistent with the Mackinnon and Shaw (1973) postulates, the expected operational and allocative efficiencies are questionable. Moreover its insignificance in the model lends support to the claim that the liberalization was oversold to developing countries. This further affirms past studies which cast serious doubts on the view that the interest elasticity of saving is significantly positive and easy to detect in developing countries. However, the present study suggests that, the proposition holds true only at the deregulated interest rate regime. Exchange rate was found to exact a positive and significant impact on banks' loans contrary to the negative and insignificant relationship revealed during the pre-SAP era. Finally, inflation rate still maintained a positive but rather insignificant impact on commercial banks loans.

4.   Recommendations and conclusion

The empirical result obtained suggest that the change in the effect of interest rate on commercial banks loans and advances from negative during regulation to positive during deregulation was actually as a result of policy change. The study recommended that the monetary authorities should increasingly use the MPR to regulate the commercial banks operations since its effect is seen to trickle down to other rates thereby exerting the desired impulse. Also, commercial banks should devise strategies to attract and retain financial deposit since this will help them improve their lending performances as well as their profitability.

The major policy thrust of interest rate deregulation in Nigeria is to improve the ease with which investible funds are channeled to the productive sectors of the economy. At the heart

of this study is the quest to empirically validate the rationale for such policy thrust on the Nigerian financial market. Using interest spread as a proxy for lending and deposit rate movements. The study suggested that interest rate deregulation impacted positively but insignificantly on banks' loans and advances. The study therefore enforces the proposition that interest rates' are not the major determinants in extension of loans in most developing countries (Nigeria inclusive).

Though, the wider spread in interest rates at the post SAP era is relevant for commercial banks' lending decisions. The impact of the high lending rate is not pronounced. This could be attributed to the weak competitiveness in the financial market, a situation where commercial banks still holds the largest share in that market. The high lending rate during this period also reflected the increase in administrative costs, uncertainty and risk of economic agents and the financial depth of the market.

The significant impact of exchange rate on commercial banks' lending activities at deregulation stresses the increasing role of exchange rate expectation in allocation of accumulated savings among domestic financial assets. The study also showed that the Monetary Policy Rate exert a negative but significant impact on commercial banks' lending operations in Nigeria. This could be seen why CBN had in recent years resorted to the MPR as a measure to curb the increasing volume of non-performing loans as interest spread widen further during the deregulation. However, a comparative analysis of the empirical results for the two periods suggests that the role of interest rates in determining banks loans was more pronounced at the interest regulation regime.

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Appendices
Appendix 1: Sectoral Allocation of commercial Banks' Credit between 2003 and 2013 in per cent.

Sectors	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Agriculture	5.16	4.46	2.44	1.96	3.11	1.37	1.12	1.67	2.20	3.73	4.40
Manufacturing	24.46	21.86	17.68	17.66	10.13	11.96	12.3	12.82	13.71	13.94	12.6
mining/quarrying	7.98	8.63	8.66	9.96	10.19	10.86	10.01	15.3	18	18.8	20.6
Communication	24.41	25.19	18.87	19.82	24.06	16.73	11.8	10.7	13.6	11.8	13
Export	2.8	2.1	1.3	2.1	1.4	1	0.5	0.6	0.8	0.5	0.2
Others	35.19	37.76	51.05	48.50	51.11	58.08	64.27	58.91	51.69	51.23	49.20
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Appendix1b: Sectoral Allocation of commercial Banks' Credit between 2003 and 2013
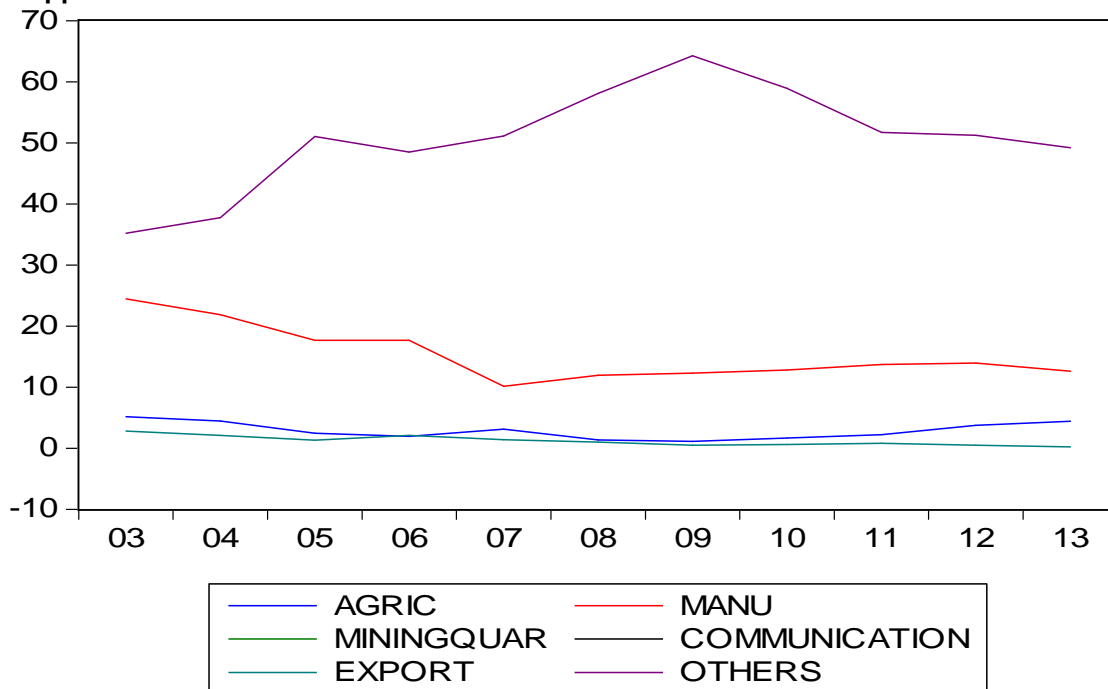
Appendix 2: Result for regulated exchange rate period 1(1970-1986)

$\ln LoA = 9.21 + 0.31MPR - 0.28DLS - 0.04SLR - 0.52EXR + 0.02INF$

SE =   0.5509   0.0519   0.0946   0.0069   0.3418   0.0093

t =   (16.716)   (6.063)   (-3.010   (-5.782)   (-1.535)   (2.541)

R^2 = 0.9471   Adjusted R^2 = 0.9231

SSR_1 = 1.373600, n1 = 17

F-stat = 39.403089

DW = 2.428312

Appendix 3: Result for deregulated exchange rate period 1(1987-2013)

$\ln LoA = 12.52 - 0.09MPR + 0.02DLS - 0.02SLR + 0.03EXR + 0.002INF$

SE   =   0.9058   0.0442   0.0451   0.0165   0.0039   0.0104

t   = (13.8276) (-2.0689) (0.3427) (-1.0447) (7.7283)   (0.2063)

$R^2 = 0.9144$ Adjusted $R^2 = 0.8940$

SSR_2 = 10.50165, $n_2 = 27$

F-stats = 44.86992

DW =   0.853188

Appendix 4: Result for regulated and deregulated exchange rate period 1(1970-2013)

$\ln LoA = 10.74 + 0.10MPR + 0.021DLS - 0.06SLR + 0.04EXR + 0.004INF$

SE   = 0.7535   0.0343   0.0517   0.0112   0.0047   0.0108

t   = (14.2516) (2.8359) (0.3697) (-5.0444) (8.4383)   (0.3285)

R^2 = 0.924127   Adjusted $R^2 = 0.914144$

SSR_2 = 31.59769, $n_3 = 44$

F-stats = 92.56772