



ISSN Print: 2394-7500  
ISSN Online: 2394-5869  
Impact Factor: 5.2  
IJAR 2019; 5(3): 186-193  
www.allresearchjournal.com  
Received: 26-01-2019  
Accepted: 27-02-2019

**Dr. CO Obi**

Department of Economics,  
Chukwuemeka Odumegwu  
Ojukwu University (COOU),  
Anambra, Nigeria

**Dr. CI Ezeanyej**

Department of Economics  
Faculty of Social Sciences  
Chukwuemeka Odumegwu  
Ojukwu University, Anambra,  
Nigeria

**Correspondence**

**Dr. CO Obi**

Department of Economics,  
Chukwuemeka, Odumegwu  
Ojukwu University (COOU),  
Anambra State, Nigeria

## Interest rate deregulation and savings mobilization in Nigeria: An impact analysis

Dr. CO Obi and Dr. CI Ezeanyej

### Abstract

This study tries to establish the impact of interest rate deregulation on saving mobilization in Nigeria from 1981 to 2017. The Augmented Dickey-Fuller (ADF) test, co-integration test and Error Correction Model (ECM), were employed in the analysis. The research findings revealed that interest rate and Government policy, proxied by dummy variable, is negative and statistically insignificant on savings mobilization. Also gross capital formation, inflation rate and real GDP are positive but statistically insignificant on savings mobilization in Nigeria. The implication of this is that government policies over the years have hindered commercial banks from performing optimally both in terms of credit allocation to sectors; exchange rate and interest rate determination which are supposed to be market driven. It was therefore recommended that a comprehensive deregulation of interest rate by the monetary authorities be affected so that commercial banks can determine their interest rate based on the market price of goods and services. Also, the central bank authorities must also work hard to reduce inflation to probably single digit on consistent basis since real interest rate levels are affected by inflation.

**Keywords:** savings mobilization, real interest rate, gross capital formation, inflation rate

### 1. Introduction

Interest rate is a vital tool of macroeconomic management for the government of any country in the world. The level of interest rate in any economy, especially the Nigerian economy is crucial in view of its role in controlling inflation, inducing savings which can be channeled to investment and thereby increasing employment output, and efficient financial resource utilization. Interest rate plays an important role in mobilizing savings and in the efficient utilization of this savings into productive investment that would boost economic growth (Okpe, 2018) [24]. Adeleke and Gbadebo (2014) [3]; Hishongwa (2015) [15] and Adalaku (2015) [2] pointed out that savings play a significant role in economic growth of any economy. Therefore ensuring an efficient level of interest is seen as an important prerequisite for the development of other sectors in the Nigerian economy. The basic role of interest rate as enunciated by Lanyi and Saracoglus (1983) [19] including, among others, is to serve as a reward for postponing current consumption; and that of accumulating monetary resources to influence the demand and allocation of borrowed funds. Also, both the domestic interest rate together with foreign interest rate and expected rate of inflation jointly influence whether savings are accumulated in domestic assets, foreign assets, foreign financial assets or inflation hedge in making decision on savings and borrowing.

The advent of the structural adjustment programme (SAP) in 1986 ushered in an era of dynamic interest rate regime where interest rates were more influenced by market forces. This shift de-emphasized direct investment stimulation through low interest rates and encouraged savings mobilization by decontrolling interest rates (Essien & Oniwoduokit, 1997). Such liberalization represents a policy response, encompassing a package of measures to remove all undesirable state imposed constraints on the free working of the financial markets. The measures include the removal of interest rate ceiling, and the loosening of deposit and credit controls (Uremadu, 2006) [28]. The regulation of interest rate in the face of high rate of inflation can make real interest rate to be negative. This can erode the profitability of banks; inhibit savings mobilization and constrain economic growth and development.

These scholars have advocated for financial liberalization so as to boost the savings as well as adequate returns for banks. They advocate for a financial liberalization where interest rate will be market determined. According to Iyoha (1996)<sup>[16]</sup>, the ultimate objective of the deregulation under SAP was to bring about improved financial intermediation by enhancing the role of banks in effectively mobilizing domestic savings and optimally allocating investable resources. But studies conducted by Anthony and Egbiremolen (2014)<sup>[6]</sup> observed no causality between financial liberalization and interest rate in Nigeria while Ogwumike and Ofoegbu (2012)<sup>[23]</sup> opined that financial liberalization does not bring about positive real interest rate and that sometimes government policy on financial liberalization are mixed.

The foregoing points to a basic fact, that interest rate are expected to play central role in savings mobilization. It is in this context that the impact of interest rate deregulation policy on savings mobilization is a key policy target in the practice of financial reforms around the world (Aziakpono, 2004)<sup>[9]</sup>. However, the need to reexamine the policies of regulation and deregulation of interest rate and how they have impacted on the Nigerian economy becomes apt and need to be address in this study.

## 1.2 Research Problem

Over two decades ago, Nigerian economy witnessed the introduction of Structural Adjustment Program (SAP) which shifted emphasis from public sector to private sector. The goal was to, among other things, encourage private domestic savings, private domestic investment and capital formation in order to enhance economic growth. By encouraging savings, resources were diverted from current consumption and invested in capital enterprises. Unfortunately things have not worked out as expected. The initial optimism expressed about public sector reforms has not been met. Although the reform programme led to privatization and commercialization of many state enterprises and improvement in some macroeconomic variables like the nominal interest rate and money supply, but not without its disappointing performances. For example, Nigeria continues to be confronted with low rate of real economic growth. Besides, the aggregate supply continued to diminish leading to demand-pull inflation. One worrisome aspect of the result of liberalization of the public sector in Nigeria is the extent of distress in the real sector as well as high rate of unemployment. This distress syndrome in the economy remains inadequately detected and controlled. Therefore the need for putting the economy back on track through savings mobilization for investment and economic growth became necessary.

In view of the stated research problem, the study broadly aimed at examining how to mobilize savings through real interest rate in Nigeria, while specifically dwelling on the effects of some macroeconomic variables like real savings rate, real interest rate, gross capital formation (% of GDP), inflation rate, Real GDP growth rate, Government policy, proxied by dummy variable, among others on savings mobilization capacity of Nigerian economy. This study is important because the behavior of interest rates, to a large extent, determines the investment activities and hence economic growth of a country. It is therefore relevant and timely in view of the fact that there is still much ado empirically on the effects of interest rates on savings

mobilization in Nigeria. It is obvious according to Umoh (2003)<sup>[27]</sup> that an understanding of the nature of aggregate national savings behavior is critical in designing policies to promote savings, investment and growth.

## 2. Review of Related Literature

### 2.1 Conceptual Framework

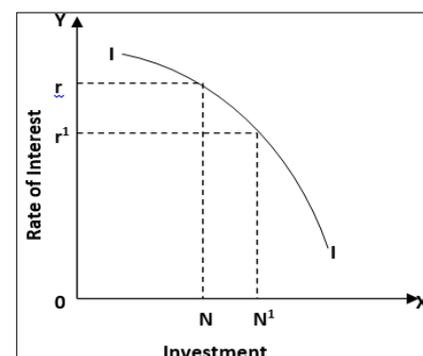
Savings can be defined as part of disposable income that is not allocated to consumption. Therefore consumption and saving decisions of economic agents in one period are simultaneously taken. Economic agents intend to increase their utility through their consumption decisions. However, usually they do not only focus on consumption today, but also on their future consumption. Therefore, the consumption decisions of economic agents are taken in an intertemporal framework and they are dynamically linked. Savings of individuals help them shift resources between different periods of their life-time in order to smooth their consumption path. This implies that savings are also determined in an intertemporal framework and can be regarded as deferred consumption. Private savings has been defined as the remaining income or unused income of the private citizens after paying taxes and spending on consumption goods (Mankiw, 2011)<sup>[20]</sup>.

### 2.2 Theoretical Review

#### 1. Classical Theory of Interest Rate

According to the classical theory, the rate of interest is determined by the supply and demand of capital. The supply of capital is governed by time preference while the demand for capital is governed by the expected productivity of capital. The theory is regarded as a real theory of interest since it explains the determination of the rate of interest by real forces such as thriftiness, time preference and productivity of capital.

On the demand side, the demand for capital comprises mainly of the demand for productive purposes, thus capital is demanded by the investors because it is productive. However, the law of variable proportions governs productivity of capital. This means productivity of capital diminishes with additional units of capital demanded by investors, up to a stage when the employment of an additional unit of capital is no more worthwhile. This implies that the rate of interest must at least equal to the marginal productivity of capital for the investor to demand capital. It shows that at a higher rate of interest the demand for capital is low and it is high at a lower rate of interest. Thus, the demand for capital is inversely related to the rate of interest and the demand schedule for investment curve slopes downward from left to right.

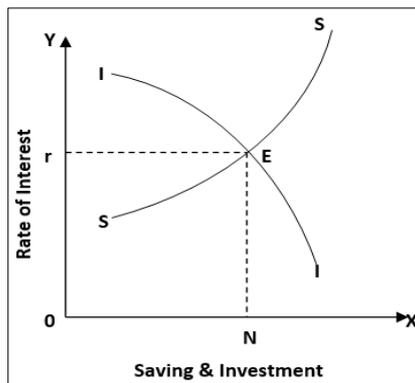


Source: Keynes (1936)<sup>[17]</sup>

Fig 1: Investment Demand Curve

On the supply side, the supply of capital depends on savings, and the rate of interest remains the most potent incentive to savings. Savings involves a sacrifice, abstinence or waiting when present consumption is foregone in order to earn interest. The higher the rate of interest, the higher will be the propensity to save and more will be the supply of funds. The supply curve of capital or the saving curve, thus moves upward to the right.

As enunciated above, the rate of interest is determined by the interaction of the investment demand curve and the supply of savings curve. This is shown in Figure 2.2 below. *SS* is the supply of savings curve while *II* is the investment demand curve. Point *E* denotes the point of intersection of Investment demand curve and the supply of savings curve *SS*. Or is determined as the equilibrium rate of interest, at which point, the demand for investment and supply of savings equilibrate at quantity *ON*.



Source: Keynes (1936) [17]

Fig 2: Classical Theory: Determination of Interest Rate

## 2. Keynesian's liquidity preference approach

The Liquidity preference theory developed by Keynes (1936) [17] is seen as a short term theory of the rate of interest in contrast to the Classical theory usually regarded as a long term model of interest rate determination in the economy. The theory is predicated on the equality of the demand for money (cash balances) and supply of money in the money and capital markets. Keynes defined the rate of interest as the reward for not hoarding, but the reward for parting with liquidity for a specified period. It is the "price" which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash.

In the Keynesian sense, the rate of interest is determined by the demand for and the supply of money. This theory is, therefore, characterised as the monetary theory of interest rate, as distinct from the real theory of interest of the classicals. Keynes coined the term "liquidity preference" for the demand for money. Liquidity preference is the desire to hold cash. In the words of Keynes, the rate of interest is the "premium which has to be offered to induce people to hold their wealth in some form other than hoarded money". The higher the liquidity preference, the higher will be the rate of interest that will have to be paid to the holders of cash to induce them to part with their liquid assets. The lower the liquidity preference, the lower will be the rate of interest that will be paid to the cash-holders. Keynes identified three motives behind the desire of the people to hold liquid cash: (1) the transactions motive, (2) the precautionary motive, and (3) the speculative motive.

The transactions motive relates to the "need of cash for the current transactions of personal and business exchanges." The transactions motive is divided into the income and business motives. The income motive is meant to bridge the interval between the receipt of income and its disbursement, while the business motive is meant to bridge the gap of the interval between the time of incurring business costs and that of receipt of sale proceeds. If the time between the incurring of expenditure and receipt of income is small, less cash will be held by the people for current transactions and vice-versa. There will, however, be changes in the transactions demand for money depending upon the expectations of the income recipients and businessmen.

The precautionary motive relates to the desire to provide for contingencies requiring sudden expenditures, and for unforeseen opportunities of advantageous purchases. Individuals hold some cash to provide for illness, accidents, unemployment and other unforeseen contingencies. Businessmen similarly, keep cash in reserve to meet unexpected profitable deals. The precautionary demand for money depends upon the level of income.

Keynes holds that the transactions and precautionary motive are relatively interest inelastic, but highly income elastic. The amount of money held under these two motives ( $M_1$ ) is a function ( $L_1$ ) of the level of income ( $Y$ ) and is expressed as  $M_1=L_1(Y)$ .

Money held under the speculative motive, in the words of Keynes, is "for securing profit from knowing better than the market what the future will bring forth". Individuals and businessmen that have funds, after keeping enough for transactions and precautionary purposes, like to gain by investing in bonds. Money held for speculative purposes is a liquid store of value, which can be invested at an opportune moment in interest-bearing bonds or security.

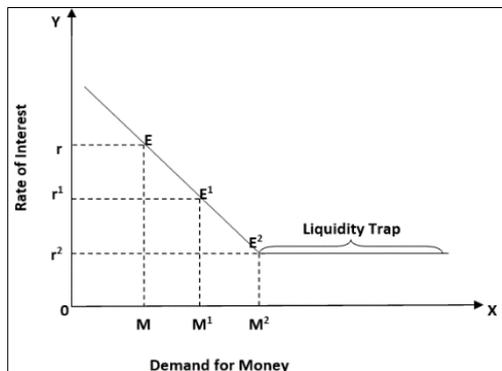
Bond prices and the rate of interest are inversely related to each other. Low bond prices are indicative of high interest rates, and high bond prices reflect low interest rates. According to Keynes, it is expectations about changes in bond prices or in the current market rate of interest that determine the speculative demand for money. The speculative demand for money is a decreasing function of the rate of interest. The higher the rate of interest, the lower the speculative demand for money.

Keynes denoted the speculative demand for money as  $M_2=L_2(r)$ , where  $L_2$  is the speculative demand for money and  $r$  is the rate of interest. The total liquid money is denoted by  $M=M_1+M_2$ , which is the sum of the transactions plus the precautionary motives ( $M_1$ ) and the speculative motive for holding money ( $M_2$ ). Though  $M_1$  is a function of income and  $M_2$  of the rate of interest, the two are not in watertight compartments. Even  $M_1$  is interest elastic at high interest rates. If there is increased demand for  $M_1$ , it can be met by transferring funds from idle balances,  $M_2$ .

Geometrically, as pointed out in Figure 2.3, money held under the speculative motive is a decreasing function of the rate of interest. The X-axis indicates the speculative demand for money, while the Y-axis represented the rate of interest. The liquidity preference curve *LP*, is downward sloping towards the right indicating that the higher the rate of interest, the lower the demand for speculative purposes, and vice versa.

It is important to note in Figure 2.3 that the liquidity preference curve *LP* becomes quite flat i.e., perfectly elastic at a very low rate of interest. This perfectly elastic portion of

liquidity preference curve indicates the position of absolute liquidity preference of economic agents. At a very low rate of interest, people will hold any amount of money as inactive balances. This portion of liquidity preference curve with absolute liquidity preference is called liquidity trap by economists.



Source: (Keynes, 1936) and Ezeanyejí, (2014) [17, 11, 12]

Fig 3: Demand for Money

## 2.2 Empirical Literature

Under this section, empirical literature on the impact of interest rate on mobilization of private savings is extensively discussed. For instance, Okpe (2018) [24] investigated the effect of interest rate on savings in Nigeria for the period 1970-2016. Ordinary Least Squares method was employed in the analysis. The result discovered that interest rate regulation has no significant impact on saving while within the period of deregulation, interest rate has a positive but insignificant effect on savings. The positive effect of interest rate on savings within this period is an indication that interest rate deregulation has the potential of encouraging savings in Nigeria. This result corroborates with the negative effect of the Dummy variables which shows that other non interest rate policies negatively impact on savings in Nigeria. Also, Alaparhi and Kota (2018) [6] assessed the effect of interest rates on saving and investment in Ethiopia from 1986 –2015. The Vector Auto Regressive (VAR) model, Co-integration and vector error correction model tests are applied to assess the short and long run relationship among the variables. The result revealed that interest rates have significant effect on saving and investment in Ethiopia. Gunasekara and Kumari (2018) [13] investigated the most effective factors affecting deposit mobilization, followed by a random sampling method, in which 120 deposit account holders were selected as a sample from three different convenient sample areas. The Questionnaires are equipped with questions to obtain primary data. The data was analyzed using descriptive statistics and regression analysis. The study discovered that there is a significant and positive relationship between deposit mobilization and deposit interest rate, security, branch expansion, services, technology and awareness. Moreover, there is a significant relationship between living area and the amount of deposits and the demographic variables, such as, gender, occupation, education level and income significantly affect for deposit mobilization.

Using panel data of forty-two (42) countries in Africa over the period 1998 – 2015 and the system generalized method of moments dynamic panel estimation framework, Twerefou and Ayimadu (2018) [26] examined the effects of financial deepening on saving mobilization in African Countries. The

study revealed there is an insignificantly positive relationship between Broad money supply and gross domestic savings in Africa. However, the impact of domestic credit to private sector was negative and significant. These results pointed out that financial deepening has not stimulated domestic resource mobilization in Africa. However, growth in per capita income had a significantly positive impact on gross domestic savings which is consistent with the life cycle theory, increase in real interest rate negatively affected gross domestic savings while increase in age dependency reduced gross domestic savings.

Ahmed, Awonusi, Adebajo and Ewunuga (2017) [4] examined the impact of financial sector reforms on savings mobilization in Nigeria from 1980 to 2013. It specifically examined the effects of financial sector reforms variables namely ratio of domestic credit given to the private sector to Gross Domestic Product, prime lending rate, ratio of broad money supply to Gross Domestic Product. Others include percentage contribution of financial sector to Gross Domestic Product, Inflation and Dummy variable (a measure of pre-reform and post reform periods) on savings mobilization (measured by domestic savings ratio) in Nigeria, using the ordinary least square (OLS) estimation technique. The result obtained from the regression analysis confirmed that financial sector reforms variables used in the study have been effective in enhancing savings mobilization in Nigeria. Similarly, Hasan, Samreen and Atiya (2017) [14] examined the effects of interest rate on savings and deposits of scheduled banks in Pakistan from 2002 to 2016. Savings and deposit are considered as dependent variable in two different models and deposit interest rate as explanatory variable. The Ordinary Least Square (OLS) regression method was applied. The result pointed out that deposit rate is positively affected by interest rate whereas savings is adversely influenced by interest rate but comparatively interest rate is strongly significant for savings.

Ouma, Odongo and Were (2017) [25] sought to established whether the pervasive use of mobile telephony to provide financial services is a boon for savings mobilization in selected countries in sub Saharan Africa. The findings show that availability and usage of mobile phones to provide financial services promotes the likelihood of saving at the household level. Not only does access to mobile financial services boost the likelihood to save, but also has a significant impact on the amounts saved, perhaps due to the frequency and convenience with which such transactions can be undertaken using a mobile phone. Both forms of savings, that is, basic mobile phone savings stored in the phone and bank integrated mobile savings are likely to be promoted by use of mobile phones. Thus, growing and deepening the scope for mobile phone financial services is an avenue for promoting savings mobilization, especially among the poor and low income groups with constrained access to formal financial services.

Nwafor, Odey and Effiong (2017) [22] investigated the existing relationship between financial liberalization and domestic savings in Nigeria. In achieving this, contemporary econometric approach involving unit root test, co-integration test and error correction model was adopted to analyze the time series data from 1970 to 2015. The study used interest rate spread and financial liberalization index as measures of financial liberalization. It used credit to the private sector over GDP and the number of bank branches

over the population to measure financial deepening and financial inclusion respectively. The findings revealed that per capita income and financial deepening were the two factors that affected domestic savings in Nigeria significantly as against interest rate which was widely viewed as the major factor affecting savings mobilization in Less Developed Countries.

Abusomwan and Ezebuihe (2017) <sup>[1]</sup> empirically investigated the long run and short run dynamic impact of interest rate and output on gross domestic savings and gross capital formation in Nigeria. Employing Ordinary Least Squares, Co-integration, and Error Correction Mechanism and Granger Causality econometric techniques on a data spanning 1981 to 2014. It was found that changes in output explains the long run and short run dynamic behaviour of gross domestic savings and gross capital formation which were used as proxies for savings and investment respectively. Whereas, a bi-causality was established between output and investment, causality flowed from output to savings in Nigeria. The research also found that interest rate is not a significant determinant of savings and investment in Nigeria in both long run and short run.

Using data on 135 countries from 1995 to 2014, Aizenman, Cheung and Ito (2017) <sup>[5]</sup> examined the alternative perspectives of interest rate effect on private saving. The study showed that a low-interest rate environment can yield different effects on private saving across country groups under different economic environments. A well-developed financial market, an aging population, and output volatility can all contribute towards turning the relationship between interest rates and saving negative. Among developing countries, when the nominal interest rate is not too low, we detect the substitution effect of the real interest rate on private saving. However, among industrial and emerging economies, the substitution effect is detected only when the nominal interest rate is lower than 2.5%. In contrast, emerging-market Asian countries are found to have the income effect when the nominal interest rate. The study also find that the real interest rate has a negative impact—i.e., income effect—on private saving if any output volatility, old dependency, or financial development is above a certain threshold.

Using ordinary least squares technique, cointegration and the error correction mechanism, Ekiesiobi, Ifebi, Ezeanyej and Agu (2016) <sup>[10]</sup> examined the relationship between private capital formation and savings in Nigeria between 1982 -2014. The research findings revealed that capital expenditure and inflation rate has negative and insignificant effect on gross fixed private capital formation, with savings having a negative and significant effect. Furthermore, foreign direct Investment, real GDP and prime lending rate all revealed to have a positive and significant effect on gross fixed private capital formation with the previous value(s) of gross fixed private capital formation having a positive and significant effect on the present value(s) similarly, Ezeanyej (2014) <sup>[11, 12]</sup> explored an assessment of the impacts of interest rate deregulation in enhancing agricultural productivity in Nigeria from 1986 to 2010. The study employed ordinary least square method in the analysis. The findings indicated that interest rate deregulation has significant and positive impact on agricultural productivity in Nigeria.

### 3 Methodology

#### 3.1 Model Specification

In order to achieve the objectives of the study, we followed the approaches of Okpe (2018) <sup>[24]</sup> although with modifications. The functional notations of the model are as indicated below:

$$RSR = f(RIR, GCF, INF, RGDP, GP) \text{-----}(1)$$

Where;

RSR = Real savings rate,

RIR = Real interest rate,

GCF = Gross capital formation (% GDP),

INF = Inflation rate,

RGDP = Real GDP growth rate,

GP = Government policy proxy by dummy variable (The dummy variable used took care of non-interest rate structural adjustment reform policies that were introduced within the period of 1987 and this variable took the value of 1 when interest rate was deregulated otherwise taking a value of 0).

The estimating form of equation (1) above is represented as:

$$RSR = \beta_0 + \beta_1 RIR_t + \beta_2 GCF_t + \beta_3 INF_t + \beta_4 RGDP_t + \beta_5 GP_t + \mu \text{-----}(2)$$

Where;  $\beta_0$  is the constant term,  $\beta_1 - \beta_5$  are estimation parameters,  $t$  is the time trend and  $\mu$  is the random error term.

#### 3.2 Estimation Technique

The estimation technique used in this study was in three procedures. The first estimation procedure examines the unit root level of the series used in the investigation. It enables the study to determine the integrated order of the data series through the application of the Augmented Dickey-Fuller (ADF) unit root test.

The second estimation procedure will be theory of co-integration which has been developed to eliminate the problem of spurious correlation often associated with non-stationary macroeconomic time series data. According to Mill (1990) <sup>[21]</sup>, co-integration establishes the link between integrated processes and the concept of steady state equilibrium. The idea behind co-integration is that “although two different series may not themselves be stationary, some linear combination of them may be stationary with more than two series” (Komolafe, 1996) <sup>[18]</sup>. According to Asteriou and Hall (2010) <sup>[8]</sup>, co-integration is an over-riding requirement for any economic model using non-stationary time series data. If the variables do not co-integrate, then there exists problem of spurious regression and the econometric work becomes almost meaningless.

The third estimation procedure involves using error correction model (ECM) to investigate the short run dynamics and long run equilibrium relationship among the data series. The application of ECM is necessary because, it is used to correct temporary short run deviation of a series within long run equilibrium relationship.

#### 3.3 Nature and Source of Data

Annual time series data were extensively utilized to investigate the relative impact of interest rate deregulation

On savings mobilization in Nigeria. Secondary data is being used in this study. The source of data is the World Bank national accounts data, OECD National Accounts data files 2017 and Central Bank of Nigeria (CBN) Statistical Bulletin, vol. 28 2017. The relevant variables sourced include: real savings rate, real interest rate, gross capital formation (% GDP), inflation rate, real GDP growth rate, and Government policy proxy by dummy variable for the period 1981 to 2017.

**4. Presentation and analysis of results**

**4.1 Unit roots test result**

The knowledge of the time series properties of the variables of interest is important in order to obviate the possibilities of spurious regression. This was implemented using the conventional – Augmented Dickey-Fuller (ADF) unit root test. For convenience, table 1 below shows the summary of the computed Augmented Dickey Fuller unit root test for each of the variables.

**Table 1:** Augmented Dickey-Fuller (ADF) Test for model.

Variables	ADF-Statistic	Critical Value			Order of Integration
		1%	5%	10%	
RSR	-8.206019	-3.632900	-2.948404	-2.612874	1(1)
RIR	-5.038170	-3.653730	-2.957110	-2.617434	1(1)
GCF	-5.298716	-3.639407	-2.951125	-2.614300	1(1)
INF	-5.526004	-3.632900	-2.948404	-2.612874	1(1)
RGDP	-10.84646	-3.632900	-2.948404	-2.612874	1(1)
GP	-6.708204	-3.632900	-2.948404	-2.612874	1(1)

Source: Author’s Compilation Using E-views 9 Output

The unit root test results showed that all the variables (real savings rate, Real GDP, real interest rate, gross capital formation, inflation rate and dummy which captured the non-interest rate structural adjustment reform policies that were introduced within the period of 1987) were not stationary at levels but were significant at first difference. Hence, by taking their first difference they became stationary. The next step after finding out the order of integration is to establish whether the non-stationary variables could be co-integrated. The co-integration of two time series suggests that there is a long-run or equilibrium relationship between them.

**4.2 Johansen Co-Integration Test**

A necessary but not sufficient condition for co-integrating test is that each of the variables be integrated of the same order. The Johansen co-integration test uses two statistics namely; the trace test and the likelihood eigenvalue test. The first row in each of the table test the hypotheses of no co-integrating relation, the second row test the hypothesis of one co-integrating relation and so on, against the alternative of full rank of co-integration. The results are presented in table 2 below.

**Table 2:** Co-integration Test Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 0.05	Prob.**
None*	0.911203	266.2111	95.75366	0.0000
At most 1*	0.879252	186.3049	69.81889	0.0000
At most 2*	0.753129	116.5413	47.85613	0.0000
At most 3*	0.682301	70.37796	29.79707	0.0000
At most 4*	0.455988	32.53844	15.49471	0.0001
At most 5*	0.314241	12.44858	3.841466	0.0004
Trace test indicates 6 co-integrating eqn(s) at the 0.05 level				
*denotes rejection of the hypothesis at the 0.05 level				
**Mackinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eight Statistic	0.05 Critical Value	Prob.**
None*	0.911203	79.90626	40.07757	0.0000
At most 1*	0.879252	69.76363	33.87687	0.0000
At most 2*	0.753129	46.16330	27.58434	0.0001
At most 3*	0.682301	37.83953	21.13162	0.0001
At most 4*	0.455988	20.08986	14.26460	0.0054
At most 5*	0.314241	12.44858	4.841466	0.0004

Max-eigenvalue test indicates 6 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Source: Author’s Compilation Using E-views 9 Output

From table 2 above, both the Trace statistic and Max-Eigen statistic reported that there was presence of six (6) co-integration equation among the variables. This means that a long run interaction existed among these relevant variables. Both the Trace statistic and Max-Eigen statistic were greater than their respective critical values and significant at 5 percent level. As such, it was concluded that a long run equilibrium relationship rightly existed among these

variables of interest used in the study.

**4.3 Error Correction Model (ECM)**

Since the variables are cointegrated, the error correlation model is required to construct the dynamic relationship of the model. The purpose of the error correlation model is to indicate the speed of adjustment from short run dynamic to the long run equilibrium state.

**Table 3:** Result of Error Correction Model (ECM) Result

Dependent Variable: D(LRGDP)				
Method: Least Squares				
Date:03/06/19 Time: 12:50				
Sample (adjusted): 1983 2017				
Included observations: 35 after adjustments				
Variable	Coefficient	Std. Error	t-statistic	Prob.
C	-0.114230	1.380896	-0.082722	0.9347
D(RIR)	-0.118998	0.101930	-1.167449	0.2529
D(GCF)	0.148596	0.526178	0.282407	0.7797
D(INF)	0.009753	0.122640	0.079528	0.9372
D(RGDP)	0.056586	0.356620	0.158673	0.8751
D(GP(-1))	-0.756211	9.823859	-0.076977	0.9392
D(ECM(-1))	-0.735361	0.193802	-3.794402	0.0007
R-Squared: 0.374322; F-statistic: 2.791908; Prob(F-statistic): 0.029523; Adjusted R-squared: 0.240248; Durbin-Watson Stat: 1.983526				

Source: Author's computation with the use of E-view 9.

#### 4.3.1 Interpretation of Result

The coefficient of real interest rate and Government policy proxy by dummy variable is negative and statistically insignificant on savings mobilization. This implies that inclusion of government policy that makes interest rate to be negative within the period under study. This has implications for policy because government is still visible in regulating the banking sector especially within the period of financial liberalization. Therefore, 1 percent increases in real interest rate and Government policy proxy by dummy variable reduced savings mobilization in Nigeria by 11.89% and 75.6% respectively.

Again, the coefficient of gross capital formation, inflation rate and real GDP are positive but statistically insignificant on savings mobilization. This implies that a 1% increase in growth rate of gross capital formation, inflation rate and real GDP growth rate on the average will bring about 14%, 0.97% and 5.65% increase in savings mobilization in Nigeria.

The result obtained from the model indicates that the overall coefficient of determination ( $R^2$ ) shows that 37.4% of changes in savings mobilization are explained by the variables in the equation. As the adjusted ( $R^2$ ) tends to purge the influence of the number of included explanatory variables, the adjusted  $R^2$  of 0.24 showed that having removed the influence of the explanatory variables, the dependent variable is still explained by the equation with 24%. Coincidentally, the goodness of fit of the regression remained too low after adjusting for the degree of freedom. The value of Durbin Watson is 1.98 in the model. By implication, there is evidence of positive serial correlation among the explanatory variables in the models. Finally, the coefficient of error correction mechanism (ECM) is negative. This is in line with economic and econometrics expectations. The error correction mechanism corrects 73.5% of the total error that occurs in the model.

#### 5. Conclusion and Recommendation

The study examined the impact of interest rate deregulation on savings mobilization in Nigeria from 1981 to 2017. The Augmented Dickey-Fuller (ADF) test, co-integration test and Error Correction Model (ECM), were employed. The respective test shows that all the variables used in the model were stationary at first differencing respectively. Also, the co-integration test carried out indicates that real savings rate, real GDP, real interest rate, gross capital formation, inflation rate, Government policy proxy by dummy variable

and savings mobilization have a long run relationship. The outcome of the Johansen co-integration test using both trace and max-eigen test statistics reveals the presence of long-run relationship among the variables at level of significance, which support the rejection of null and acceptance of alternate hypothesis that there is co-integration.

The research findings revealed interest rate and Government policy proxied by dummy variable is negative and statistically insignificant on savings mobilization. Also gross capital formation, inflation rate and real GDP are positive but statistically insignificant on savings mobilization in Nigeria. The non-performance of the banking sector was demonstrated with the inclusion of dummy variable which shows that government intervention affect interest rate negatively. The implication of this is that government policies over the years have hindered commercial banks from performing optimally both in terms of credit allocation to sectors; exchange rate and interest rate determination which are supposed to be market driven. More so, high level of inflation of more than 10 percent can impact negatively on the level of interest rate because it will reduce the real value of goods and services and frustrate the savings mobilization efforts of the banking sector hence, an inflation rate of single digit will stimulate savings and encourage economic growth and development. This is because people will borrow at low interest rate, invest in productive investment, generate more income and there will be increase in production as well as increase in consumption of goods and services.

#### 6. References

1. Abusomwan S, Ezebuihe J. Ross Domestic Savings and Gross Capital: What Matters to their Formation in An Era of Economic Recession in Nigeria? *Oradea Journal of Business and Economics*. 2017; 2(2):45-55.
2. Adelakun OJ. An Investigation of the Determinants of Savings and Investment in Nigeria. *International Economics and Business*. 2015; 1(2):1-16.
3. Adeleke AI, Gbadebo AO. Financial Intermediation, Investment and Economic Growth in Nigeria: A Simultaneous Equations Approach. *Asia-African Journal of Economics and Econometrics*. 2014; 14(1):41-55.
4. Ahmed AV, Awonusi F, Adebajo JF, Ewunuga YA. Financial Sector Reforms and Savings Mobilization in Nigeria (1980 – 2013). *CARD International Journal*

- of Management Studies, Business & Entrepreneurship Research. 2017; 2(2):1-21.
5. Aizenman J, Cheung YW, Ito H. The Interest Rate Effect on Private Saving: Alternative Perspectives. ADBI Tokyo: Asian Development Bank Institute, 2017, 715.
  6. Alaparhi MV, Kota MR. The Effect of Interest Rates on Saving and Investment in Ethiopia. ZENITH International Journal of Business Economics & Management Research IJBEMR. 2018; 8(7):34-45.
  7. Anthony O, Eigbiremolen G. Financial liberalization, Interest Rate Structure and Savings Mobilization: The Nigerian experience. International Journal of Current Research. 2014; 6(2):5101-5109.
  8. Asterious D, Hall S. Applied Econometrics. 2nd Ed. New York: Palgrave Macmillan, 2010.
  9. Aziakpono M. Financial Development and Economic Growth in Southern Africa. Paper presented at a conference on how to reduce debt costs in Southern Africa, March, National University of Lesotho, Lesotho, 2004.
  10. Ekesiobi CS, Ifebi OE, Ezeanyejí CI, Agu AO. Analysis of Savings and Private Capital Formation in Nigeria. Research on Humanities and Social Sciences. 2016; 6(12):104-110.
  11. Ezeanyejí CI. An Assessment of the Impact of Interest Rate Deregulation in Enhancing Agricultural Productivity in Nigeria. Journal of Economics and Sustainable Development. 2014; 5(8):17-23.
  12. Ezeanyejí CIS. Monetary Economics: Instruments and Mechanism. Rex Charles & Patrick Publications, Nimo, 2014.
  13. Gunasekara HU, Kumari P. Factors Affecting for Deposit Mobilization in Sri Lanka. International Review of Management and Marketing. 2018; 8(5):30-42.
  14. Hasan R, Samreen H, Atiya S. The Effects of Interest Rate, on Savings and Deposits in Pakistan. International Journal of Business and General Management (IJBGM). 2017; 6(6):67-74.
  15. Hishongwa EN. The Relationship between Saving Mobilisation, Investment and Economic Growth in Namibia. Research assignment presented in partial fulfilment of the requirements for the degree of Master of Development Finance at Stellenbosch University, 2015.
  16. Iyoha M. O.M.O and the Efficacy of Monetary Policy in Nigeria: The Nigeria Economic. In, Keynes, J. (1936). The general theory of employment, Interest and money. New York: Harcourt Brace and World, 1996.
  17. Keynes JM. The General Theory of Employment, Interest and Money. New York, Harcourt Brace and World, 1936.
  18. Komolafe SO. Cointegration Theory: Technique and Application. Chapter 13 In: Macroeconomic Policy Analysis, Tools, Technique and Application to Nigeria. Obadan, M.I. Institute of International Economics, 1996.
  19. Lanyi A, Saracoglus R. Interest Rate Policies in Developing Countries. IMF Occasional Washington D.C, 1983, 22.
  20. Mankiw NG. Principles of Economics, 5th edition. South-Western Cengage Learning, 2011.
  21. Mills TC. Time Series Techniques for Economists. Cambridge University, 1990.
  22. Nwafor JU, Odey FI, Effiong CE. Financial Liberalization and Domestic Savings in Nigeria: an Empirical Analysis. International Journal of Development and Economic Sustainability. 2017; 5(6):84-97.
  23. Ogwumike FO, Ofoegbu DI. Financial Liberalization and Domestic Savings in Nigeria. The social Sciences. 2012; 7(4):635-646.
  24. Okpe IJ. Savings Mobilization in Nigeria: a Re-Assessment of Financial Repression Hypothesis. International Journal of Innovative Research in Social Sciences and Strategic Management Technique. 2018; 5(1):1-14.
  25. Ouma SA, Odongo TM, Were M. Mobile Financial Services and Financial Inclusion: is it a boon for Savings Mobilization? Review of Development Finance. 2017; 7:29-35.
  26. Twerefou DK, Ayimadu BY. Effects of Financial Deepening on Saving Mobilization: Evidence from African Countries. International Journal of Contemporary Research and Review. 2018; 9(07):07-22.
  27. Umoh OJ. An Empirical Investigation of the Determinants of Aggregate National Savings in Nigeria. Journal of Monetary Economic. Integration. 2003; 3(2):113-132.
  28. Uremadu SO. The Impact of Real Interest Rate on Savings Mobilisation in Nigeria. An unpublished Ph.D. Thesis submitted to the Department of Banking and Finance, UNN< Enugu Campus, Enugu State, 2006.