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Interest Rate and Economic Growth: The Case of Nigeria

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The focus of this study is on the assessment on the effect of interest rate on Economic Growth of Nigeria. The study adopted an Error-Correction Mechanism to test for the short - and long – run relationships among the saving deposit, real interest rate and inflation, ECM is negative *and further test of Granger causality indicates that there is a causal relationship between SD and GDP and a unidirectional relationship exists between SD and GDP. Therefore Savings deposit causes Gross domestic product. The study recommends that policies which would boost the saving accumulation in Nigeria that will increase Capital Formation are necessary for economic growth. This will also enhance lending to the real sector of the economy for productive economic activities. This could be done by increasing the deposit rate which would lure the people to deposit their money in banks thereby increasing the supply of loanable funds. This would lead to a fall in interest rate and eventually rise in investment.*

Keywords: Interest Rate, Saving Deposit, Gross Domestic Product, Investment, Inflation Rate.

1. Introduction

The trend of interest rates, to a large extent, determines the investment activities and hence economic growth of a country. Investment depends upon the rate of interest in getting funds from the capital market, while economic growth to a large extent depends on the level of investment. The Nigerian economy has at different times witnessed enormous interest rate swings in different sectors of the economy since the 1970s under the regulated regime. The preferential interest rates were based on the basis of argument that the market, if freely applied would exclude some priority sectors. Thus, interest rates were adjusted through the "invisible hand" in order to promote increased level of investment in the various preferred sectors of the economy. Prominent among the preferred sectors by the monetary authorities were the agricultural, manufacturing and solid mineral sectors which were accorded priority and deposit money banks were directed to charge preferential interest rates on all loans to encourage the upsurge of small-scale industrialization which is a catalyst for economic development (Udoka, 2000).

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The objectives of interest rate policy in Nigeria include but not limited to the moderation of inflation, financial savings and investment, encouragement of reduction of pressure in the balance of payments achieving favorable exchange rate stability and the promotion of macroeconomic and financial sector stability. Interest rate in Nigeria has been affected by the incidence of oligopolistic structure of Nigeria banking systems.

Interest rate management has passed through two main approaches in Nigeria namely direct and indirect approaches. The direct approach entails the administrative adjustment of lending rate and saving rates, while the indirect approach relies on the mutual effect of market forces, all the above approach tend to have its own way of inducing economic growth. The Central Bank of Nigeria retains the discretionary power to intervene in the money market to ensure orderly development in interest rates.

The Nigerian government has since 1987 been pursuing a market–determined 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 from the previous 8 percent while a ceiling of 21 percent per annum was fixed for lending. The gap of interest rates introduced in 1994 was retained in 1995 with little modification for flexibility.

On the other hand the economic growth of any country reflects its capacity to increase production of goods and services. The simplest definition of economic growth can be stated as the increase in the gross domestic product (GDP) of that country. Nominal GDP is usually adjusted for inflation factor to reflect real GDP. Interest rate is one of the macroeconomic growth factors; it's up and down volatility is closely related to inflation rates. Its high or low rate also impact economic boom (high GDP) thus extending to influence economic growth rate. In business fields, it is very important to accurately predict interest rate trends. Many previous studies have assumed that the time series data is stationary and they ignored that non stationary could exist in the data. This study is a contribution to the existing literature on real growth applied to Nigeria's economy; it will examine the effect of interest rate on the GDP.

For several decades now, interest rates had always been a problem in the Nigerian economy ever since the late 1980s when interest rates were deregulated, There has always been complains about high interest rate in the country. So far, the government has not been able to address the issue. (Iweala, 2013). It is evident that high interest rate is detrimental to the development of the real sector since it creates serious barrier to indigenous investors in their inability to access funds. The deregulation of interest rate that was introduced in the 1980s was expected to tackle the issues of discouragement of savings in financial assets, which in turn limited the supply of loanable funds while lending rates reduces excessive demand for credit resulting in the rationing of funds that had an adverse effect of depriving the economy from long term growth. Therefore to effectively tackle the problem stated above, the following Research questions must be answered:

1. How interest rate does affect Nigeria's economic growth?

2. Does the change of interest rate regulation affect the investment behaviour of individual?

The above necessitates the formulation of the following research questions:

H_0:1 Interest rate has no significant impact on economic growth in Nigeria.
H_0:2 Interest rate reductions do not have a significant impact on increase in investment behavior of individual.

The Nigerian economy has at with the period taken steps to bring about enormous increase in the levels of investment through favorable interest rate. Even with this effort, the economy still experiences about slow economic growth and development. There are still other diverse sectors of the economy where productive and service rendering investments are required, although, the Nigerian economy which depends solely on earnings from crude oil, the secondary (manufacturing/industrial) sector's contribution to the economy still needs to be greatly increased.

Given this premises, an examination of interest rate and its impact/effects on investment will provide workable options for future policy formulations and adjustment of interest rates in Nigeria. Therefore, the reason for this study is to examine the relationship between interest rate and economic growth and more importantly to investigate the direction of causality between interest rate and economic growth in Nigeria.

The study is hereby divided into five sections namely the introduction which is section one that consist of the background to the study, statement of the research problem, the hypothesis and the justification of the study. The second section is mainly the literature review which includes the theoretical and empirical review of literature and section three which consist of the methodology. The fourth section discusses the findings and finally section five is summary and conclusion.

2. Literature Review

In August, 1987; the Central Bank of Nigeria (CBN) liberalized the interest rate regime and adopted the policy of fixing only its minimum rediscount rate to indicate the desired direction of interest rate. This was modified in 1989, when the CBN issued further directives on the required spreads between deposit and lending rates. In 1991, the government prescribed a maximum margin between each bank's average cost of funds and its maximum lending rates. Later, the CBN prescribed savings deposit rate and a maximum lending rate. Partial deregulation was, however, restored in 1992 when financial institutions were required to only maintain a specified spread between their average cost of funds and maximum lending rates. The removal of the maximum lending rate ceiling in 1993 raised interest rates rising to unprecedented levels in sympathy with rising inflation rate which rendered banks' high lending rates negative in real terms. In 1994, direct interest rate controls were restored. As these and other controls introduced in 1994 and 1995 had negative economic effects, total deregulation of interest rates was again adopted in October, 1996, (CBN 2010).

(Mwega & Ngola;, 1991), used Kenyan data to test the relationships between interest rates and financial and nonfinancial saving. Their results reveal that the real deposit rate has an insignificant influence on both financial and non-financial saving in Kenya. They also found out that higher interest rates constrict the demand for credit, suggesting that a policy of interest rate liberalization might be stag-inflationary in its effects.

(Khat & Bathia, 1993) used non parametric method in their study of the relationship between interest rate and other macroeconomic variable, including savings and investment. In his study he grouped sixty four (64) developing countries including Nigeria into three on bases the level of their real interest rate. They computed economic rate among which were gross savings, income and investment for countries applying Mann Whitney test, they found out that the impact of real interest was not significant for the three groups. However, this method of study was criticized by (Balassa, 1989) that a relationship has been established by the use of regression analysis.

(Albu, 2006) studied the trends in the interest rate, investment, GDP growth relationship using two partial models to examine the impact of investment on GDP growth and the relationship between interest rate and investment in the case of the Romanian economy. The study found out that the behavior of the national economy system and interest rate investment relationships tend to converge to those demonstrated in the normal market economy. (Akintoye & Olowolaju, 2008) in their work titled “Optimizing Macro Economic Investment decisions lesson from Nigeria” revealed that low interest rate have constrained investment decisions in Nigeria. This revelation does not support (Erega., 2010) whose study showed an inverse relationship between interest rate and investment rate in Nigeria.

(Obamuyi, 2009) claimed that the relationship between interest rate and economic growth in Nigeria. The study modelling techniques and revealed the lending rate has significant effect on economic growth. The study then postulated that investment friendly interest rate policies necessary for promoting economic growth needs to be formulated and properly implemented. (Erega, 2010) agrees that the relationship between interest rate and investment in Nigeria between 1970 and 2002. His study revealed that variations in interest rate played a negative and significant role in investment decision in the economy and demand for growth.

(Obamuyi & Olorunfemi, 2011) further investigation on implications of financial reform and interest rate behaviour on economic growth in Nigeria. Using co integration and error correction model on time series data from 1970-2006, they document that financial reform and interest rates have significant impact on economic growth in Nigeria. The results imply that the behaviour of interest rate is important for economic growth in view of the empirical nexus between interest rates and investment, and investment and growth. The period use were characterised with mostly fixed and regulated interest rate regime especially the early 70’s during the military rule which does not allowed the market forces the rate to determine the rate of interest. In this research the period is identify with when the economy been influence with liberalization of economy policy that enable the policy maker identify the optimal and appropriate interest rate regime that influence economic growth in the country.

3. The Methodology and Model

This paper is on the assessment of the effect of interest rate on Economic Growth of Nigeria from 1980- 2012 this was in line with the stead economic policy and socio-political harmony in the country during the period. 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 used for this research study is specified as follows:

GDPGR=f (SD, RIR, INFL)

Thus, we can express the econometric form of the models as:

$$GDPGR = \beta_0 + \beta_1 SD + \beta_2 RIR + \beta_3 INFL + \mu_t$$

Where,

GDPGR = Gross Domestic Product Growth Rate
SD = Savings Deposit
RIR = Real interest rate
INF = Inflation rate
B_0 = intercept
B_1, B_2 andB_3 are the regression parameters
U = Error terms

Expressing in Log-linear Form,

$$lnGDP = \beta_0 + \beta_1 lnSD + \beta_2 RIR + \beta_3 INFL + \mu$$

4. The Findings

Table 1: Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.746334	0.377957	25.7869	0.0000
LOG(SD)	0.27167	0.03351	8.107015	0.0000
RIR	-0.002763	0.005321	-0.51928	0.6078
INFL	-0.001107	0.004362	-0.25377	0.8016

Source: E-views 7

$$GDPGR = 9.746334 + 0.271670SD - 0.002763RIR - 0.001107INFL$$
(0.377957) (0.033510) (0.005321) (0.004362)

R^2= 0.72 ADJ R^2=0.68 DW=1.118

The regression coefficient of savings deposit (SD) in the estimated regression line represented above is 0.2717 which implies that a unit increase in savings will lead to 27% increase in gross domestic product (GDP). The coefficient of savings deposit is positive which conforms to the *a priori* expectation. The relationship between GDP and SD is significant based on the fact that the P value is less than 0.01. The regression coefficient of real interest rate (RIR) presented in the table above is approximately -0.003 which implies that increase in real interest rate by 1% will lead to the decrease in gross domestic product (GDP) by 3%. The coefficient of real interest rate is negative which conforms to *a priori* expectation. Findings also indicate that that the relationship between GDP and RIR is insignificant because the P value is greater than 0.01.

The regression coefficient of inflation rate (INFL) in the estimated regression line presented above is -0.001 which implies that a unit increase in inflation rate will lead to a simultaneous decrease in GDP by 1%. The coefficient of inflation rate is negative which also conforms to *a priori* expectation. Results also indicate that the relationship between GDP and INFL is insignificant because the P value is greater than 0.01. The R^2 which is the coefficient of determination shows that about 72% of the total variations in the log of GDP are explained by all the independent variables in the model. This dropped to 69% after adjusting for degree of freedom. The Durbin Watson statistics which is 1.118166 indicates positive serial autocorrelation meaning that there is a linear relationship between Gross Domestic Product (GDP) and the independent variables.

Table 2: Unit Root Test

VARIABLES	**ADF TEST STATISTICS**		**CRITICAL VALUE**		**ORDER OF INTEGRATION**	**REMARKS**
	LEVEL	**1ST DIFF**	**1%**	**5%**		
LOG(GDPGR)	-2.64095	-9.298366	-3.67932	-2.96777	1(1)	STATIONARY
LOG(SD)	0.317114	-4.419455	-3.67932	-2.96777	1(1)	STATIONARY
RIR	-5.07994	-	-3.67017	-2.96397	1(0)	STATIONARY
INFL	-3.12576	-5.376563	-3.68919	-2.97185	1(1)	STATIONARY

Source: Author's computation

In order to test for the stationarity of the variables, the Augmented Dickey-Fuller unit root test was employed for the variables of the model. The Augmented Dickey-Fuller value was compared with the critical value at 5% level of significance. The results of the unit root test show that variables namely GDP, SD, INFL are stationary at first difference while RIR was stationary at level. This suggests that variables employed have unit root. Therefore, co integration test will be conducted to determine if variables share long run relationship.

Table 3: Cointegration Test

EINGEN VALUE	TRACE STATISTICS	CRITICAL VALUE AT 5%	HYPOTHESIZED NO OF CE(s)	PROB. *
0.616133	53.66690	47.85613	None *	0.0129
0.432351	25.90061	29.79707	At most 1	0.1317
0.241976	9.479290	15.49471	At most 2	0.3229
0.048610	1.445110	3.841466	At most 3	0.2293

Trace test indicates 1 cointegrating equations at 5% level
Note: *denotes rejection of the hypothesis at 0.05 level

The result of the co-integration rank test presented in the table above indicates het there is at least one co integrating equation. This is because the trace statistics value (53.66690) is greater than the critical value (25.90061) at 5% level of significance. The results therefore confirm the existence of co integration (long run relationship) among the variables. Thus we can conclude that there exist a long run relationship between interest rate and economic growth in Nigeria. The normalized co integrating equation is stated as follows:

$$LOG(GDP) = 1.000000 - \underset{(0.18677)}{0.572956SD} + \underset{(0.04235)}{0.256921RIR} + \underset{(0.02715)}{0.113181INFL}$$

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Now that we have seen that our variables are co-integrated; that is there is a long-term or equilibrium relationship between them, there is needed to state that there might be disequilibrium in the short run. In order to tie the short-run behavior of GDP to its long-run value, we shall express the relationship between GDP and independent variables as an Error Correction Mechanism (ECM).

To estimate the short effect of interest rate on economic growth, the result is given below:

Table 4: Error Correction Mechanism

VARIABLES	COEFFICIENT	STD. ERROR	T-STATISTICS	PROB.
LOG(SD)	0.150737	0.0198864	7.5799	0.00002
RIR	0.00159871	0.00162627	0.9831	0.34877
INFL	-0.00662478	0.00648765	-1.0211	0.33126
ECM(-1)	-0.256429	0.0057127	-44.8875	0.00001

R^2= 0.861397 Adj. R^2= 0.819816

From the results above, ECM is negative (-0.26), this indicates that the speed of adjustment in the short run is 26% (-0.256429). This indicates that 26% of the disequilibrium in the Gross domestic product is offset by short run adjustment in each year. The value of the R^2 is 0.86 which is an indication that 86% of the variation in GDP is explained by the independent variables (SD, RIR, and INFL). We therefore state our ECM equation as follows:

$$LOG(GDP) = 0.150737SD + 0.00159871RIR - 0.00662478INFL - 0.256429ECM_{t-1}$$

Table 5: Pairwise Granger Causality Test

Direction Of Causality	F-Statistics	Prob.	Accept/Reject Ho	Lags
SD → GDPGR	24.5243	0.00003	Reject	1
GDPGR → SD	0.11667	0.7353	Accept	1
RIR → GDPGR	2.20027	0.1496	Accept	1
GDPGR → RIR	2.10757	0.1581	Accept	1
INFL → GDPGR	1.22558	0.2780	Accept	1
GDPGR → INFL	0.67236	0.4194	Accept	1

Source: Author's computation

Evidence from the Granger causality test indicates that there is a causal relationship between SD and GDP significant at 1% level of significance. . A unidirectional relationship exists between SD and GDP. The direction of the relationship is from SD to GDP), no feedback mechanism was confirmed. Therefore it can be said that Savings deposit causes Gross domestic product. Finally, it can be observed that there is no causality between GDP and RIR as well as GDP and INFL.

5. Summary and Conclusions

The main objective of this paper is to determine how interest rate serves as very sensitive monetary variable, crucial determinant of investment and how it will in turn bring about economic growth. However from the result we can also deduce that other factors such as real interest rate, investment, manufacturing capacity utilization, savings deposits, and gross capital formation have large impact in determining the level of growth.

It is important to note that since 1986, Monetary policy in Nigeria which involved market oriented measures have moved in line with the policy prescription of the financial liberalization i.e. promoting savings, investment and economic growth. However, interest rate is expected to reduce inflation, it could be via deregulation of the interest rate, which will in turn increase foreign private investment. The findings of this study suggest that Interest rate is a determinant of economic growth as measured by GDP. The result specifically leads to the conclusion that direct relationship existed between interest rate and the growth of the economy (GDP), indicating that increase in interest rate will certainly increase savers are encouraged to save thereby inducing growth in the economy.

For the enhancement of an appropriate economic stability leading to economic growth and development, the following policy recommendation is stated as that monetary authorities should make policies which would help to boost the saving culture of the people. The policy market should embark on a policy that will reduce Lending rate as will stimulate investment and increate output, proper implementation and co-ordination of policy objective should be rigorously pursed implementation of policy is usually multidimensional and hence its calls for effective co-ordination among the various government department, banks and other relevant

sectors. Efforts should be made so as to ensure enabling environment so as to make sure there is good political and macro-economic stability where investment and savings can thrive and promoting a more efficient fiscal and monetary policy such that suit the economic condition of the country like the availability of credit rather than its cost of investment seems responsible to it.

Though the result of this paper assert the findings of early studies like (Obamuyi, 2009) and (Soyibo & Olayiwola, 2000), we which to state that limiting factor to this study is that ECM lack structural parameters of a system as evidence in the literature. And for interest rate to boost economic growth other socio – political economic hindrances are mainly political instability, regional socio-political unrest and insecurity of lives and property as witness in some parts of the country and investment uncertainty due to continuous agitation from the various ethnic groups across all geo-political zone as currently experienced. All these do not encourage investment and thereby the interrelationship between interest rate, inflation rate, GDP and real economic growth are not having the adjustable relationship as in many macroeconomic theories. Finally peace and stability should be pursued by all to boost investment and sustainable economic growth.

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