THE INFLUENCE OF INTEREST RATE DEREGULATION AND MONETARY POLICY EFFECTIVENESS ON ECONOMIC GROWTH IN NIGERIA

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Abstract

This study examined the influence of deregulation of interest rate and monetary policy effectiveness on Nigerian economy. The study covered the period 1970-2018 which encompasses a period of major reforms in monetary policy. The Autoregressive Distributed Lags (ARDL) approach to co-integration, structural break test and error correction mechanism (ECM) test were applied in the study. The results revealed positive impact of deregulation on economic growth in Nigeria. It also revealed that deregulation policy has been a hindrance to the efficacy of monetary policy. The study therefore recommends a guided and a well-planned deregulation policy embedded with increase in the level of money supply coupled with more attention on the productive sector of the country. Banks should be directed to make adequate credits available to investors to lubricate the economy for greater output. The Securities and Exchange Commission should re-engineer and re-invigorate optimal development of both money and capital markets to achieve the desired results.

1. INTRODUCTION

Interest rate and monetary policy are very vital to the growth and development of a nation's economy. The formulation and implementation of all monetary policies in a country is usually vested in the central bank of such country. Akiri and Adofu (2007) opined that the banking industry, owing to the nature of activities, role and its function is heavily regulated sectors globally. As financial intermediaries, banks help in channelling funds from surplus sectors to the deficit ones, in order to lubricate the economy. Bearing in mind that funds are owned by other people (the investing public/depositors), the banking ethics demand that such

funds should be efficiently and effectively managed in order to build public confidence and reduce distress syndrome.

Under the deregulated interest rate system, the interplay of market forces of demand and supply determines interest rate. Despite the deregulation, the Nigerian economy faces challenges. The basic goal at each point in the application of these monetary policies have always included the regulation and control of the volume and cost of money, as well as the direction in which credits should follow in order to achieve macroeconomic policy objectives (Akingunola, Adekunle & Ojodu, 2012). But the Nigerian economy is still grasping for optimal solution in spite of deregulation and the applicable monetary policy. Hence, there is dire need to delve into this current research. Indeed, the deregulation of interest rate in 1987 has resulted into a plethora of problems for monetary policy effectiveness in Nigeria and this has necessitated the following questions that deserve keen consideration: has interest rate deregulation significantly influenced the level of economic growth? To what extent has inflation influenced the level of Nigeria's economy? Has exchange rate significantly influenced the level of economic growth? What is the influence of money supply on economic growth? This research therefore, seeks to address the influence of deregulation of interest rate and monetary policy effectiveness on economic expansion in Nigeria with the following objectives:

- Assess the influence of interest rate deregulation on economic growth.
- Determine the effect of money supply on economic growth.
- Examine the impact of private sector credit on Economic growth.
  The hypotheses for this study include the following:

- Ho**:** there is no relationship between interest rate deregulation and economic growth.
- Ho**:** there is no relationship between money supply and economic growth.
- Ho**:** there is no relationship between private sector credit and economic growth in Nigeria

2. LITERATURE REVIEW

According to Koutsoyiannis (2006), although each country must design its own blueprint for financial reform, some general principles seem to be universally applicable, at least, in countries where policy makers have some control over the liberalization process. Such principles are: First, policy makers have to decide when to start liberalizing interest rates and how fast to move. Several scholars like Egwaikhide et al (1994); Adekaye (2002); Ibimodo (2005); Chete (2006); Balogun (2007); Obamuyi (2009) and Adeniran. (2014) respectively examined interest rate policy in Nigeria; deregula6tion of interest rate in Nigeria; a review of banking reforms in Nigeria; how monetary policy can enhance remittances for economic growth; interest rate determination; deregulation and bank lending in Nigeria, not much attention has be paid to examining the influence of interest rate deregulation and monetary policy effectiveness on economic growth. Few studies that examined the relationship between interest rate deregulation, monetary policy effectiveness

and economic growth were either bias to quantitative or qualitative methodology, or the available literature on this all important research topic are inadequate. This present research work intends to fill this gap in literature by establishing respectively the problems of interest rate, inflation, exchange rate, money supply, and private sector credit on economic growth in Nigeria. This study also shows a precise and concise presentation of the qualitative and analytical framework to be adopted in obtaining and analysing the data in the research study.

Numerous literature reviewed in the course of this research, could not agree on the likely influence of interest rate changes and other macroeconomic variables on economic development. James et al (2013) used OLS to identify the existing relationship between variables and concluded that the interest rate impact on economic growth in Nigeria and a long-term relationship exists between interest rate and economic growth. In their study, Udoka and Roland (2012) used OLS technique to investigate the effect of interest rate fluctuation on the economic growth and found that there existed an inverse relationship between interest rate and economic growth in Nigeria.

However, Babalola, *et al* (2015) adopted OLS technique to determine the effect of inflation and interest rate on economic growth for the periods 1981-2014. Their study found out that the variables have negative effect on Economic growth. Hussain (2011) studied the effect of inflation on economic growth in Pakistan found out that the independent variables has about 99% influence on economic growth. In a related research, Richard and Hammed (2012) used multiple regression of the OLS to determine the impact of interest rate and other macroeconomic variables such as inflation rate, exchange rate on capital market growth. Findings of the study showed that interest rate has adverse effect on capital market growth.

Nwoko, Ihemeje and Anumudu (2016), examined the impact of monetary policy on the economic growth using the OLS technique of estimation for the period, 1980-2011. The results obtained show that interest rate liberalization impacted negatively on the Nigerian economy.

3.0 RESEARCH METHODOLOGY

THEORETICAL FRAMEWORK

This study will adapt the neoclassical growth theory as its theoretical framework. It emphasizes the three factors that influence the growth of an economy which includes capital, labour and technology. It states that a temporary equilibrium can be achieved, when capital size, labour and technology is appropriately adjusted. The theory is dynamic and lay emphasis on technological and institutional changes which can enhance productivity and output. The neoclassical production function depicts that:

$$Y = AF (K, L) \qquad (1)$$

Where:

Y –Denotes an economy's gross domestic product (GDP)

K – Represents its share of capital

L – Describes the amount of unskilled labour in an economy

A – Represents a determinant level of technology.

Improvement in technology is generally measured by growth in Total Factor Productivity (TEP). It is believed that total factor productivity could be enhanced by the government monetary policies (i.e. money supply and interest rate) embarked upon by the government. Such that the baseline model for the study (equation 1) becomes:

$$Y = F (INF, INR, EXR, MS, PSC, CAP, LAB) \qquad (2)$$

Where: Y = Gross Domestic Product

INF = Inflation

INR = Interest Rate

EXR = Exchange Rate

MS = Money Supply

PSC = Private Sector Credit

CAP = capital in the economy

LAB = labour component of the production function (proxied by secondary school enrolment rate)

However, any empirical estimation of Equation 2 will produce highly biased coefficients since three of the variables (INR, MS and PSC) all measure a similar factor (monetary policy direction). These variables are therefore highly collinear and will result in biased estimates.

MODEL SPECIFICATION

The basic specification therefore used in the study adopted from equation (2) above will be a model of the form

$$GDP = F (MPOL, INF, EXR, CAP, LAB, OPEN) \qquad (3)$$

Where MPOL is monetary policy factor which captures all three variables of INR, MS and PSC. Trade openness (OPEN) is also included in the model since the Nigerian economy is highly open and non-inclusion of this factor can lead to omitted variable bias in the estimates (Iyoha, 2004). Equation (3) does not however contain the indicator variable of interest rate deregulation. Deregulation will be captured by a dummy variable that takes 1 for the period after the deregulation of interest rates (i.e., after 1987) and 0 for the period before deregulation. Equation 3 can therefore be re-specified as

$$GDP = F (MPOL, DDUM, INF, EXR, CAP, LAB, OPEN) \qquad (4)$$

Where DDUM represents the dummy variable that captures interest rate deregulation. Finally, we also specify equation to capture the influences of deregulation on the effectiveness of monetary policy in the Nigerian economy. In order to capture this influence, a slope dummy (with respect to monetary policy) is specified within the model as:

$$GDP = F (MPOL, DDUM, MPOL*DDUM, INF, EXR, CAP, LAB, OPEN) (5)$$

Where MPOL*DDUM is the indicator of the slope dummy that measures how deregulation influences the impact of monetary policy on the economy. Where all variables are as earlier defined.

ESTIMATION TECHNIQUES

In this study, the Autoregressive Distributed Lags (ARDL) approach to cointegration relationship, which is based on the methodology outlined in Pesaran et al (2001) is adopted. The method also allows for inferences about the long-run estimates, which is not possible under alternative cointegration procedures Bahmani-Oskooee, & Fariditavana, (2016). Ohiomu & Oluyemi (2019). In relation to the current study, the model in Equation (5) above is written in the ARDL form as:

$$\Delta RGDP_t = \alpha_0 + \phi MPOL_{t-1} + \delta_1 DDUM_{t-1} + \delta_2 MPOL * DDUM_{t-1} + \delta_3 INF_{t-1}$$
$$+ \delta_4 EXR_{t-1} + \delta_5 CAP_{t-1} + \delta_6 LAB_{t-1} + \delta_7 OPEN_{t-1}$$
$$+ \sum_{i=1}^{p-1} \psi_i \Delta RGDP_{t-i} + \sum_{i=1}^{q_1-1} \varphi_1 \Delta MPOL_{t-i} + \sum_{i=1}^{q_1-1} \varphi_2 \Delta DDUM_{t-i}$$
$$+ \sum_{i=1}^{q_1-1} \varphi_3 \Delta INF_{t-i} + \sum_{i=1}^{q_1-1} \varphi_4 \Delta EXR_{t-i} + \sum_{i=1}^{q_1-1} \varphi_5 \Delta X_{t-i} + \xi_t (6)$$

Where X is the matrix of other explanatory variables including CAP, LAB and OPEN. The conditional long-run model can then be produced from the reduced form solution of (6), when the first-differenced variables jointly equal zero. The long-run coefficients and error correction model are estimated by the ARDL approach to cointegration, where the conditional ECM is estimated using OLS .The values of the short-run tax effort is given by the $\varphi_i S$, while the values of long-run growth (or RGDP) is represented as $\dfrac{\varphi_{it}}{1-\varphi_{it}}$ for tax-to-income tax effort estimations.

4. PRESENTATION OF RESULTS AND INTERPRETATION

DESCRIPTIVE STATISTICS

Table 1. Descriptive Statistics

Variable	Mean	Max.	Min.	Std. Dev.	Skew	Kurt.	J-B	Prob.
GDPGR	1.29	12.46	-9.20	4.88	-0.17	2.97	0.24	0.89
INTR	14.60	29.80	3.50	6.88	-0.17	2.19	1.57	0.46
M2YR	22.42	38.00	9.32	6.72	0.50	2.45	2.69	0.26
PSCRY	15.73	36.70	4.78	6.61	0.85	3.82	7.29	0.03
INFL	19.18	76.76	0.22	16.46	1.84	5.86	44.53	0.00
EXRT	70.37	307.00	0.55	88.19	1.19	3.68	12.52	0.00
OPEN	32.47	58.92	7.36	12.14	-0.38	2.46	1.77	0.41
SER	27.13	54.17	4.26	14.96	0.36	2.39	1.81	0.40
CAP	30536.7	70338.5	2717.1	19335.3	0.61	2.11	4.63	0.10

Source: Author's computation

For the other variables in the study in table 1, the average M2 to GDP ratio is 14.60 percent which also indicates that financial depth is still shallow for the Nigerian economy. There appears to be the overall preponderance of informality in the financial sector which is not essentially captured within the formal sector that contributes to GDP. The maximum ratio for the financial depth is relatively high at 24.3 percent, although the minimum value is quite low also. The ratio of credit to GDP in the economy is 11.18 on average for the period, which is similar to that of the financial depth ratio. Average interest rate for the period was 17.59 percent, and it is quite high, considering that average inflation rate was 20.23 percent. Apparently, the financial market in Nigeria has a less optimum structure, based on the high interest rates and high inflation rates in the economy. The average exchange rate was 82.9 to the dollar over the period. Again, this is a very high rate and also implies that the financial sector in Nigeria is less efficient over the period. Also, average inflation was high over the period at 19.18 percent.

In the study, the initial pattern of relationship among the variables in the study is also considered based on the estimated correlation coefficients in Table 2. From the Table, a high and positive relationship is shown to exist between economic growth both M2 to GDP ratio and PSC to GDP ratio. Thus, there is indication that both financial depth and credit to the private sector move in the same direction with economic growth in Nigeria. Rising financial sector development is associated with economic performance over time. Economic growth also has a significant positive correlation with the naira-dollar exchange rate. On the other hand, there is negative and insignificant correlation coefficient between economic growth both interest rate and inflation in the economy. Thus, as expected rising interest rates appear to be inimical for economic growth in Nigeria. Thus, if deregulation actually promoted interest rates increases in the country, then such deregulation may have hurt the growth of the economy over time in Nigeria.

Table 2. Correlation Matrix

Variable	RGDP	M2	PSC	INTR	INF
M2	0.854 (0.000)				
PSC	0.884 (0.000)	0.969 (0.000)			
INTR	-0.034 (0.843)	-0.011 (0.950)	-0.071 (0.677)		
INF	-0.281 (0.092)	-0.285 (0.087)	-0.277 (0.097)	0.292 (0.079)	
EXRT	0.828 (0.000)	0.823 (0.000)	0.780 (0.000)	0.090 (0.595)	-0.369 (0.025)

Source: Author's computation

A high and significant positive relationship is also seen between financial depth (M2) and PSC, indicating that financial sector appears to develop interdem.

Also, M2/GDP and CPS/GDP have significant positive correlation with exchange rate. Indeed, all the financial sector variables appear to move together in terms of relationships.

Table 3. Testing the Existence of a Long-Run Relationship (Bounds Cointegration Test Result).

Null Hypothesis: No long-run relationships exist						
	Money supply		**Private credit**		**Interest rate equation**	
Test Statistic	Value	K	Value	K	Value	k
F-statistic	3.69	7	4.18	7	2.46	7
Critical Value Bounds						
Significance	I0 Bound	I1 Bound	I0 Bound	I1 Bound	I0 Bound	I1 Bound
10%	2.03	3.13	2.03	3.13	2.03	3.13
5%	2.32	3.5	2.32	3.5	2.32	3.5
2.50%	2.6	3.84	2.6	3.84	2.6	3.84
1%	2.96	4.26	2.96	4.26	2.96	4.26

Source: Author's computation

According to the empirical realizations of the F-value in Table 3, we find that for money supply and private credit models, the computed F-values of 3.69 and 4.18 are respectively higher than the critical F-value of the upper bounds at 3.50 at the 5 percent level. This shows that the null hypothesis of no long-run relationship in the case of unrestricted regressions of these models is rejected at all the 5 percent significance level. For the interest rate equation, the computed F-value is only greater than the critical lower bounds F-value of 2.32 at the 5 percent level. Though the null hypothesis of no cointegration is also rejected, it is at a lower level. These results reveal that for each of the measurements, the independent variables had significant and strong long run relationships with the manufacturing performance and cointegration is established Apparently, the monetary policy indicators move interdem with economic growth over time in Nigeria.

ARDL RESULTS

The Bounds test for long run relationships shows that the selected independent variables in the study actually move together with economic growth in the long run. This gives the mandate to proceed for the estimation of the long run ARDL models that were specified in Chapter Three. The optimum lag length of one period for the model was selected based on the Shwarze-Bayesian Information criterion (SIC). The results of the estimates are presented for the budget performance indicators. The diagram in Figure 1 shows the selected optimum estimates for the over parameterized model – which shows the initial structure of the short run relationships. It can be seen from the diagram that the lag structure of 4, 4, 4, 3, 3, 4 is the optimum for the estimated relationships.
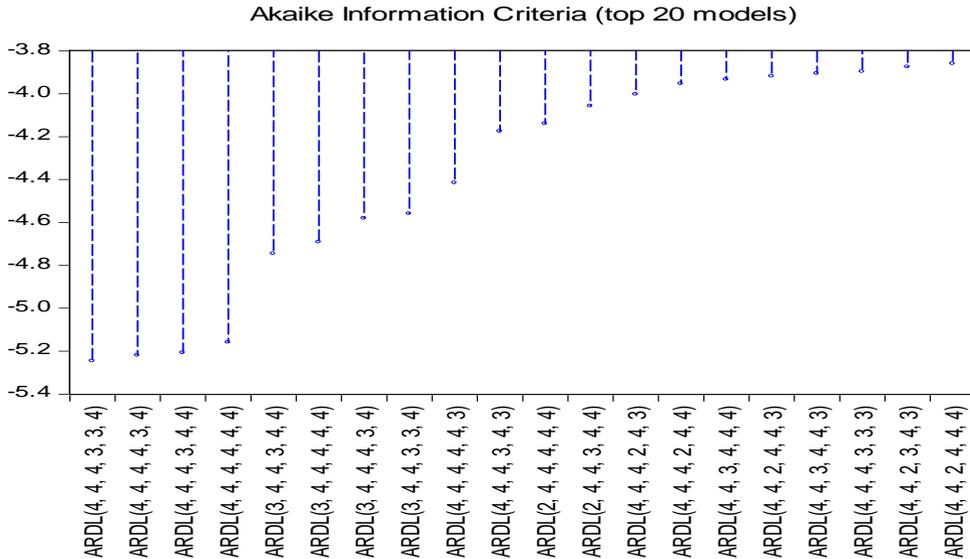
Figure 1. Optimum Estimates for The Over Parameterized Model

In Table 4, the estimates of the over parameterized ARDL model – which shows the short run pattern of behaviour among the relationships is presented. The goodness of fit statistics for the results for each of the indicators of monetary policy is relatively high, with the adjusted R-squared value at 0.91 to 0.97. Thus, the results show that a high proportion (over 90 percent) of the movements of economic growth in Nigeria from the specified equation was explained by the explanatory variables. Moreover, the F-value for the equations is very high and significant at the 1 percent level. Thus, the hypothesis of no significant relationship between the selected monetary policy indicator and the dependent variable combined is easily rejected.

Table 4. Over parameterized results

Variable	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
constant	2.719	0.007	4.584	0.000	1.570	0.215
LRGDP(-1)	0.209	0.169	0.137	0.326	0.544	0.000
LM2	2.236	0.000	--	--	--	--
LM2(-1)	-1.766	0.003	--	--	--	--
LPSC	--	--	3.100	0.000	--	--
LPSC(-1)	--	--	-2.683	0.000	--	--
LINTR	--	--	--	--	0.268	0.348
DDUM	20.199	0.007	27.197	0.000	-0.190	0.869
DDUM(-1)	-15.596	0.023	-22.702	0.001	--	--
M2_DDUM	-1.959	0.006	-2.672	0.000	-0.020	0.961

M2_DDUM(-1)	1.559	0.020	2.328	0.001	--	--
LINFL	-0.012	0.739	-0.011	0.756	0.026	0.487
LCAP	0.002	0.971	0.009	0.875	-0.008	0.906
LSER	0.773	0.025	0.500	0.507	0.866	0.005
LSER(-1)	--	--	1.760	0.131	--	--
LSER(-2)	--	--	-1.552	0.021	--	--
LOPEN	-0.427	0.004	-0.413	0.005	-0.223	0.121
LOPEN(-1)	0.230	0.102	--	--	0.477	0.001
Adj. R-sq.	0.979		0.976		0.914	
F-statistic	186.02		146.27		180.85	
D.W. stat	1.96		1.95		1.903	

Source: Author's computation

Given that the estimates are for the over parameterized tests; we focus on the overall performance of the model. It can be seen that most of the estimated coefficients are significant at the 1 percent level. This clearly demonstrates that the use of the optimum four period lags in the estimation was successfully operationalized. More importantly, we consider the coefficients of the lagged dependent variable which shows the persistence of disequilibrium in the relationships. For each of the equations, the coefficient of the lagged dependent variable ($LRGDP_{t-1}$) is significant at the 1 percent level and has the expected positive sign. This shows that long run stability can be established in the model. The coefficients are also small with that of interest rate equation only reaching 0.544, which shows that long run disequilibrium do not persist for long in the economy on the basis of monetary policy effectiveness.

RESULTS OF THE CO-INTEGRATING EQUATION

The main focus of the estimations in this section is on the outcome of the cointegrating equations. The cointegrating equation is the equation that provides balanced long run properties of the relationships based on the over parameterized estimation. Thus, the cointegrating equation provides the dynamic structure of the relationship in terms of highlighting the long run properties of the estimations. In Tables 5 to 7, the results of the cointegrating equations are presented for each of the estimates using different monetary policy measures. In the results, we focus on the tendency for long run stability adduced from the coefficient of the ECM terms. It should be noted that the cointegrating equations only report the standardized estimates of the coefficients and not the diagnostic test results. For each result, the short run estimates are in the upper panel while the long run estimates are in the lower panel.

In Table 5, the particular effects of the explanatory variables on economic growth are observed by considering the individual coefficients of the explanatory variables in terms of the signs and significance. A close look at the individual coefficients of the variables for the short run results reveals that the coefficient of

money supply (M2) is significant at the 1 percent level (given that the probability values of the t-test is less than 0.01). This coefficient is also positive, which shows that money supply has a significant positive impact on economic growth in Nigeria. This result is in line with the theoretical postulations of using money supply to stimulate the economy through aggregate demand. Thus, money demand has a strong impact on economic growth in the short run. The coefficient of deregulation dummy (DDUM) also passed the test at the 1 percent level with a positive coefficient, suggesting that interest rate deregulation actually had a positive impact on economic growth in Nigeria. This implies that deregulation was good for the Nigerian economy. However, the coefficient of the interaction between deregulation and M2 has a significant negative relationship, which indicates that in the short run, deregulation lowered the capacity of monetary policy to improve economic growth in the country. The coefficient of labour is also positive and significant in the short run result.

Table 5. Results for model with money supply

Cointegrated short run equation			
Variable	**Coeff.**	**t-Stat.**	**Prob.**
D(LM2)	2.236	3.894	0.000
D(DDUM)	20.20	2.876	0.007
D(M2*DDUM)	-1.959	-2.914	0.006
D(LINFL)	-0.012	-0.336	0.739
D(LCAP)	0.002	0.037	0.971
D(LABOUR)	0.773	2.343	0.025
D(LOPEN)	-0.427	-3.101	0.004
CointEq(-1)	-0.791	-5.305	0.000
Long run equation			
Variable	**Coefficient**	**t-Statistic**	**Prob.**
LM2	0.594	3.066	0.004
DDUM	5.821	3.862	0.001
M2*DDUM	-0.506	-3.474	0.001
LINFL	-0.015	-0.335	0.740
LCAP	0.003	0.037	0.971
LSER	0.978	2.192	0.035
LOPEN	-0.249	-1.211	0.234
C	3.439	3.120	0.004

Source: Author's computation

The coefficient of the error correction term (ECM) is expected to be significant and possess a negative sign. In the estimated equation, the coefficient of the error correction term has the expected negative sign and is significant at the 1 percent level. The significant and negative coefficients indicate that there is capacity for restoring long run stability following any short run deviation of the economy from equilibrium. The coefficient of the ECM term is high at-0.791,

which indicates that up to 79 percent of the long run adjustment to equilibrium is completed within the first year.

For the long run result in Table 5, the coefficients of each of the variables are similar to those of the short run results both in terms of sign and significance. The result shows that in the long run, the coefficient of both money supply and deregulation had a significant positive impact on economic growth, while that of the interaction between the two variables had significant negative impact on the Nigerian economy.

The result of the cointegrating estimates for the model with private sector credit is shown in Table 6. In the result for the short run estimates, the coefficient of private sector credit (PSC) is significant at the 1 percent level along with the coefficient of deregulation. This shows that credit to private sector actually stimulates economic growth in Nigeria. However, when PSC is interacted with the deregulation dummy, the coefficient is negative. This shows that deregulation actually reduced the efficacy of monetary policy in Nigeria in terms of private credit in the system, in the short run.

The coefficient of the error correction term (ECM) has the expected negative sign and is significant at the 1 percent level. The significant and negative coefficients indicate that there is capacity for restoring long run stability following any short run deviation of the economy from equilibrium. The coefficient of the ECM term is also high at-0.863, which indicates that up to 86 percent of the long run adjustment to equilibrium is completed within the first year. This shows that monetary policy is a strong asymptotic tool for quickly promoting economic growth in Nigeria.

For the long run, the coefficients are also similar to those of the short run. The coefficients of PSC and DDUM are both positive and significant at the 1 percent level, while that of PSC interaction with DDUM is negative. This means that even in the long run, the deregulation actually led to drop in the effectiveness of monetary policy as a macroeconomic tool in Nigeria.

Table 6. *Results for model with Private sector credit*

Co-integrated short run equation			
Variable	**Coefficient**	**t-Statistic**	**Prob.**
D(LPSC)	3.100	4.855	0.000
D(DDUM)	27.197	4.166	0.000
D(PSC*DDUM)	-2.672	-4.175	0.000
D(LINFL)	-0.011	-0.313	0.756
D(LCAP)	0.009	0.158	0.875
D(LSER)	0.500	0.671	0.507
D(LSER(-1))	1.552	2.425	0.021
D(LOPEN)	-0.413	-3.004	0.005
CointEq(-1)	-0.863	-6.268	0.000
Long run equation			

Variable	Coefficient	t-Statistic	Prob.
LPSC	0.483	2.585	0.014
DDUM	5.211	3.927	0.000
PSC*DDUM	-0.398	-2.727	0.010
LINFL	-0.013	-0.312	0.757
LCAP	0.010	0.158	0.875
LSER	0.820	2.087	0.045
LOPEN	-0.479	-2.881	0.007
Constant	5.314	4.427	0.000

Source: Author's computation

Finally, the results of the estimation for the model with interest rate are presented in Table 7. From the result of the short run estimates, the coefficients of interest rate, deregulation and the interaction term all failed the significance test even at the 5 percent level. This shows that interest rate changes have no significant impact on economic growth in Nigeria. And the deregulation that affected interest rate shifts was ineffective in changing the pattern of growth in the country. This outcome is robust for both the short run and long run estimates. Thus, interest rate does not appear to be an effective monetary policy too in Nigeria. The coefficient of the error term is however significant at the 1 percent level and has the expected negative sign. This shows that there will be restoration to long run equilibrium following any short term deviation in the system.

Table 7. Results for model with interest rate

Cointegrated short run equation			
Variable	**Coefficient**	**t-Statistic**	**Prob.**
D(LINTR)	0.268	0.951	0.348
D(DDUM)	-0.190	-0.166	0.869
D(INTR*DDUM)	-0.020	-0.049	0.961
D(LINFL)	0.026	0.702	0.487
D(LCAP)	-0.008	-0.119	0.906
D(LSER)	0.866	2.983	0.005
D(LOPEN)	-0.223	-1.587	0.121
CointEq(-1)	-0.456	-3.929	0.000
Long Run Coefficients			
Variable	**Coefficient**	**t-Statistic**	**Prob.**
LINTR	0.588	0.927	0.360
DDUM	-0.415	-0.165	0.870
INTR*DDUM	-0.044	-0.049	0.961
LINFL	0.057	0.700	0.488
LCAP	-0.019	-0.119	0.906
LSER	1.897	4.891	0.000
LOPEN	0.556	1.708	0.096

Constant	3.439	1.448	0.156

Source: Authors Estimation

POST ESTIMATION TESTS FOR BREAKPOINTS

In order to ascertain the empirical shift effect that deregulation may exert on economic growth in Nigeria, we also report the results for the Chow breakpoint test (using 1987 as the breakpoint year). The Chow test result is reported in Table 8 below. As explained earlier, the selected breakpoint is 1987. The result presented shows that the F-statistic value passed the significance test in each of the equations. The F-values are greater than the 1 percent critical value of 5.39. Also, the log-likelihood ratios are greater than the 1 percent critical chi-square value of 13.72. Based on these results, we reject the null hypothesis and accept the alternative hypothesis that a significant structural break occurred in the economic growth and either money supply, private sector credit or interest rate relationship during the 1987 period. This shows that the deregulation of the interest rate 1987 had a strong shift in economic performance in Nigeria.

Table 8. *Chow Breakpoint Test (1994)*

Test	Statistic	prob.
Money supply		
F-statistic	16.375	0.000
Log likelihood ratio	26.794	0.000
Wald Statistic	32.749	0.000
Private sector credit		
F-statistic	116.073	0.000
Log likelihood ratio	89.076	0.000
Wald Statistic	232.145	0.000
Interest rate		
F-statistic	108.377	0.000
Log likelihood ratio	86.276	0.000
Wald Statistic	216.753	0.000

Source: Author's computation

Finally, robustness checks are provided by testing the stability of the estimated data set across the period of the study. This helps to eliminate doubt about possible outlier regression for any of the groups in the sample. An outlier may result from the break that occurred after the deregulation. The chart in Figure 2 shows the result of the CUSUM of squares test. It can be seen that the CUSUM of squares line for the result actually broke out from the boundary at the 1987 period for both money supply and private credit. This also confirms the structural effect of deregulation on the Nigerian economy.
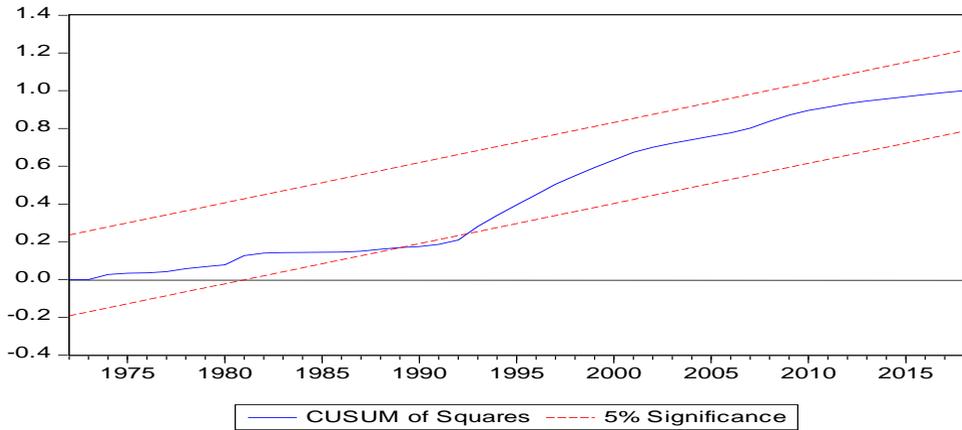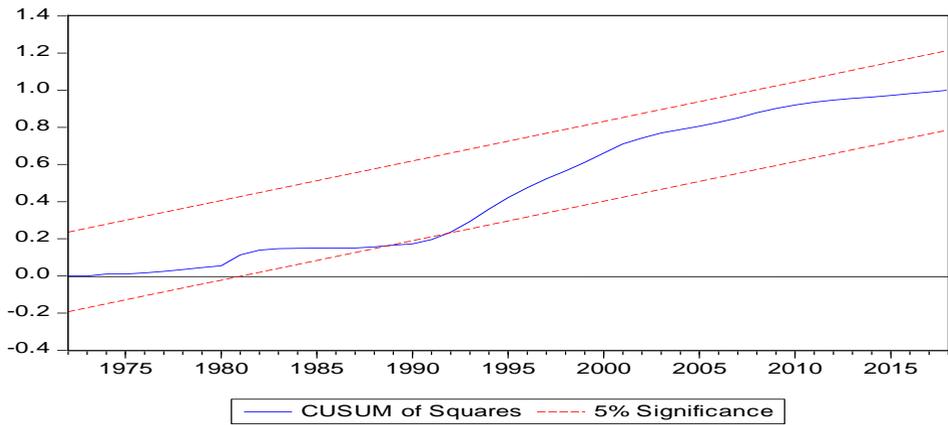
Figure 2. CUSUM test for Money supply
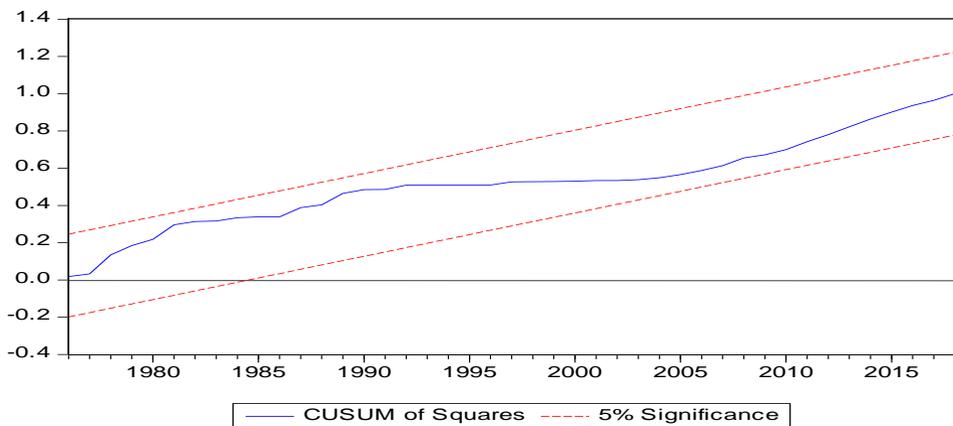

Figure 3. CUSUM test for Private sector credit

Figure 4. CUSUM test for Interest rate

POLICY IMPLICATION OF FINDINGS

The results obtained in the estimations are far reaching and possess certain policy evaluation outcomes. First, the result contains empirical evidence showing a significant and positive impact of deregulation on economic growth, especially when money supply and credit are considered. This highlights the relevance of allowing market led participation in the financial market. Indeed, the study has demonstrated that the deregulation caused a significant shift in economic activities in Nigeria. This implies that the wide-spread deregulations and liberalizations that occurred during SAP implementation actually improved the economy. Thus, deregulation will have better effect on BOP if it were more guided and effectively planned.

Similarly, sustained increase in money supply in the country will yield improved economic performance in Nigeria. Though the short term effect is greater than that of the long run, the result confirms findings by Okwu et al (2011) that monetary policy activities should be intensified especially through money supply. Third, the results have shown that both in the short run and long run, private sector credit are critical for growth in Nigeria.

5. SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1. SUMMARY OF FINDINGS

In this study, the role of interest rate deregulation and monetary policy in promoting the Nigerian economic performance was examined. Annual data for the period 1970 to 2018 were used in the empirical analysis, and a dynamic framework was devised for assessing the relationships in the study using the Autoregressive Distributed Lags (ARDL) approach to cointegration and error correction. The study demonstrates clearly that an essential relationship exists between monetary policy tool and deregulation on the one hand, and economic growth on the other in Nigeria. More specifically, the following findings were made in the study:

- That money supply has a significant positive impact on economic growth both in the long run and in the short run.
- That credit to private sector has a positive impact on the economy and actually stimulates economic growth in Nigeria both in the long run and in the short run.
- That the deregulation actually had a positive impact on economic growth in Nigeria by shifting the growth trajectory to a highly baseline level.
- That both in the short run and long run, deregulation lowered the capacity of monetary policy to improve economic growth in the country. Deregulation actually reduced the efficacy of monetary policy in Nigeria.

5.2. CONCLUDING REMARK

Based on the findings of this study, the following conclusions were made: money supply has a significant positive effect in growing the Nigeria economy both in the short period and in the long run. It is also verified/confirmed from the

findings of this study that private sector credit has a positive and significant impact on economic growth in Nigeria. It is also concluded that interest rate has no significant impact on economic growth in Nigeria, given that the deregulation which affected interest rate shifts were ineffective in changing the pattern of growth in the Nigerian economy. However, the study concludes that although interest rate deregulation had positive impact on economic growth in Nigeria, it has a significant negative impact on monetary policy effectiveness as a macro-economic tool in Nigeria.

5.3. RECOMMENDATIONS

Below are the recommendations from this study:

- Given the empirical findings of this study are some key policy issues which necessitate the following recommendations:

- The government or Central Bank of Nigeria should adopt a guided and well-planned deregulation policies that attract both domestic and foreign investments, create jobs, promote non-oil exports and revive home based industries that are currently in operation far below installed capacity. Thus, promoting BOP position and, economic growth and development is assured.

- The government should further increase the level of money supply in the country, though with some caution. More attention should be given to the productive sector of the economy for a sustained economic growth and development.

- Banks in the country should be compelled to make available adequate credit to investors, business organizations and entrepreneurs. When credit is available, both small and medium scale enterprises (SMEs), as well as quoted manufacturing companies will benefit. This will boost their business potential and enhance their production capacity. This will in turn stimulate growth and development of the Nigerian economy.

- Government should direct effort towards improving the level of development of both the money and capital markets. This is because a well-developed money and capital market with wide range of both short and long term finances are necessary for effective monetary policy.

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