# INTEREST RATE LIBERALISATION AND SAVINGS MOBILISATION IN NIGERIA

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## Abstract

*This study investigates the empirical effect of interest rate deregulation policy on savings mobilization in Nigeria using dataset that spanned 1981 through 2017, which was analyzed with Autoregressive Distributed Lag Models (ARDL). The Augmented Dickey Fuller unit root test was applied to filter and smoothen the dataset, while The ARDL Bounds test was used to test for cointegration among the variables . The ARDL results of this empirical study refutes the existence of Shaw's intermediation effect as regard the transmission mechanism between interest rate deregulation and savings mobilization, but it upheld the classical argument of savings being a function of income level. This imply that interest rate deregulation policy, has positive relationship with saving mobilisation in Nigeria but this is not statistically significant. It further implies that it is not an effective and efficient policy has it failed to be meet its purpose. The study therefore recommends that adoption of interest rate deregulation policy should be consistent and continuous, and monetary policy rules should be the order (guiding rule) and not discretionary policy*

**Keywords:** Interest RateLiberalisation Policy, Savings Mobilisation, Auto-Regressive Distributed Lagged Model (ARDLM), Nigeria.

JEL Classification: E44; G38

## Introduction

Financial liberalization concept metamorphosed from the Classical thought of laissez faire and has two dimensions (aspects) to the adopting Nation. The first is the domestic aspect of financial liberalization which entails deregulation of all financial markets within the economy by allowing market forces to determine the financial prices. While, the second is the international aspect of financial liberalization, which suggests free flow of international financial transaction by both government and the private sector. The basic intent of financial liberalization policy is to allow for free flow of investible funds from within and outside the country, so that these funds could be utilized by optimum investors, and generate positive real interest rate to the savers (or primary investors) (Bakare-Aremu, 2018).

Furthermore, Financial liberalization is the removal of every constraint that hinders the free flow of financial resources across borders, it equally entails not only deregulation of domestic financial markets but also allowance of market mechanism to allocate 'financial prices'(Ojo, 2004). In Nigeria financial liberalization policy came through Structural Adjustment Programme(SAP) as an integral part of the policy Programme in the mid-nineteen-eighties (1980s).The SAP was a product of the International Monetary Fund's (IMF) .The International Monetary Fund's (IMF) loan was a child of necessity because most of the developing nations as at that time needed the loans to smoothen their balance of payment difficulties occasioned by unequal trade relationship among nations.

It is pertinent to note that prior to that IMF's loan, most developing nations were 'having it hard'. This resulted to excessive control of the economy, which led to further problems of 'cash crunch'. The Nigerian economy was not an exception with low output resulting from poor saving culture, low investment, and poor infrastructural facility, and by implication a low living standard. Also, the economy at that period was largely dominated by public sector and excessive fiat control, and could be described as public driven economy.

Understanding the above narrative is fundamental for the concept of interest rate liberalization because it's the key policy concept for domestic financial liberalization. Interest rate liberalization or deregulation implies removal of

excessive control by fiat in fixing or determining the market rate of interest in the banking sector of any economy. Then, the market forces become major instrument of interest rate determination in the economy, which is the case during the period of financial liberalization. This, according to the proponents of liberalization policy will enable nominal interest rate to rise in accordance with the yearnings in the economy and in the long run will translate to positive real interest rate. The positive real rate of interest is an essential ingredient for saving mobilization and investment growth in the economy (Bakare-Aremu, 2018).

To have a clear understanding of financial liberalization and of interest rate deregulation, the work of McKinnon (1973) and Shaw (1973) in their separate but simultaneous studies advocate for financial liberalisation as a mechanism for domestic saving mobilization and by implication physical capital accumulation (investment growth) known in the literature as McKinnon complementarity hypothesis and Shaw's money balance hypothesis. The combination of these is known as McKinnon-Shaw financial liberalization thesis, which has since then provoked empirical debate among scholars.
It is important to note that there exists no consensus among these researchers as regard the theoretical argument of McKinnon-Shaw on financial liberalisation hypothesis. While some adopt the line of the proponents (Levine, 2001; Bekaert, Harvey &Lundblad 2003), others are of the opposing view (Kraay, 1998 and Rodrik, 1998; Eichengreen&Leblang, 2003), still, some other studies believe the effect vary from one country to another based on their stage of institutional and level of economic development, and on the advancement of their macroeconomic framework (Edwards, 2001 and Bekaert, Harvey &Lundblad, 2005).

The argument of protagonists of financial liberalization policy can never be misconstrued regardless of divergent empirical outcomes, the central idea of financial liberalisation thesis vis-à-vis interest rate deregulation was to stimulate economic growth via increased savings mobilization and investment growth through market determined interest rate and exchange rate.

However, given empirical divergent outcomes of financial liberalization and interest rate liberalization on macroeconomic outcomes, this study evacuates

the effect of interest rate liberalisation policy on savings mobilization in Nigeria. This objective is achieved using technique of Autoregressive Distributed Lag Model (ARDL).

## Literature Review and Conceptual Clarification

### The Concept of Interest Rate Liberalization

Prior to the introduction of financial liberalization policy, many governments of developing countries practiced financial repression (outright determination of interest rate by the fiat), in addition many banks were owned and controlled by governments including the determination of interest rates , in other words, the government controlled interest rate and were also the biggest customer to the banks they fully or partly owned. This practice of financial repression did not only discourage savings but also retarded private investment, and by implication economic growth.

Interest rate liberalization is an integral part of financial liberalization policy and it imply allowance for forces of demand and supply to determine the equilibrium rate of interest as orchestrated by the 'apostle' of financial liberalisation. Financial liberalization (FL) refers to the deregulation of domestic financial markets and the removal of restrictions on the flow of capital account. Figure 1 sheds some light on the conceptual clarification of what financial liberalisation entails and by extension interest rate deregulation.

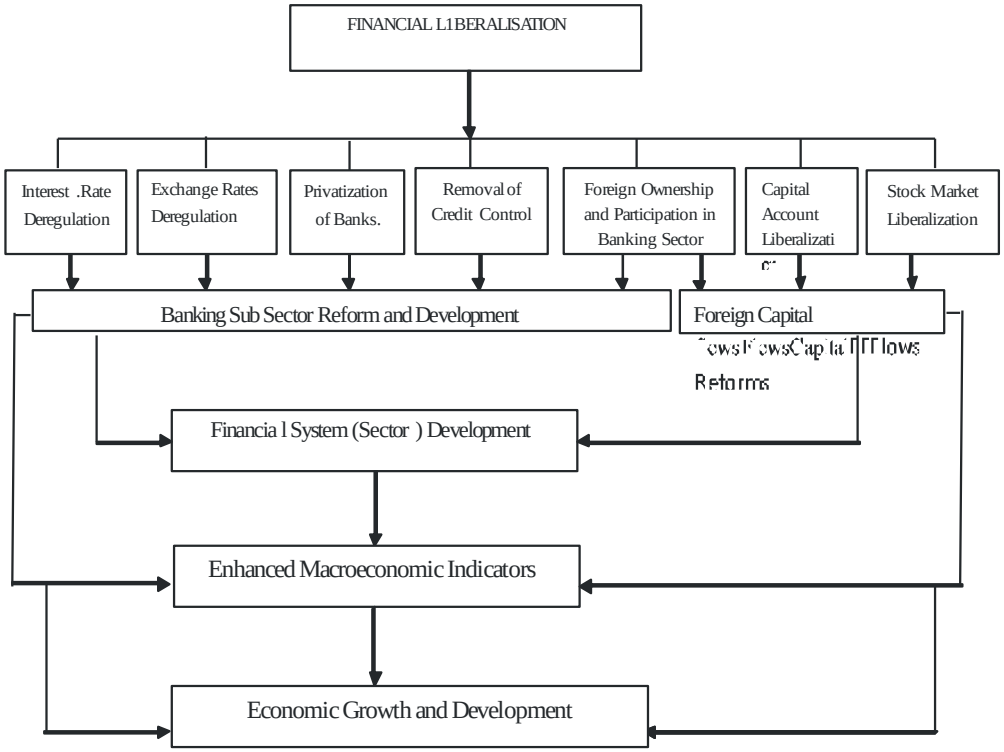



**Fig.1** Conceptual Framework of Financial Liberalisation
**Source:** Bakare-Aremu (2018)

This study adopts the conceptual framework of financial liberalization to showcase the effect of interest rate deregulation on saving mobilization in Nigeria through its transmission mechanism. The main instrument of domestic financial liberalization is the interest rate deregulation (liberalization). This is because a liberalized financial market spurs a rise in interest rate through market mechanism, and as a result a rise in the volume of savings because savers would like to take advantage of rise in the market determined rate of interest, and by extension a rise in investment level. The reason for this is that when deposits rate is determined by market forces, available funds (savers' money) locate the prime users (investors) with the highest possible lending rate. What interest rate deregulation does is to reduce the spread of interest rate (IRS) overtime, such that in the long run the difference between deposit rate and lending rate would be negligible and thus guarantee positive real interest rate (Bakare-Aremu & Ohioze 2017)).

**Empirical Literature**

To determine the savings behavior in Nigeria, Anthony (2012) examined the effects of bank savings and bank credits ratios in Nigeria's economic growth process from 1970-2006. He adopted autoregressive distributive lag model and the results showed that average income (PCI), financial deepening (FD), and the spread of interest rate (IRS) which proxy financial liberalization have positive effect on the size of private domestic savings. Furthermore, it was shown that real interest rate (RIR) and inflation rate (INFR) had an inverse effect on the volume of private domestic savings and that there was a direct relationship between the previous values of total private savings, interest rate spread, credits to public sector, private sector credit, exchange rates and growth in Nigeria. In a similar study, Nwafor, Odey, and Effiong, (2017) investigated the impact of financial liberalization on savings mobilization in Nigeria using dataset that spanned 1970-2015 and, error correction mechanism, the study observed that than interest rates and financial liberalization policy index, per capita income and financial deepening contribute significantly to savings mobilization in Nigeria, and thus concluded that policies that could foster the two factors should be formulated and implemented.

Ofoegbu and Adegele (2013), affirmed that deregulation of Nigerian financial system brings about consumers satisfaction, efficiency, innovations and competition which provide customers the opportunity to bargain and gain competitive rate of interest due to the existence of many banks. Particularly in Nigeria, the policy of deregulation was designed among other things to restructure and diversify the productivity of the economy in order to stimulate domestic production for economic growth and profitability of commercial banks (Abogon, Olajide, and Oloba, 2014). Deregulation was also aimed at increasing competitive efficiency, improve allocation efficiency, reduce cost of financial intermediation and improve financial services and to rationalize the use of scarce resources.

Among the several policies of deregulation, interest rate deregulation performs outstanding function by efficiently allocating limited supply of credit in the economy and mobilization of savings. The main function of Interest rate is to regulate the flow of business and industrial behavior in an economy by

influencing the supply of and demand for loanable fund. According to Akpan (2004) interest rate deregulation involves the establishment of interest rate that equates the demand for and supply of savings and lending. Even though many economists have argued that the deregulation of interest rate has led to increase in the real interest rate, that is, interest rate that has taken into consideration the changes in price level, which has induced savings and investment in general (Amassoma, Nwosa and Ofere, 2011), the deregulation of interest rate in Nigeria has been met with different views by financial experts.

The extensive literature reviewed recorded divergent outcomes as regard the empirical effect of interest rate liberalisation (deregulation) on mobilization of savings, and the scope and method of analysis adopted by individual researchers differ. On this note, this study examines the dynamics of interest rate deregulation on savings mobilization in Nigeria.

## Theoretical Framework

### Financial Liberalization Theory

Laissez faire argument of liberalization of financial system could be traced back to the early writers of the seventieth century who stressed the need for liberal financial sector, popular among these writers were Adam Smith, Jeremy Bentham, John Lock, and Joseph Schumpeter (Fry, 1995). However, in recent times, a major intellectual discourse that re-emphasized and elaborately analysed the need for market mechanism to interplay in determination of financial 'prices' was found in the work of McKinnon (1973) and Shaw (1973). Both authors argued for financial freedom in the propositions contained in their independent publications. These propositions, taken together, have since become known as the McKinnon-Shaw hypothesis or the financial liberalisation thesis.

The duo rejected the Keynesian monetary models and structuralists ideas. They both argue that crucial assumptions in these paradigms are erroneous in the context of developing countries. They challenged the case for low interest rates and financial repression and advocated financial liberalisation as a growth stimulating economic policies.

## Loanable Funds Theory

The loanable funds theory was developed by the neoclassical economists. This theory assumes that the determination of interest rate is predicated on changes in demand and supply of loanable funds. Robertson and Pigou among other neoclassical economists elaborated the loanable funds theory. For the neoclassical theorists, interest rate is the price of credit which depends on the demand and supply of loanable funds. The neoclassical theorists categorized demand for loanable funds into three sources comprising the government, investors and consumer. The demand for fund by the government or public sector is for the provision of public goods which the private sector cannot provide effectively and efficiently or at all. Investor's demand for loanable funds is for purchase of inputs and other capital goods required for boosting the level of production. Borrowings by investors for productive purposes are interest elastic and depend largely on the expected rate of profit relative to the level of interest rate (Ajilore, 2015).

Similarly, the demand for loanable funds by consumers for durable goods is interest elastic. Consumers' willingness to borrow tend to decline with rising levels of interest rate. Generally, the demand for loanable fund is a negative function of rate of interest. The supply of loanable funds by both private individuals and corporate savings are interest elastic. Increase in the rate of interest tends to increase the propensity to save and in turn the supply of funds.

## Keynesian Liquidity Preference Theory

The liquidity preference theory is pioneered by John Maynard Keynes. In his seminal work "The General Theory of Employment, Interest and Money", Keynes categorized interest rate as a monetary phenomenon. Specifically, according to him, interest rate involves the reward for parting with liquidity for a given period of time. According to Keynes, the demand for and supply of money govern the rate of interest. The supply of money which measure aggregate quantity of money available in an economy is assumed to be perfectly inelastic. This stems from the role of the monetary authorities in fixing the quantity of money (monetary targeting) available in the economy. Therefore interest rate according to Keynes is determined at the point of

intersection or equality of demand for money and the exogenous supply of money, however, the monetary authority can influence interest rate through variation (increase or decrease) in its money supply. But this is limited to the point where demand for money becomes perfectly elastic, which Keynes regarded as liquidity trap. The liquidity preference theory developed by Keynes is mainly applicable to demand for money. It specifically measures the desire to hold money. Higher liquidity preference requires higher interest rate in order to induce holders of cash to part with the liquid assets (Ajilore, 2015). If no interest is payable to cash holders as an inducement to part with their liquid assets, the tendency of holding liquid will be very high. Therefore, the higher the rate of interest, the more likely people are to forgo their liquid assets and in turn more funds would be made available for borrowing.

## Research Methodology

To answer the research question as hypothesized in this study, Ordinary Least Square (OLS) technique was used to estimate the effect of Interest Rate liberalisation on savings mobilization in Nigeria through estimation of Nigerian savings function to test the 'financial intermediation effect' as advocated by Shaw (1973). However, a pre-estimation test was carried-out to filter and smooth the dataset owing to the nature of time series data. The unit root test (Augmented Dickey Fuller (ADF)) was employed to filter and smooth the dataset, while Autoregressive Distributed Lag model bound test was applied to establish whether or not there is existence of long run relationship among all the variables. All the data used in this study were obtained from Central Bank of Nigeria (CBN) statistical bulletin (2017).

This study therefore hypothesized that there is no significant relationship between interest rate deregulation policy and financial intermediation (mobilization of savings) in Nigeria using econometric method known as Autoregressive Distributed Lag Model (ARDLM).

Adopting the Classical's savings model as used by Bakare-Aremu (2018) and beginning with its implicit savings function in equation (1) through its long run explicit and static linear relationship in equation (9), and the short run dynamics relationship in equation (10), which are to be estimated.

The classical two sector model is expressed in equation (2), given as implicit in equation (1) while the saving function began in equation (3) and well specified in equation (6),

$$S = Y - c \quad (1)$$
$$C = a + by \quad (2)$$
$$S = Y - (a + by) \quad (3),$$
$$but\ S = Y - a - bY \quad (4)$$

Inserting equation (4) into (3) gives;

$$S = -a + (1 - b)Y \quad (5),$$

Which could be written as;

$$S = -a + sY \quad (6),$$

$$where\ s = 1 - b$$

Considering other factors that influence savings other than the level of income as indicated in the deterministic savings function in equation (6) to have;

$$S = -a + sY + X \quad (7),$$

Where X represent the vector of other factors that influence savings. Therefore equation (6) could be rewritten in a model form as;

$$S_t = -a + sY_t + X_t + \mu_t \quad (8),$$

Explicitly, in a long run form, equation (8) could be written as;

$$GNS_t = \varphi_0 + \varphi_1 FDP_t + \varphi_2 IRS_t + \varphi_3 EXR_t + \varphi_4 GDP_t + \varphi_5 INF_t + \cup_t \quad (9)$$

While the short run dynamic model is presented in equation (10)

$$\begin{aligned}\Delta lGDS_t = \propto + & \sum \theta \Delta LGDP_t \\ & + \sum \theta \Delta LGDP_{t-2} \\ & + \sum \beta_1 \Delta IRS_t \\ & + \sum \beta_2 \Delta IRS_{t-1} \\ & + \sum \beta_3 \Delta IRS_{t-2} \\ & + \sum \gamma_1 \Delta FDP_t \\ & + \sum \gamma_2 \Delta FDP_{t-1} \\ & + \sum \gamma_3 \Delta FDP_{t-2} + \sum \varphi_1 \Delta EXR_t + \sum \varphi_1 \Delta EXR_{t-1} + \omega_1 \Delta LGDS_t \\ & + \omega_2 \Delta LGDS_{t-1} + \partial_1 \Delta INF_t + \delta ECV - - \end{aligned} \quad (10)$$

## Data and Measurement of Variables

The data used spanned the period 1986 through 2017 for all variables, financial deepening was measured as the ratio of credits from commercial bank to private sector to gross domestic product; interest rate deregulation or liberalized interest rate was measured as the difference between lending and deposit rates which is known in the literature as interest rate spread (IRS), other variables such as Gross Domestic product (GDP), Exchange Rate (EXR), Gross Domestic Savings (GDS), and Inflation Rate (INFR) were taken as given by the Central Bank of Nigeria statistical bulletin and National Bureau of Statistics.(NBS)

## Presentation of Empirical Results

**Table1: Augmented Dickey Fuller Unit Root Test (The Test for Stationarity of Variables)**

| Variables | ADF statistics @ Level | ADF statistics @ First Difference | Order of Integration |
|---|---|---|---|
| EXR | 1.607707 | -4.603363*** | I(1) |
| LGDP | -8.714488*** | -11.093446** | I(0) |
| INFR | -2.58433 | -5.563702*** | I(1) |
| IRS | -2.888214 | -7.521825*** | I(1) |
| FDP | 0.918559 | -6.218253*** | I(1) |
| LGNS | -1.535274 | -4.916163** | I(1) |
| Source: Author's Computation via E-view 8.0. | | | |

Table 1 shows the results of the stationarity tests at both the level and the first difference for all the variables in the model. The study applies constant, intercept and trend term in these tests as appropriate. The optimal lag length of each variable was chosen, using the Schwarz information criteria (SIC). As specified in Table 1, only one of the variables was stationary at level but after taking the first difference of other variables they became stationary. This is shown by ADF calculated statistics for all the variables, which is greater in absolute term than the ADF critical value at either 1 or 5 per cents level of significant (or both), as denoted by *** and **, respectively. This imply that the variables in the model are integrated of order 0 and 1, denoted by I(0) and I(1). The study further carried out a co-integration test, using the ARDL Bound's test. This result is shown in Table 2 as follows:

**Table 2: ARDL Bounds Test (Cointegration Test)**

ARDL Bounds Test
Date: 02/07/19 Time: 18:30
Sample: 1983 2017
Included observations: 35
Null Hypothesis: No long-run relationships exist

| Test Statistic | Value | k |
|---|---|---|
| F-statistic | 6.988148 | 5 |

Critical Value Bounds

| Significance | I0 Bound | I1 Bound |
|---|---|---|
| 10% | 2.26 | 3.35 |
| 5% | 2.62 | 3.79 |
| 2.5% | 2.96 | 4.18 |
| 1% | 3.41 | 4.68 |

**Source:** Author's Computation via E-view 8.0.

As shown in Table 2, the null hypothesis of no cointegration is rejected, as the value of F-statistics is greater than the critical Bound (I0) and (I1) at all the significant level. Therefore this study report cointegration of all variables at one per cent level of significant. The results imply the existence of long-run relationship among the variables in the models. However, since the variables in the model are integrated in order of zero and one (i.e.I(0); I(1)), then the autoregressive distribute lag is implied. The ARDL result is presented in Table 3 for the savings function.

**Table 2: Autoregressive Distributed Lag**
**Model Results**
Dependent Variable: LGDS
Dependent Variable: D(LGDS)
Method: ARDL
Date: 02/07/19 Time: 18:29

Sample (adjusted): 1983 2017
Included observations: 35 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): D(LGDP) D(FDP) D(IRS) D(INFR)
D(EXR)
Fixed regressors: C
Number of models evalulated: 32
Selected Model: ARDL(1, 1, 1, 1, 0, 0)

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|---|---|---|---|---|
| D(LGDS(-1)) | -0.340676 | 0.200347 | -1.700433 | 0.1015 |
| D(LGDP) | -0.703438 | 1.141738 | -0.616111 | 0.5434 |
| D(LGDP(-1)) | 1.892758 | 1.129828 | 3.675262 | 0.0063 |
| D(FDP) | -16.32701 | 9.224878 | -1.769889 | 0.0889 |
| D(FDP(-1)) | 26.30680 | 9.953224 | 2.643043 | 0.0140 |
| D(IRS) | 0.051865 | 0.155472 | 0.333594 | 0.7415 |
| D(IRS(-1)) | 0.285985 | 0.154936 | 1.845823 | 0.0768 |
| D(INFR) | -0.017103 | 0.027951 | -0.611874 | 0.5461 |
| D(EXR) | -0.080656 | 0.037315 | -2.161473 | 0.0404 |
| C | 0.016213 | 0.568759 | 0.028505 | 0.9775 |

| | | | |
|---|---|---|---|
| R-squared | 0.506044 | Mean dependent var | -0.182480 |
| Adjusted R-squared | 0.492219 | S.D. dependent var | 3.002067 |
| S.E. of regression | 2.698156 | Akaike info criterion | 5.057971 |
| Sum squared resid | 182.0012 | Schwarz criterion | 5.502356 |
| Log likelihood | -78.51449 | Hannan-Quinn criter. | 5.211372 |
| F-statistic | 3.898959 | Durbin-Watson stat | 2.231287 |
| Prob(F-statistic) | 0.09237 | | |

Source Author.s Computation (2018)

The dynamic ARDL models' result of savings function in Nigeria is presented in Table 3. It is the short run savings model, and it takes into consideration the structural instability of individual variables and the adjustment process to long

run equilibrium since they are linearly integrated. The result reveals that interest rate liberalization policy promote savings in the short run but not statistically significant but income level (a year lag) promote saving and highly statistically significant at 1 per cent level. The economic implication is that interest rate derregulation policy has limited impact in promoting or mobilising savings in Nigeria in the short run, this could be as a result of some distortions via quasi regulations from fiats and inconsistency in the adoption of the policy.. Conversely, the income level support the savings mobilization as propounded by the Classical School of thought, that savings is a function of income.

On the other hand, exchange rate and inflation rate have theoretically expected signs, while the former is statistically significant 5 per cent, the latter is insignificant. Both inflation and exchange rate are inversely related to the gross domestic savings. Therefore, higher inflation will reduce saving mobilization likewise the exchange rate but the reverse is also true for both rates..

On statistical ground, the R-square and adjusted R-square shows that 50% variation in savings mobilization in Nigeria is explained by all included explanatory variables, and that if other variables that influences savings mobilization are put into consideration, the included variables in this model will still explain 49% variation in savings mobilization in Nigeria . The F-statistics shows robustness of the model at 1 per cent level of significant. The comparison of Durbin Watson statistics with R-square value show that the short run model as estimated is not spurious and thus is reliable. The Durbin Watson statistics further shows no autocorrelation or serial correlation in the model.

**Post Estimation Tests**

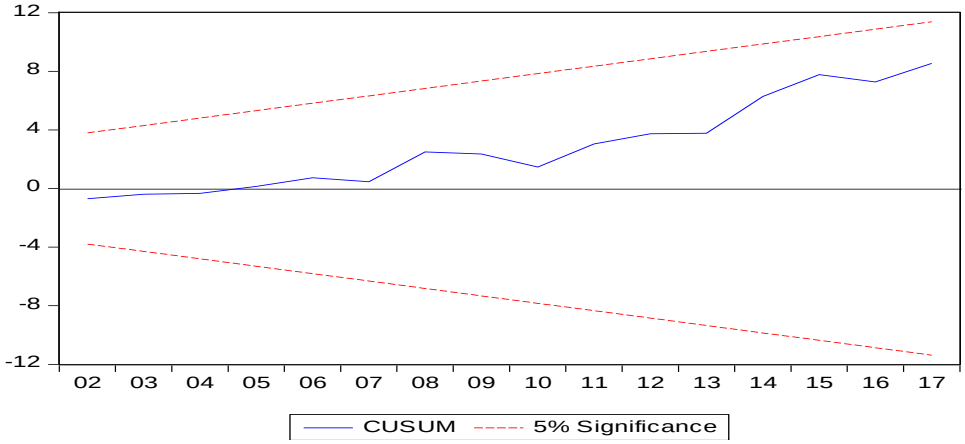



**Figure 1: Cusum Stability Test Result**

The Figure 1show that the plot of Cusum for the model under study are within the five per cent critical bound as indicated by the two lines that bounded the trend curve. The implication of this, for the model is that the parameters of the models do not suffer from any structural instability over the period of study.

**Table 4: Serial Correlation LM Test: (Model 1)**

Breusch-Godfrey Serial Correlation LM Test:

| | | | |
|---|---|---|---|
| F-statistic | 0.638947 | Prob. F(2,14) | 0.9906 |
| Obs*R-squared | 0.757247 | Prob. Chi-Square(2) | 0.5196 |

The Breusch-Godfrey serial correlation test is used to test for existence of autocorrelation in the model. The null hypothesis is that there is no serial or autocorrelation, the results in Table 5 and 6 show absence of autocorrelation because the F-statistics is not significant at five per cent level. Therefore, the study shall accept the null hypothesis of no serial correlation in the model..

## Conclusion and Recommendations

This study refutes the existence of Shaw's financial intermediation hypothesis as regard the transmission mechanism between interest rate deregulation and savings mobilizations. The Shaw's intermediation effect is not supported in this study because interest rate liberalization policy failed to adequately and efficiently influenced savings mobilization in the short and could also be in the long run. However, the classical argument of savings being a function of income level was upheld. This study shows the adoption of interest rate liberalization policy in Nigeria is below expectation as some forms of regulations still exist in the Nigerian financial markets.

In line with its findings, the following recommendations are made;

i. The government through Central Bank of Nigeria should allow free interplay of demand and supply to determine both deposit and lending rates without fixing a limit as orchestrated in financial liberalization thesis.
ii. The targeting of interest rate as intermediate monetary policy may improve investment standard through efficient saving mobilization in Nigeria.
iii. There should be consistency in the adoption of interest rate deregulation policy while the monetary authority should uphold the monetary policy rules rather than frequent application of discretionary policy.

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