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**AN ASSESSMENT OF THE IMPACT OF INTEREST RATES DEREGULATION ON ECONOMIC GROWTH IN NIGERIA (1964-2009)**

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**Obute Christopher<sup>1</sup>, Adyorough Asor<sup>2</sup>, and Itodo Ahmed Idoko<sup>3</sup>**

<sup>1</sup>*Department of Economics, Benue state university, Makurdi.*

<sup>2</sup>*Department of Business Management, Benue State University, Makurdi.*

<sup>3</sup>*Department of Economics, University of Mkar, Gboko, Benue State.*

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**ABSTRACT**

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Nigeria's financial sector reforms of 1986 which began with interest rates deregulation, was aimed at enhancing funds mobilization and disbursement to achieve economic growth and development. However, the deregulation exercise has been met with mix feelings. While some believe the exercise would help to promote investment and economic growth by enhancing savings, others are of the opinion that the exercise would push up real lending rates thereby discouraging investments, in view of the inverse relationship between investment and real lending rate. It was against this backdrop that this research was carried out to assess the impact of interest rate deregulation on economic growth in Nigeria. The objectives of the research were to establish the relationship that exists between deregulated interest rates and economic growth through savings and investment in Nigeria, and also to make a comparative analysis between the impact of regulated and deregulated interest rates on economic growth in Nigeria. It was hypothesized that interest rates deregulation do not have significant influence on economic growth in Nigeria. The research used Time series data, sourced mainly from Central Bank of Nigeria (CBN) bulletin and World Bank data base. Four separate models were estimated to capture the relationship between; Real Deposit Rate (RDR) and Total Savings (TS) (Model 1), Real Lending Rate (RLR) and investment (INV) (Model 2), INV and economic growth (Model 3), and, RLR and economic growth (RGDP) (Model 4) for both the deregulation era (1987-2009) and the regulation era (1964-1986). The research revealed that RDR does not have significant impact on total savings before and after the deregulation exercise, RLR also does not have significant impact on investment before and after the deregulation exercise, investment has a positive and significant impact on economic growth before and after the deregulation of interest rate, and, RLR does not have a significant impact on economic growth before and after the deregulation exercise. This may be due to the incomplete deregulation of interest rates as its value is still tied to the monetary policy rate even after the deregulation exercise. It is therefore recommended that interest rates should be effectively deregulated to allow the country reap the full benefits of the financial reforms introduced about 25 years ago with very little satisfactory results.

**Keywords:** *Interest rate, Economic growth, Deregulation, Real Lending Rate.*

**INTRODUCTION**

The behaviour 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 involved in getting funds from the market, while economic growth to a large extent depends on the level of investment. According to Jhingan (2003), if interest rate is high, investment is at low level and when interest rate falls, investment will rise. There is therefore a need to promote an interest rate regime that will ensure "inexpensive" spending for investment and consequently enhancing economic growth at low financial

cost. The financial system of most developing countries came under stress as a result of economic shocks of the 1980s. Additionally, financial repression, largely manifested through indiscriminate distortion of financial prices including interest rates has tended to reduce the real rate of growth and the real size of the financial system. More importantly, financial repression has retarded the development process as envisaged by Shaw (1973). Undoubtedly, Government's past efforts to promote economic development by controlling interest rate and securing inexpensive fund for their own activities have undermined financial development. Prior to the deregulation of interest rates in Nigeria, the financial sector operated under financial regulations and interest rates were said to be repressed. According to Mckinnon (1973) and Shaw (1973), financial repression arises mostly where a country imposes ceiling on deposit and lending nominal interest rates at a low level relative to inflation. The resulting low or negative interest rates discourage savings mobilization and channeling of mobilized savings through the financial system. This has negative impact on the quantity and quality of investment and hence economic growth in view of the empirical link between savings, investment and economic growth. In realization of these, the Nigerian government took steps to liberalize interest rates as part of the reform of the entire financial system. Financial sector reforms began with the deregulation of interest rates in August 1987 Ikhinde et al (2001). The Nigerian government in 1994, in a policy reversal, however introduced some measure of regulations into the interest rates management. It was claimed that there were "wide variations and unnecessarily high rates" under the complete deregulation of interest rates. Immediately, deposit rates were once again set at 12%-15% per annum while a ceiling of 21% per annum was fixed for lending rate. By the end of 1994, the weighted average lending and deposit rates were 21% and 13.5% respectively. The cap for interest rate was retained in 1995 with minor modification to allow for flexibility. The cap was maintained until it was lifted in 1996. This made possible a flexible interest rate regime in which bank lending and deposit rates were largely determined by the forces of demand for and supply of funds.

### **STATEMENT OF THE PROBLEM**

Prior to the deregulation of interest rate in Nigeria, the prevailing rates of interest were regulated by government through the Central Bank of Nigeria (CBN). This was meant to guide the economy to follow the desired direction. However, it was soon realized that, the low rates of interest that prevailed could not be sustained. On the other hand, the very low and sometimes negative real interest rates discouraged savings. Also, the low rates did not only increase the demand for loanable funds but also misdirected credit. Consequently, the demand for credit soon exceeded the supply of funds while essential sectors of the economy were starved of funds. It was against this background that the Nigerian financial system was deregulated in the second half of the 1980s. A major objective of the deregulation exercise was to increase savings for investment and economic growth. But despite this effort, economic growth is still in the doldrums. The deregulation exercise has been met with mixed feelings in Nigeria. While some believe it would enhance economic performance in Nigeria, others have contrary opinion. Nwankwo (1989) believes that interest rate deregulation will definitely lead to more efficient allocation of financial market resources. His position is in line with the arguments of Mckinnon (1973) and Shaw (1973). Abiodun (1988), on the other hand holds that deregulation of interest rate is like a double-edged sword, which will either stimulate or

mar the economy. He asserted that the deregulation of interest rate will lead to an increase in interest rate, which will increase savings. However, he opined that high cost of borrowing might bring about cost-push inflation as borrowers of funds will pass the high cost of borrowing to the customers by pushing up prices. Ojo (1988) and Ani (1988) are both of the opinion that interest rate deregulation would mar the Nigerian economy. In their separate papers, they flawed the deregulation exercise, claiming it would discourage investment and hence economic growth, by pushing up interest rates. Ojo and Ani's position are supported by Soyimbo and Olayiwola (2000) and Akpan (2004) who all pointed out the low positive impact of deposit rate on economic growth after interest rate liberalization in Nigeria. These contrary opinions about the effectiveness of the deregulation exercise in Nigeria raises the issue of the effectiveness of the deregulation exercise. There is therefore the need for a comprehensive evaluation of the role of interest rate deregulation in promoting economic growth in Nigeria through savings and investment. It was against this backdrop that this research work sought to evaluate the impact of interest rates deregulation on economic growth in Nigeria.

### **OBJECTIVE OF THE STUDY**

The main objective of the study is to examine the impact of interest rate deregulation on economic growth in Nigeria.

The specific objectives of the study are: -

- i. To investigate the relationship between deregulated interest rates and economic growth in Nigeria.
- ii. To investigate the impact of interest rate deregulation on savings in Nigeria.
- iii. To investigate the impact of interest rate deregulation on investment in Nigeria.
- iv. To investigate the impact of investment on economic growth in Nigeria.
- i. To investigate the relationship that exists between economic growth and government expenditure in Nigeria?
- ii. Make a comparative analysis between the impact of regulated interest rates and deregulated interest rates on economic growth in Nigeria.

### **THE SIGNIFICANCE OF THE STUDY**

The relationship between interest rates deregulation and economic growth in Nigeria has been analyzed in many empirical studies. Obamuyi (2009) used a single equation model to investigate this relationship. This approach was also employed by Adofu (2010) and Amassoma (2011) when they separately investigated the impact of interest rates deregulation on agricultural productivity in Nigeria. But the relationship between interest rates and economic growth is indirect as interest rates affect economic growth by first of all affecting savings and investment. There is therefore a need to investigate the impact of interest rate deregulation on economic growth by first of all looking at its relationship with savings and then investment. This approach was lacking in most empirical studies. This study investigated the interest rates deregulation and economic growth relationship by taking into consideration the "transmission mechanism" through which interest rate affects economic growth. This research is also significant because it will made a comparative analysis between the impact of deregulated interest rates on economic growth and that of regulated interest rates on economic growth. As a result, the outcome of this research shed more light on the role of interest rates in economic development in

Nigeria. Consequently, this work will be useful to Government and monetary policy makers in their quest to improve financial intermediation in the economy. Also, by raising specific issues concerning the link between interest rates and economic growth in Nigeria, this work provides a basis for further in-depth investigation in this area.

## **LITERATURE REVIEW**

### **Conceptual Framework**

#### **The Meaning of Economic Growth**

Economic growth is the process by which national income or output is increased. An economy is said to be growing if there is a sustained increase in the actual output of goods and services per head. The rate of economic growth therefore measures the percentage increase in real national output, during a given period of time, usually a year, over the preceding year's level Anyanwoncha (1993). Jhingan (2003) defines economic growth as a process whereby the real per capital income of a country increases over a long period of time. According to him, economic growth is measured by the increase in the amount of goods and services produced in a country. Economic growth occurs when an economy's productive capacity increases which, in turn, is used to produce more goods and services. A nation's economic growth can be measured in terms of its national income and the real per capital income. Economic growth is a very important goal of macro-economic policy because of the role it plays in economic development.

#### **Meaning of Interest Rate**

According to Keynes, interest is the reward for not hoarding but for parting with liquidity for a specific period of time. Keynes' definition of interest rate focuses more on the lending rate. Adebisi (2002) defines interest rate as the return or yield on equity or opportunity cost of deferring current consumption into the future. Some examples of interest rate include the saving rate, lending rate, and the discount rate. Professor Lerner, in Jhingan (2003), defines interest as the price which equates the supply of 'Credit' or savings plus the net increase in the amount of money in the period, to the demand for credit or investment plus net 'hoarding' in the period. This definition implies that an interest rate is the price of credit which like other price is determined by the forces of demand and supply; in this case, the demand and supply of loanable funds.

#### **Meaning of Financial Repression**

Financial repression refers to the notion that a set of government regulations, laws, and other non-market restrictions prevent the financial intermediaries of a country from functioning at full capacity. The policies that cause financial repression include interest rates ceiling, liquidity ratio requirements, high bank reserve requirements capital controls, restrictions on market entries into the financial sector, credit ceilings or restrictions on directions of credit allocation, and government ownership or domination of banks. Economists argue that financial repression prevents the efficient allocation of capital and thereby impairs economic growth. Ronald Mckinnon (1973) and Shaw (1973) were the first to explicate the notion of financial repression.

#### **Meaning of Interest Rates Deregulation**

Interest rates deregulation is an economic term used to refer to a situation where by forces of demand and supply are allowed to determine the value of interest rates rather

than its value being administered directly by monetary authorities. Interest rates deregulation is seen as a deviation from financial repression. It has been advocated by many economists that interest rate deregulation helps to enhance savings, boost investment and consequently help to enhance economic growth.

### THEORETICAL FRAMEWORK

The Financial Liberalization Theory put forth by Mckinnon (1973) and Shaw (1973) postulates that financial liberalization in financially repressed developing countries would induce higher savings, especially financial savings, increase credit supply, stimulate investment and hence help to boost economic growth. They both claim that interest rate regulations usually lead to low and sometimes negative real interest rates, which is the cause of unsatisfactory growth performance of developing countries. They claim that financial repression through interest rates ceiling keeps real interest rates low and thus discourages savings and consequently, stifles investment. Thus investment is constrained as a result of low savings resulting from financial repression. The quality of investment will also be low because the projects that would be undertaken under a regime of repression would have a low rate of yield. With interest rate deregulation, real interest rates would rise thereby increasing both savings and investment. The increased investment results in the rationing out of low-yielding projects and subsequent undertaking of high-yielding projects. This would therefore boost economic growth. Both Mckinnon and Shaw advocated that interest rates deregulation was needed to remedy the problems caused by financial repressive policy of developing countries. The researcher hereby adopts this theory as the main theoretical framework of this research.

### EMPIRICAL REVIEW

The relationship between interest rate and economic growth has been a subject of discussion among economic scholars. This relationship has stimulated a lot of empirical investigations. Khalid (2007), used four separate equations to measure the relationship between interest rate deregulation and economic growth in Pakistan between 1981 and 2002. There are;

$$TS_t = \alpha_0 + \alpha_1 RGDP_t + \alpha_2 RIR_t + \alpha_3 CF_t + \alpha_4 INF_t + \alpha_5 TS_{t-1} + e_t \quad (1)$$

$$FS_t = \beta_0 + \beta_1 RGDP_t + \beta_2 RIR_t + \beta_3 CF_t + \beta_4 INF_t + \beta_5 TS_{t-1} + u_t \quad (2)$$

$$INV_t = \gamma_0 + \gamma_1 RGDP_{t-1} + \gamma_2 RIR_t + \beta_3 DC_t + \beta_4 FS_t + \beta_5 INV_{t-1} + v_t \quad (3)$$

$$RGDPG_t = \delta_0 + \delta_1 RGDP_{t-1} + \delta_2 INF_t + \delta_3 FS_t + \delta_4 Sg_t + \delta_5 Sf_t + \delta_6 CF_t + \xi_t \quad (4)$$

Where (TS) is total savings, (FS) financial saving, (INV) is investment, (RGDP) is real income, real interest rate (RIR), ( $R^f$ ) is foreign interest rate, (e) is expected appreciation of domestic currency, inflation rate (INF), (CF) is a measure of capital flight, (DC) is domestic credit, (Sg) is government saving, (Sf) is foreign. The level of total savings is proxied by gross domestic savings (GDS). Foreign reserves to GDP ratio is used as a measure of foreign saving (Sf). While equation 1 and 2 are to measure the impact of real interest rate on total savings and financial savings respectively, equation 3 measures the impact of real interest rate on investment, and equation 4 measures the impact of total savings and financial savings on economic growth. His findings were that real interest rate (RIR) has a positive effect on total savings (TS) (equation 1). The estimate of equation 2 revealed that RIR has an insignificant impact on financial savings (FS). From equation 3, while RIR was found to have an insignificant and negative impact on investment, the

relationship between (FS) and investment was also negative. Similarly, the estimate of equation 4 also revealed a negative impact of FS on real GDP. His conclusion was that interest rate liberalization has not impacted positively on economic growth in Pakistan as most of the indicators of the financial liberalization do not show any significant impact on saving, investment or growth. Albu (2006), used two separate partial models to investigate the impact of investment on GDP growth rate and the relationship between interest rate and economic growth in the Romanian economy. The models are specified as;

$$r(a) = a a + b$$
$$a(I) = c/(d + i)$$

Where  $r$  = GDP growth rate,  $a$  = investment rate;  $i$  = interest rate,  $p$  = inflation, while  $a$ ,  $b$ ,  $c$ , and  $d$  are parameters to be estimated. Albu's study revealed that while the investment-interest rate relationship is negative, the investment-economic growth relationship is positive. A study by Omar et al (2007) on the impact of interest rate liberalization on the economy of Bangladesh revealed that long-run economic growth in Bangladesh is largely explained by physical capital and real interest rate. They went on to state that financial liberalization has had significant negative impacts on economic growth implying that financial reforms failed to attract new investment. This they believe is due to the adverse investment climate existing in that country. Oshikoya (1992) used time series econometrics to investigate the impact of interest rate deregulation on economic growth in Kenya. Using data from 1970 to 1989, he found real interest rate to have a significant and negative impact on economic growth. The sample was then split into sub-periods 1970-1979 (regulation era) and 1980-1989 (deregulation era). The real interest rate had a negative and significant coefficient for the 1970-1979 period, but was positive and significant for the 1980-1989 period; thus offering no robust result of the impact of interest rate deregulation on economic growth of that country. In their work titled "The impact of Interest Rate Liberalization: Empirical Evidence for Sub-Saharan Africa (SSA) (2002), Charlier and Oguie found the real interest rate to have a significant and positive relationship with economic growth. A study conducted by Drees and Parabasioglu (1998) on the impact of interest deregulation on economic growth of Norway, Finland and Sweden revealed that with interest rates deregulation, interest rates surged in these countries leading to and increased economic growth.

Osterbaan et al. (2000) estimated the relationship between the annual rate of economic growth (YC) and the real rate of interest (RR) using the basic equation  $YC = B_0 + B_1 (RR + B_2) (RR + B_2)$ , he showed the effect of a rising real interest rate on growth. He also showed that growth is maximized when the real rate of interest lies within the normal range of say, -5 to + 15%. De Gregorio and Guidotti (1995) suggest that the relationship between real interest rates and economic growth might resemble an inverted U-curve. Very low and negative interest rates tend to cause financial disintermediation and hence to reduce growth. However, a World Bank report, cited in Oosterbaan, et al (2000), showed a positive and significant cross-section relationship between average growth and real interest rate over the period 1965 to 1985. The relationship between interest rate and economic growth as recognized in the literature on growth can be found in the neoclassical growth frame work and the Mckinnon-Shaw hypothesis. For instance, McKinnon-Shaw (1973) argued that financial repression – indiscriminate distortions of

financial prices including interest rates reduces real rate of growth. One of the basic arguments of Mckinnon-Shaw model is an investment function that responds negatively to the effective real loan rate of interest and positively to the growth rate. Mckinnon – Shaw school of thought expects financial liberalization to exert a positive effect on the rate of economic growth in both the short and medium term. Obamuyi (2009), analyzed the relationship between interest rate and economic growth in the regulation and deregulation era in Nigeria.

His model was in the form: -

$$GDP_t = \partial_0 + \partial_1 RLR_t + \partial_2 RDR_t + \partial_3 FID_t + \partial_4 INF_t + \partial_5 DSG_t + \partial_6 FPS_t + \Sigma_t$$

Where GDP is real GDP growth rate, RLR is real lending rate, RDR is real deposit rate, INF is inflation rate (measuring macro-economic instability), FID is ratio of broad money to GDP,  $M_2/CDP$  (index of financial depending), DSG is ratio of gross domestic savings to GDP and FPS is dummy variable to capture the shift in financial policy from regulation to deregulation of interest rate in 1987,  $\Sigma$  is a white noise disturbance term and  $\partial_1, \partial_2, \dots, \partial_6$  are parameters to be estimated. His findings were that there existed a unique long run relationship between interest rate and economic growth. However, according to Obamuyi, deregulation of interest rate in Nigeria may not optimally achieve its goal, if those other factors which negatively affect investment in the country are not tackled. Eregha (2010) investigated 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 credit also has negative and significant influence on interest rate variations in both the short-run and long-run. Akintoye and Olowalaju (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 Eregha (2010) whose study showed an inverse relationship between interest rate and investment rate in Nigeria.

Adofu et al (2010) "Assessed the effect of interest Rate Deregulation in Enhancing Agricultural Productivity in Nigeria"

Their model was in this form;

$$A_o = B_o + B_1 IR + B_2 ER + U$$

Where,

$A_o$  = Agricultural output

$B_o$  = Intercept

$B_1$  = Parameter estimate of interest rate

IR = Interest rate

$B_2$  = Parameter estimate of Exchange rate

ER = Exchange rate

U = Stochastic error term

The study discovered that deregulated interest rate has a significant but positive impact on Agricultural production in Nigeria.

Similarly, Amassoma et al (2011) investigated the impact of interest rate deregulation on agricultural productivity in Nigeria. Using Agricultural output (AGRIC), on Bank Lending (BKLD), Credit to Agricultural Sector (CRAG), Credit to Private Sector (CRPR), Direct

Investment (DINVT), Exchange Rate (EXH), Interest Rate (INT) and Stochastic error (U1), the explicit form of his model was in this form;

$$\text{AGRIC} = \$0 + \$1 \text{BKLD} + \$2 \text{CRAG} + \$3 \text{CRPR} + \$4 \text{DINVT} + \$5 \text{EXH} + \$6 \text{INT} + \text{U1}.$$

His finding was that interest rate deregulation (represented by INT) does not have significant impact on agricultural output in Nigeria. As a recommendation, he called on the government to encourage total deregulation of interest rate in order to avoid financial disintermediation which may lead to low credit, investment and growth. The significance of Adofu et al (2010) and Amassoma et al (2011)'s studies is informed by the fact that agriculture forms a significant part of GDP in Nigeria.

### **An Analysis of Interest Rate and Economic Growth in Nigeria**

Prior to the deregulation interest rates in 1986, the level of interest rates was administered by the Central bank of Nigeria (CBN). Okpe (1998) opined that, before the introduction of the Structural Adjustment Program (SAP), interest rate was institutionally and administratively determined by the monetary authorities, in line with the federal government macro-economic objectives such as price stability. The power to control the structure of interest rate was contained in the Banking amendment act of 1969. This act states that the rate of interest charged on advance, loans and credit facilities or interests paid on deposits by licensed bank shall be linked to the minimum rediscount rate of the central bank. According to Agu (1988), the 1969 bank decree (section 14) gave the bank of Nigeria (CBN) power not only to control but to determine and prescribe minimum and maximum interest rates chargeable by the banks. The advent of the structural adjustment program resulted in radical departure from the regime of control of interest rate and monetary management. It introduced market oriented development process with emphasis on small government, efficient resources allocation and market-determined price. The major policies of the structural adjustment program include trade liberalization, deregulation of interest rates, public sector reforms, privatization and commercialization Okpe (1998). The pre-reform period (1960-1986) is considered a period of financial repression and was characterized by a highly regulated monetary policy environment in which policies of directed credits, interest rate ceiling and restrictive monetary expansion were the rule rather than exception (Soyibo and Olayiwola, 2000). Although the rate policy instruments remain fixed, there were marginal increases. For instance, the deposit rate was increased from 4% in 1975 to 9.5% in 1986, while the lending rate rose from 6 to 10.5% within the same period.

For the reform period, deposit and lending rates were allowed to be determined by market forces and the interest rate actually increased as envisaged. For instance, the nominal deposit and lending rate rose from 9.5% and 10.5% in 1986 to 14% and 17.5% respectively in 1987 as a result of the interest rates reform in Nigeria. By 1990, the deposit and lending rates have risen to 18.8% and 25.5% respectively. The government intervened in 1991 and pegged the deposit and lending rates at 14.29% and 20.01% respectively. Unfortunately, between 1997 and 2006, the lending rate did not show a significant trend in reduction, with an average of about 22%. The real GDP growth rate which was 4.7% in 1964 increased to 19.8% in 1974, but was negative for 1978, 1982-



1984. The introduction of interest rate reform in 1987 brought a positive change in real GDP growth rate to a peak of 21% in 2002. For most of the reform period, real GDP growth was positive. However, as an instrument of monetary policy the central Bank of Nigeria CBN (2000) indirectly influenced the level and direction of change in interest rate movement through its invention rate on various money market assets especially the Minimum Rediscount Rate (MRR) as well as the stop rate of weekly tender for treasury bills. The MRR as the nominal anchor of CBN's interest rate policy continued to be used proactively in line with prevailing economic conditions while the rate of treasury bills is made market related and competitive with comparable money market instruments CBN (2006). Further, the MRR has undergone some fluctuations since 1987 to date as a result of the changes in the CBN policies which in turn have changed the overall economic conditions. In August 1987, was 15.0% and was reduced to 12.75% in december of 1987 with the objective of stimulating investment and growth in the economy. In 1989, the MRR was raised to 13.25% in order to contain inflation. To further liberalize interest rate management, the cap on interest rate was lifted in 1992 and re-imposed in 1994 when inflationary spiral could not contained. However, in October 1996, interest rates were fully deregulated with the banks given freedom to determine the structure of interest rates in consultation with their customers. The CBN however, retained its discretionary power to intervene in the money market to ensure orderly developments in interest rates. The policy of interest rate deregulation has been retained since 1997. Interestingly, the MRR was replaced with the Monetary Policy Rate (MPR). Again, the MPR was brought down to 10% from 14% MRR, with a lending rate of 13% and a deposit rate of 7% which stood as a standing facility intended to stem volatility in interest rates especially that of the interbank rates.

## **METHODOLOGY**

The study covered all the sector of the Nigerian economy within the period of 1964-2009. This was to enable the researcher measure quantitatively, the performance in terms of economic growth, of the entire economy within the period under review. The data required for this study are the Real Gross Domestic Product (RGDP), within the period under review (1964-2009). This is because the RGDP serves as proxy for collective growth of all sectors of the economy. The study also used the Real Lending Rate (RLR) (as a measure of Interest rates deregulation), the Real Deposit Rate (RDR), investment, total savings, money supply ( $M_2$ ), population and government expenditure. Clearly, all these constitute secondary data. These data were sourced from the Central Bank of Nigeria (CBN) publications, particularly the Statistical Bulletin and World Bank data base. Others are journals, magazines, reports, related textbooks and Federal Office of Statistics (FOS) review of the economy. The study adopted analytical method of data analysis. The analytical tool consisted of Ordinary Least Square (OLS) regression. Four separate regressions were estimated for each of the deregulation era (1987-2009) and the regulation era (1964-1986). The first regression attempted to measure the relationship between real deposit rate and total savings before and after the deregulation exercise in Nigeria, the second measured the relationship between real lending rate and investment before and after the deregulation of interest rates. The third separately captured the impact of investment on economic growth within the two periods. And the last expressed the relationship between real lending rate and economic growth before and after the deregulation exercise. The essence was to enable the researcher reveal the interest rate

and economic growth relationship by looking at the transmission mechanism through which this relationship exists, and also to make a comparative analysis between deregulated and regulated interest rates in terms of their contribution to economic growth. The usual tests of significance and goodness-of-fit were employed to decide whether or not interest rate deregulation has a significant impact on the economic growth in Nigeria. These included the t-values, the coefficient of determination ( $R^2$ ) and adjusted  $R^2$ , the F test, and the Durbin-watson test for autocorrelation. The t-test and F-test were both conducted at 5% and 10% level of significance. As a result, using their respective probability values, where their probabilities were below 10%, they were considered as being statistically significant.

### **Model Specification**

According to the financial liberalization theory, interest rate deregulation would cause real deposit rate to rise and impact positively on total savings. While real lending rate would be negatively related to investment, investment would be positively related to economic growth. Thus real lending rate would be inversely related to economic growth. This methodology was employed by Khalid (2007) in specifying his model. The model specification for this research improved upon that of Khalid by attempting to also measure the relationship between economic growth and real lending rate. These models are;

$$TS = a_0 + a_1RDR + a_2MS + U_1 \dots \dots \dots (1)$$

$$INV = b_0 + b_1RLR + b_2TS + b_3POP + U_2 \dots \dots \dots (2)$$

$$RGDP = c_0 + c_1INV + U_3 \dots \dots \dots (3)$$

$$RGDP = d_0 + d_1RLR + d_2GE + U_4 \dots \dots \dots (4)$$

Where;

TS=total savings

INV=investment

RGDP=real gross domestic product

POP=population

MS=money supply ( $M_2$ )

GE=government expenditure

RDR=real deposit rate (defined as Nominal deposit rate-inflation rate)

RLR=real lending rate (defined as Nominal lending rate-inflation rate)

$a_0$ ,  $a_1$  and  $a_2$ =parameters to be estimated for model (1)

$b_0$ ,  $b_1$ ,  $b_2$  and  $b_3$ =parameters to be estimated for model (2)

$c_0$  and  $c_1$ =parameters to be estimated for model (3)

$d_0$ ,  $d_1$  and  $d_3$ =parameters to be estimated for model (4)

$U_1$ ,  $U_2$ ,  $U_3$  and  $U_4$ =stochastic error terms for model 1, 2, 3 and 4 respectively.

Model 1 captured the relationship between real deposit rate and total savings; model 2 measured the impact of real lending rate on investment; model 3 captured the relationship between investment and economic growth; and model 4 measured the relationship between real lending rate and economic growth. The inclusion of all explanatory variables in their respective models is in line with Obamuyi (2009), Jhingan (2003) and Mckinnon (1973) who claimed these variables are explanatory variables as used in the model specifications.

### A Priori Expectations

It was expected that;

For **Model 1: Both** RDR and MS should be positively related to TS. That is,  $a_0$ ,  $a_1$  and  $a_3 > 0$ .

For **Model 2:** RLR should be negatively related to INV while POP and TS should be positively related to INV. That is  $b_0 > 0$ ,  $b_0 < 0$ ,  $b_2$  and  $b_3 > 0$ .

For **Model 3:** INV should be positively related to RGDP. That is,  $c_0$  and  $c_1$  should  $> 0$ .

For **Model 4:** RLR should be negatively related to RGDP, while GE should be positively related to RGDP. That is,  $d_0 > 0$ ,  $d_1 < 0$  and  $d_2 > 0$ .

### ANALYSIS OF REGRESSION RESULT

The results of the estimated models are presented on page 16-19.

#### Model 1

The result of model 1 in the deregulation era (1987-2009) shows that Real Deposit Rate (RDR) has a negative and insignificant impact on Total Savings (TS) in Nigeria with a coefficient -450.75 and a probability value of 0.87. Money Supply (MS) however has a positive and significant impact on TS as its coefficient is 0.357 with a probability value of 0.00. The model shows a good fit with an  $R^2$  of 89%, adjusted  $R^2$  of 88%, Durbin Watson statistic of 1.78 and an F statistic of 75.9 with a probability value of 0.00. For the regulation era (1964-1986), the estimated model reveals a positive but insignificant relationship between RDR and TS as the coefficient is 13.44 with a probability value of 0.28. As in the case of the deregulation era, Money Supply (MS) also showed a positive and significant impact on TS with a coefficient of 0.41 and a probability value of 0.00. The estimated model also showed a good fit as both the  $R^2$  and adjusted  $R^2$  lie above 96%, the Durbin Watson statistic is 0.81, while the F statistic is 339.78 with a probability value of 0.00.

#### Model 2

The result of model 2 in the deregulation era (1987-2009) shows that Real Lending Rate (RLR) has a negative but insignificant impact on investment (INV) in Nigeria as its coefficient is -0.0000091 with a probability value of 0.9. Similarly, population (POP) has a negative but insignificant impact on INV as its coefficient is -5006.7 with a probability value of 0.3. However, Total savings (TS) has a positive and significant impact on INV as its coefficient is 1.348 with a probability value of 0.00. The estimated model shows a good fit as both its  $R^2$  and adjusted  $R^2$  are above 98%, its F statistic is significant with a probability value of 0.00, and its Durbin Watson statistic is 1.62. The situation is however different in the regulation era (1964-1986). Here, the estimated model shows an insignificant but positive relationship between RLR and INV. This is not in line with a priori expectation as its coefficient is 1.079 with a probability value of 0.48. However, both Total Savings (TS) and population (POP) were found to have positive and significant impact on INV as their respective coefficients are 1.09 and 207.97 with respective probabilities of 0.00 and 0.0035.

### **Model 3**

For the deregulation era (1987–2009) the estimates of model 2 show a positive and significant relationship between investment (INV) and Real GDP (RGDP). The coefficient is 0.113 with a probability value of 0.00. The  $R^2$  and adjusted  $R^2$  are 67% and 65% respectively while the Durbin –Watson is 1.76. The F statistic is significant with a probability value of 0.000005. This shows the estimated model has a good fit. The estimates of model 3 in the regulation era (1984 – 1986) also show that INV has a positive and significant impact on RGDP. The coefficient is 12.81 with a probability value of 0.000. The model also has a good fit in the regulation era as both its  $R^2$  and adjusted  $R^2$  are above 79%, its Durbin Watson statistic is 1.27, and its F statistics is significant with a probability value of 0.00.

### **Model 4**

The estimate of model 4 in the deregulation era shows that Real Lending Rate (RLR) has a negative but insignificant impact on Real GDP (RGDP) as its coefficient is -0.0000061 with a probability value of 0.93. Government expenditure (GE) however, shows a positive and significant impact on RGDP as its coefficient is 0.168 with a probability value of 0.000. Both the  $R^2$  and adjusted  $R^2$  lie above 89%, the Durbin – Watson statistic is 1.77, while the F – statistic is significant with a probability of 0.00. This shows that the estimated model has a good fit in the deregulation era. For the regulation era, the estimate of model 4 shows an insignificant and positive relationship between RLR and RGDP as the coefficient of RLR is 7.61 with a probability of 0.64. Government expenditure (GE) shows a positive and significant impact on economic growth (RGDP) with a coefficient of 11.72 and a probability of 0.0001. The model also shows a good fit with  $R^2$  of 54%, adjusted  $R^2$  of 49%, Durbin Watson statistic of 1.81 and F statistic of 11.37 which is significant at 0.00056 level of significance.

## **DISCUSSION OF FINDINGS**

This study reveals that Real Deposit Rate (RDR) has an insignificant impact on Total Savings in Nigeria before and after the deregulation of interest rates (Model 1). For a lot of the periods within the scope of this study, RDR was negative. This has been attributed to the facts that interest rates have been repressed in Nigeria and also due the high inflation rate in the country. The implication is that low and sometimes negative RDR, discourages funds mobilization as people would prefer to consume their current income rather than saving at a rate lower than the inflation rate. The result of model 2 shows that Real Lending Rate (RLR) does not have significant impact on investment (INV) in Nigeria in both deregulation and regulation era. This shows that the deregulation exercise has not been effective in enhancing the role of RLR in promoting investment in Nigeria. The model also shows that Total Savings (TS) has a significant and positive impact on Investment (INV) in Nigeria before and after the deregulation exercise. TS represents loanable funds for investment. So as these funds rise, it is expected that investment would rise. However, population (POP) was found to constrain INV after the deregulation exercise. A high population can cause overcrowding which promotes social vices such as crime and insecurity, thereby making the economic environment less conducive for investment. This study also revealed from the result of model 3 that Investment is significant in promoting economic growth in Nigeria. For both the regulation and deregulation era, INV shows a positive and significant impact on economic growth (RGDP). Similarly,

Government expenditure (GE) has a positive and significant impact on Real GDP (RGDP) before and after the deregulation of interest rates in Nigeria. This is captured by model 4. The implication is that for a sustained economic growth in Nigeria, both Investment and Government expenditure must be rising. This would by multiplier effect, boost income in Nigeria. The post deregulation era witnessed an insignificant and negative relationship between RLR and RGDP (Model 4). This is understandable as RLR revealed an insignificant impact on investment (INV) in the deregulation era (Model 2). Since RLR does not significantly affect INV, then it cannot significantly affect RGDP since RLR affects RGDP through INV. This shows that interest rate deregulation has not had any significant impact on economic growth in Nigeria. This may be due to the incomplete deregulation exercise. As pointed out by Amassoma et al (2011), interest is still being tied to monetary policy rate in Nigeria. The results also show that RLR did not impact significantly on investment (INV) and hence economic growth (RGDP) during the regulation era (1964–1986). And since interest rates have not been effectively deregulated, the situation did not change for the post deregulation era (1987–2009).

### **SUMMARY OF MAJOR FINDINGS**

- Real Deposit Rate (RDR) has no significant impact on savings before and after the deregulation of interest rates in Nigeria.
- Real Lending Rate has no significant impact on investment and hence economic growth in Nigeria.
- Investment has a positive and significant impact on economic growth in Nigeria.

### **RECOMMENDATIONS**

Based on the findings of this study, the following recommendations are hereby made;

- Since interest rate deregulation has no significant impact on savings, investment and economic growth in Nigeria, there is need for authorities to carry out far reaching reforms that would enhance the role of money market in funds mobilization and disbursement for investment purposes. This may include the complete deregulation of interest rates which would allow their values to be determined absolutely by market forces and not by any administratively determined rate. This would enable the economy reap the full benefits of the deregulation exercise which was introduced about 25 years ago with little satisfactory results
- The high inflation rate in the country has adversely affected real interest rate in Nigeria. As a result, real interest rates are so low and sometimes negative. This has had adverse effects on funds mobilization in the economy. Government should therefore implement policies that would help curb the present level of inflation in the economy to a level lower than interest rates.
- Also, population control policies should be implemented to control the rising population. The estimates of model 2 show a negative and insignificant relationship between population and investment. This means the rising population in Nigeria constrains investment hence economic growth. Birth control policies that would limit the number of child birth per family should be implemented to curtail the adverse effects of population on investment in Nigeria.

- Lastly, government should improve the country's infrastructural base. Power and access roads should be improved upon to create an enabling environment for investment to thrive. Also, government should work with the informal financial sector by granting interest-free loans for investment purposes. These efforts would help to boost investment and economic growth in Nigeria.

## **CONCLUSION**

In conclusion, the study was able to show that interest rate deregulation has no significant impact on savings, investment and economic growth in Nigeria. This contradicts the widely established significant relationship between interest rate deregulation and these variables, as presented by the Mckinnon–Shaw financial liberation hypothesis. This may however, be due to the incomplete deregulation exercise as the value of interest rates in Nigeria are still tied to the monetary policy rate of the central bank. As a result, real interest rates are still being repressed, thereby limiting its role in financial intermediation for investment and economic growth. This calls for reforms in the money market to enable it effectively play its role of financial intermediation.

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**RESULT OF ESTIMATED MODELS****MODEL 1****DEREGULATION ERA (1987-2009)**

Dependent Variable: TS

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-64507.80	83150.53	-0.775795	0.4479
RDR	-450.7566	2767.918	-0.162850	0.8725
MS	0.357019	0.019198	18.59678	0.0000
R-squared	0.894001	Mean dependent var		473778.6
Adjusted R-squared	0.882223	S.D. dependent var		682269.6
S.E. of regression	234145.3	Akaike info criterion		27.69684
Sum squared resid	9.87E+11	Schwarz criterion		27.84605
Log likelihood	-287.8168	Hannan-Quinn criter.		27.72922
F-statistic	75.90654	Durbin-Watson stat		1.788677
Prob(F-statistic)	0.000000			

**REGULATION ERA (1964-1986)**

Dependent Variable: TS

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-286.2344	204.4021	-1.400350	0.1775
RDR	13.44335	12.23393	1.098858	0.2856
MS	0.411032	0.016040	25.62542	0.0000
R-squared	0.972801	Mean dependent var		3234.300
Adjusted R-squared	0.969938	S.D. dependent var		3864.823
S.E. of regression	670.0959	Akaike info criterion		15.97884
Sum squared resid	8531543.	Schwarz criterion		16.12762
Log likelihood	-172.7673	Hannan-Quinn criter.		16.01389
F-statistic	339.7807	Durbin-Watson stat		0.815801
Prob(F-statistic)	0.000000			

SOURCE: Data Analysis, 2011

**MODEL 2****DEREGULATION ERA (1987-2009)**

Dependent Variable: INV

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	519116.9	536055.0	0.968402	0.3457
RLR	-9.05E-06	7.81E-05	-0.115883	0.9090
TS	1.348417	0.060560	22.26572	0.0000
POP	-5006.734	4816.405	-1.039517	0.3123
R-squared	0.984965	Mean dependent var		1137633.
Adjusted R-squared	0.982459	S.D. dependent var		1946153.

S.E. of regression	257754.5	Akaike info criterion	27.92037
Sum squared resid	1.20E+12	Schwarz criterion	28.11874
Log likelihood	-303.1241	Hannan-Quinn criter.	27.96710
F-statistic	393.0611	Durbin-Watson stat	1.623086
Prob(F-statistic)	0.000000		

**REGULATION ERA (1964-1986)**

Dependent Variable: INV

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11299.70	3594.728	-3.143407	0.0059
RLR	1.078995	1.498704	0.719952	0.4813
TS	1.090057	0.169206	6.442203	0.0000
POP	207.9714	61.34908	3.389968	0.0035
R-squared	0.974569	Mean dependent var	3635.614	
Adjusted R-squared	0.970082	S.D. dependent var	4460.638	
S.E. of regression	771.5537	Akaike info criterion	16.30433	
Sum squared resid	10120016	Schwarz criterion	16.50329	
Log likelihood	-167.1955	Hannan-Quinn criter.	16.34751	
F-statistic	217.1616	Durbin-Watson stat	1.953360	
Prob(F-statistic)	0.000000			

SOURCE: Data Analysis, 2011

**MODEL 3**

**DEREGULATION ERA (1987-2009)**

Dependent Variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	308394.1	20010.74	15.41143	0.0000
INV	0.113272	0.013975	8.105067	0.0000
R-squared	0.676250	Mean dependent var	353939.5	
Adjusted R-squared	0.659210	S.D. dependent var	129681.1	
S.E. of regression	75704.20	Akaike info criterion	25.39745	
Sum squared resid	1.09E+11	Schwarz criterion	25.49693	
Log likelihood	-264.6732	Hannan-Quinn criter.	25.41904	
F-statistic	39.68717	Durbin-Watson stat	1.769636	
Prob(F-statistic)	0.000005			

**REGULATION ERA (1964-1986)**

Dependent Variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8740.562	9791.316	-0.892685	0.3832
INV	12.80100	1.289793	9.924846	0.0000
R-squared	0.808923	Mean dependent var	47862.25	

Adjusted R-squared	0.798866	S.D. dependent var	73399.32
S.E. of regression	32918.06	Akaike info criterion	23.73182
Sum squared resid	2.06E+10	Schwarz criterion	23.83130
Log likelihood	-247.1841	Hannan-Quinn criter.	23.75341
F-statistic	80.43644	Durbin-Watson stat	1.276959
Prob(F-statistic)	0.000000		

SOURCE: Data Analysis, 2011

**MODEL 4**

**DEREGULATION ERA (1987-2009)**

Dependent Variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	256375.7	13719.26	18.68728	0.0000
RLR	-1.07E-06	1.28E-05	-0.083559	0.9343
GE	0.168392	0.010786	15.61246	0.0000
R-squared	0.904813	Mean dependent var	353939.5	
Adjusted R-squared	0.894236	S.D. dependent var	129681.1	
S.E. of regression	42174.03	Akaike info criterion	24.26856	
Sum squared resid	3.20E+10	Schwarz criterion	24.41778	
Log likelihood	-251.8199	Hannan-Quinn criter.	24.30094	
F-statistic	85.55033	Durbin-Watson stat	1.777727	
Prob(F-statistic)	0.000000			

**REGULATION ERA (1964-1986)**

Dependent Variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9756.166	18254.71	-0.534447	0.5992
RLR	7.617620	16.14782	0.471743	0.6425
GE	11.72267	2.360302	4.966598	0.0001
R-squared	0.544866	Mean dependent var	54824.71	
Adjusted R-squared	0.496957	S.D. dependent var	78723.45	
S.E. of regression	55835.01	Akaike info criterion	24.82431	
Sum squared resid	5.92E+10	Schwarz criterion	24.97309	
Log likelihood	-270.0674	Hannan-Quinn criter.	24.85936	
F-statistic	11.37298	Durbin-Watson stat	1.808306	
Prob(F-statistic)	0.000565			

Source:Data Analysis,  
2011