An Empirical Analysis of the Effect of Interest Rate Management Policies in Nigeria 1970-2010

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Abstract: *This study was designed to analyze the effect of interest rate management policies on the economic growth of Nigeria. Two research hypotheses were formulated to investigate the relationship between interest rate and economic growth and the difference in economic growth before and after interest rate deregulation regime in Nigeria. Ex-post facto research design was adopted for the study. Data for the study were obtained from the Central Bank of Nigeria statistical bulletin. Data collected were analyzed and tested using the ordinary least square multiple regression analytical technique. The result of the findings revealed that: there existed an inverse relationship between interest rate and economic growth in Nigeria, implying that increase in interest rate will decrease GDP of the country, thus hindering growth of the real sector. It was recommended that a strong monetary policy for Nigeria should be initiated that would enhance lending to the real sector economy of Nigeria for the sustenance of economic activities.*
KeyWords: *Deregulation of interest rate, Gross domestic product, Interest rate, Interest rate management policies, Investment demand*

I. Introduction

The Nigerian macro-economy saw different interest rate for different sectors in the 1970s through the mid 1980s under regulation, the preferential interest rate were based on the assumption that the market rates, if freely applied would exclude some of the priorities sectors. Interest rate were, therefore, adjusted periodically with visible hands to promote increase in the level of investment in the different sectors of the economy. For example agriculture, manufacturing and tourism sectors were accorded priority, and banks were directed to charge preferential interest rate to small-scale industry. Since 1986 the inception of interest rate deregulation the government of Nigeria has being pursing a market determining interest rate regime, which does not permit a direct state intervention in the general direction of the economy (Ikezu, 2012 and Udoka, 2000).

Closely followed by the regulated interest rate regime was the interest rate reform, a policy evolved under the financial sector liberalization. The policy was put in place to achieve efficiency in the financial sector, thus, engendering financial deepening. In Nigeria, financial sector reforms started with the deregulation of interest rate in August, 1987 (Ikhide and Alawade, 2001). This according to Mckinnon (1973) and Shaw (1973) ignited financial repression which occurs mostly when a country imposes ceiling on deposit and lending nominal interest rate at a low level relative to inflation. The resulting low or negative interest rates discourage savings mobilization and the channeling of mobilized savings through the financial system. This has a negative effect on the quantity and quality of investment and hence economic growth.

The Nigerian government has since 1987 been pursuing a market –determine interest rate which does not permit a direct state intervention in the general direction of the economy (Nyong, 2007).

In January, 1994 there was another policy reversal. This time the government had rightly introduced some measures of regulating interest rate management. It was claimed that there were wide variation and unnecessarily high rate under the complete deregulation of interest rate. Immediately, deposit rates were once again set up at 12 percent per annum while a ceiling of 21 percent per annum was fixed for lending. The cap of interest rates introduced in 1994 was retained in 1995 with little modification for flexibility.

In October, 1996, interest rates were fully deregulated with the banks given freedom to determine the structure of the interest rate in consultation with their customers. The apex bank (CBN) however, retained the discretionary power to intervene in the money market to ensure orderly development in interest rates. It should be remembered that this policy on interest rates deregulation has been in force in Nigeria since 1997-till date.

The crucial role of capital in the economic growth and development process had been recognized since the pre-Keynesian era, when the classical ideology monopolized economic thinking and policy formulation. Without doubt, every nation in the world today still lay tremendous emphasis on capital accumulation by stressing the need for raising the level of investment in relation to output. This emphasis is traceable to the short term fiscal policies and national development plans of both the developed and the developing economies over

the past four decades. One important trend in developmental process which has remained consistent since civilization is that, all developed Nations are industrialized. Industrialization is associated with heavy investments financed through capital accumulation. Rapid and sustainable real economic growth is a necessary condition for economic development. Meanwhile, for growth to occur there is the need for a relatively stable macro-economic environment which is an indicator for low risk and a condition for attracting investment and boosting entrepreneurial activities. Entrepreneurs and investors will always shy away undertaking projects associated with high risks. By implication, even though a certain level of lending interest rate and inflation may be important in attracting investment. There is therefore the need to keep lending interest rate and inflation at a manageable limit in order to propel economic growth. The macro-economic policy formulation challenge confronting many developing countries today is how to achieve a single digit inflation, manageable trade and balance of payments deficits and higher savings and investments rates to finance long term economic growth. This problem has become more complex in today's world. It is on this premise that this paper is evolved to analyze the effect of interest rate management policies in Nigeria.

The central objective of this paper is to analyze the effect of interest rate management policies on the economic growth of Nigeria between 1970-2010.Other specific objectives include:

i) To investigate the relationship existing between interest rate fluctuation and gross domestic product in Nigeria;

ii) To compare the growth of the Nigerian economy before and after interest rate deregulation and how it could influence the growth of Nigeria, and finally to make relevant recommendations that could assist policy makers in Nigeria to formulate sound policy thrust that would put the nation in the right direction. In order to achieve the above stated objectives, the study is divided into five distinct sections. Section one is the introduction .This is closely followed by the literature review which enunciates the opinions and stance of scholars on interest rate regimes. The third section captures the research methodology, indicating the step by step approach of carrying out this research. The fourth section is on the analysis of salient data relating to interest rate as it affects economic growth. The remaining section of the paper draws some managerial implications that emerge from the discussions.

II. Literature Review

There is a large body of literature on interest rate management. The important ones are the classical, the loanable funds, the Keynesian and the modern theory of interest. The classical theory posits that, rate of interest is determined by the supply and demand for capital by the expected productivity of capital. Both time preference and productivity of capital depend upon waiting or saving or thrift. The theory is also known as the supply and demand theory of savings.

The Keynesian liquidity preference theory determines the interest rate by the demand for and supply of money is a stock theory. It emphasizes that the rate of interest is purely a monetary phenomenon. It is a stock analysis because it takes the supply of money as given during the short run and determines the interest rate by liquidity preference or demand for money. On the other hand, the loanable funds theory is a flow theory that determines the interest rate by the demand for and supply of loanable funds. It involves the linking of interest rates with savings, dishoarding and bank money on the supply side. However, this work is anchored on the Keynesian theory .The idea by the classical theory that interest rate is determined by the intersection of the investment-demand schedule and the saving-schedule that is disclosing the relation of investment and saving to the rate of interest was somehow vague and of course misleading. Thus, giving rise to serious attack by the Keynesian school. The point that as income rises, the saving-schedule shifts to the right does not give anyone a clear idea of what the rate of interest would be unless one had already known the income level (Udoka, 2000).

2.1. Empirical Evidence

In Nigeria, the long and difficult search for saleable variables in the money demands function has led to a number of empirical works. Empirical investigations into the nature of demand for money function remains perhaps then most extensively study area of economic research. Tomori (1972) in his pioneering work set out:

i) To examine the factors which have influenced the demand formerly in the Nigerian economy .

ii) To establish whether there was a stable demand for money.

iii) To examine what constituted a better definition of money in the Nigerian context.

He adopted a very simple linear model which expressed nominal (and real) narrow (and board) money as function of either nominal (or real) GDP- a proxy for income or both income and interest rate (official discount rate) representing the opportunity cost of holding money. The model was estimated using annual data for the period 1960 to 1970, while a test for stability was conducted by using a separate regression of the period 1960-1966 and comparing the coefficients obtained with that of full model. Applying the ordinary least square (OLS) technique, the following conclusions were made:

i. Income is a significant variable in explaining variation in the demand for money, irrespective of which

definition is adopted.

ii.   Income is a more important variable determining the demand for money than the interest rate.
iii. The narrow definition of money seems to perform better than the broad definition of money.
iv.   An average real income seems to show a more significant relationship than normal income in the demand for money.

Ajaji (1974) employed the adjustment framework, specified a linear equation with real balances (and nominal balances), narrow and broad, expressed as a function of current nominal income, short-term interest rate and lagged (or nominal) balances. Using OLS technique to estimate the equations, Ajayi (1974) came to the following conclusions.

i. Income alone explained about 1 percent when the wider definition of money is used
ii. Interest rate has wrong sings and is statistically significant
iii.   The wider definition of money performs better, irrespective of whether real or nominal balance is adopted
iv.   Merest elasticity of the demand for money at the mean is low, while the income elasticity is high ranging from 1.5 to 1.9 for nominal money balance, (his indicating that demand for money is not sensitive to interest rate. However, income elasticity for real balance using both narrow and broad money is less than unity,
(v)   The speed of adjustment is fast.

Teriba (1974) carried out a study which he included different interest rates (either individually or in combination) so as to throw more light on the substitutability between money and other financial assets, and to identify the closest substitute for money. He contended that estimating an aggregate demand function was not sufficient in itself, but that demand for its components should be specified and estimated as well. Employing the OLS technique and the long linear relationship between real balance (or its components) and its determinants, Teriba specified and estimated a short term demand for money function that related real balance to aggregate real national income, lagged real balances and a variety of interest rates -federal government Long-term interest rate (RL) Central Bank short-term interest rate (RG) time deposit rate (RM) and savings deposit interest rate (RS). A war dummy was included to account for the civil war year 1967-1969. In the basis of his empirical work, Teriba arrived at the following conclusions money narrowly defined or its components, currently and demand deposits

i.   Real income as the most important variable determining the demand for money as well as the components
ii.   There are evidence that to some extent, treasury has are close substitute for money or currency, while savings deposits appears to be close substitutes for demand deposits and treasury bills
iii. The war years had negative but insignificant effect on the demand for narrow money or its components
iv.   The speed of adjustment between actual and desired balances or narrow money and currency is very low, while in the case of demand deposits it is fairly fast
v.   The short-run and long-run interest elasticity of demand of currency is not significant different from Zero while the short-run income elasticity is in all cases much greater than unity
vi.   In the case of demand deposit, the interest elasticizes are very low and insignificant, while the short-run income elasticity was never below 0.8 and the long-run elasticity was generally about 1.4
vii. The result of the disaggregated equations for currency and demand deposit differ substantially from those of the aggregate equation and What is money is basically an empirical equation

The study by OJo (1974) was carried out mainly to establish if a developing economy like Nigeria characterized by underdeveloped money market and lack of financial assets, the choice facing an individual is more between money and physical assets rather than between money and financial assets. Consequently, he specified and estimated (using the OLS techniques) two kinds of relationship (in Log-linear form) between money and determinants. He first specified real money balance as a function of current nominal income and interest rate. Following the insignificance of interest rate variable in this equation, he specified real money balances as a function of nominal income and expected rate of inflation.

2.2   Determinants of interest rates in Nigeria
In Nigeria, interest rate is determined by the following factors:
(i)   The investment demand: The higher the level of investment demand the higher the level of intere rates. On the other hand, the lower the investments demand, the lower the level of interest rates.
(ii)   The level of savings (or conversely the level of consumption): The higher the level of savings the lower the interest rate while, the borrower the level of savings, the higher the level of interest rates,
(iii) Demand for money or the liquidity preference: The higher the money demand, the lower the interest rate while the lower the money demand the higher the interest rates,
(iv)   The quantity of money or money supply: In the Keynesian parlance as we increase money supply the interest rate will reduce.

III. RESEARCH METHODOLOGY

This paper is on the effect of interest rate fluctuation on the economic growth of Nigeria from 1970-2010.secondary data were obtained from the CBN statistical bulletin of various years. The data would be analyzed, interpreted and tested in order to facilitate a valued conclusion on the effect of interest rate fluctuation in Nigeria. The major statistical tool used in the study is the multiple regression statistical technique. The model formulated for the study is given by;

GDP = F(INTR, U) -------------------------------------1

INTR = Interest rate (prime)

GDP = Gross demotic product (income)

To make the equation easily testable, we specify that:

GDP = $b_0 + b_1$ INTR+ U. ---2

The sign constraints are that: $b_0 > 0$, $b_1 > o$, $b_2 > 0$ and $b_3 < 0$

b_0 = intercept

b_1, b_2 and b_3 = coefficients of the independent variables.

U = disturbance or stochastic term.

IV. DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Data presentation

Using Nigerian data of 40 years, period (1970 - 2010) as included in the observations, the ordinary' least square (OLS) method of multiple regression analysis was carried out to determine the explanatory of gross domestic product (GDP) and interest rate (IR) as variables under study.

TABLE 1

Presentation of major variables used for the study

OBS	GDP	INTR
1970	5205.1	4.5
1971	6570.7	4.5
1972	7208.3	4.5
1973	10990.7	4.5
1974	18298.3	4.5
1975	20957	4.5
1976	26656.3	3.5
1977	31520.3	4
1978	34540.1	5
1979	41947.7	5
1980	49632.3	6
1981	50456.1	6
1982	51653.4	8
1983	56812.9	8
1984	62474.2	10
1985	70633.2	10
1986	71859	10
1987	108183	12.75
1988	142618	12.75
1989	220200	18.5
1990	2717908	18.5
1991	316670	14.5
1992	536305.1	17.5
1993	688136.6	26
1994	904004.7	13.5
1995	1934831	13.5
1996	2703809	13.5
1997	2801973	13.5
1998	2721178	19.25
1999	3313563	19.93
2000	4727523	16.25
2001	5374335	18.75
2002	6232244	19

2003	6061700	14
2004	11411067	14
2005	3652720	14
2006	3652720	14
2007	3652720	14
2008	4583232	17.5
2009	4621720.8	17.5
2010	47893747.9	18

Source: CBN statistical bulletin

4.2 Data Analysis

Table 1 shows that GDP recorded 17.8 per cent in 1979 and in 1980 GPD dropped by 0.19 per cent, picked up steadily from 1.89 percent in 1981 to 54.77 percent in 1988. GDP reduced to 15.94 per cent in 1989 and witnessed a continued increased in 1997 and by 1999 the growth rate in GDP was negative. This could be attributed to transition of power from the military to the civilian government. GDP rose up steadily and witnessed an annual differential per cent increase of 04.59, 3.47, 10.23, 4.44, 15.0993, 15.90 per cent respectively from 2000-2007.

Interest rate witnessed a differential increase of 5, 15, and 10 % respectively from 1980-1983. Dropped by 11, 9, 33, 70, 1, 9, 27, 32, 9 and 3 % from its previous years respectively from 1983, 1986, 1989, 1991, 1994, 1997, and 1999, 2001-2003. The highest interest rate was in 1991 with an interest rate of 31.2%

4.2 Data Analysis

Hypothesis one

Ho: There is no significant relationship between interest rate fluctuation and economic growth in Nigeria. Ordinary least square multiple regression was used to test this hypothesis. The result is as presented in Table 2

Table 2: Regression result of the relationship between interest rate (INTR) and gross domestic product (GDP)

Dependent Variable: LGDP

Variables	Coefficients	Std. Error	T	Sig.
(Constant)	23.454	0.129	181.813	0.000
INTR	-0.362	0.034	-10.671	0.000

R^2 = 0.8225
Adj. R^2 = 0.8069
F (3, 24) = 54.09
DW= 1.57

The result in Table 2 shows an R^2 value (coefficient of multiple determinants) of 0.8225. This implies that 82 per cent changes in the dependent variable GDP is caused by changes in the independent variables of interest rate. This means that interest rate fluctuation is a good determinants of GDP. It therefore means that the remaining 18 per cent is caused by other variables not found in the equation but indicated by the error term

The adjusted R^2 value of 0.8069 means that the model is about 81 per cent goodness fit. The F-value of 54.09 which is greater than the critical F-value of 3.14 goes to confirm that there exist a significant relationship between the dependent variable of GDP and the independent variable of interest rate.

The estimated coefficient for interest rate is negative, indicating that there exist an inverse relationship between interest rate and GDP. This means that when interest rate increases GDP will also decreases. The result is in order with economic theory. The result is also statistical significant at 5 and 10 per cent level of significance.

4.2.2 Hypothesis Two

There is no significant difference in the economic growth of Nigeria before and after deregulation.
Independent t-test analytical technique was employed to test this hypothesis. The result is as presented in

Table 3

Table 3: Independent t-test analysis of the difference in economic growth before and after deregulations

Economic growth	N	Mean	SD	t-cal
Before deregulation	17	617415.6	2342.453	17.65
After deregulation	24	6881213.379	43321.728	

*$p < 0.05$, d.f=39, critical t=2.13

The result in Table 4.3 revealed that the calculated t-value of 17.65 was found to be greater than the critical t-value of 2.13 needed for significance at 0.05 alpha level of significance with 39 degrees of freedom. With this result, the null hypothesis is rejected. It therefore means that there exist a significant difference in economic growth of Nigeria before and after interest rate deregulations.

4.3 Discussion of Findings

The analysis also indicates that a real deposit rate has a statistically significant impact on economic growth in Nigeria. Thus, a high deposit rate of interest encourages savings and economic growth in view of the link between savings, investment and economic growth. This result is consistent with the prediction of economic theory and existing studies that higher deposit interest rate from liberalisation will increase household savings in the banking system thereby enhancing economic growth. The econometric results further reveal that financial deepening has negative effect on economic growth in Nigeria. The financial system in Nigeria is weak and can best be described as an inhibitor and banks are only in business to reap 'wind fall' profit. As Taylor (2004) observed, if financial markets are weak, the effectiveness of transmitting policy through interest rates will be limited.

Thus, there is the need for the financial system to be well developed so that it can efficiently and cheaply mobilize and allocate funds within the system to guarantee reasonable returns for savers and investment needs of the borrowers in order to contribute to economic growth.

Our results also show that there existed a significant difference between the economic growth of Nigeria before interest rate deregulations and economic growth after interest rate deregulations. Studies have shown that interest rate deregulation favours economic growth (Akinlo, 2005; Akimo, E. 2005). Thus this result is in agreement to the findings of this study.

V.   Conclusion And Recommendations

5.1 Conclusion

The focus of this study was on the effects of interest rate on the growth of the Nigeria economy. Interest rate is a determinant of economic growth as measured by GDP. The result specifically leads to the conclusion that a direct relationship existed between interest rate and the growth of the economy (GDP), meaning that increase in interest rate will certainly increase savers are encouraged to save thereby inducing growth in the economy. Also, the economic growth of Nigeria after interest rate deregulation is greater than the economic growth after interest rate deregulations.

5.2 Recommendations

1. The government should channel their policy thrust towards increase in aggregate output through increase in interest rate as this enhances economic growth.
2. Since inflation rate varies inversely with GDP (aggregate output), the government should aim at reducing the rate of inflation in Nigeria so that the output level can increase which entails economic growth in the face of the global financial crunch.
3. A strong monetary policy for Nigeria should not be based on interest rate regulation, except our financial sector is improved and the awareness of the activities of the financial institutions taken to ordinary Nigerians.
4. Also, the enclave nature of the mainstay of the Nigerian economy should be changed by channeling the proceeds from oil to other sectors of the economy like education, industries, agriculture, etc and capital development which is a prerequisite for growth and development.
5. Interest rate should be liberalized in Nigeria

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