



REVIEW ARTICLE

FINANCIAL LIBERALIZATION, INTEREST RATE STRUCTURE AND SAVINGS MOBILIZATION:
THE NIGERIAN EXPERIENCE

Cletus Chike Agu, *Anthony Orji and God'stime Eigbiremolen

Department of Economics, University of Nigeria, Nsukka

ARTICLE INFO

Article History:

Received 29th November, 2013
Received in revised form
14th December, 2013
Accepted 19th January, 2014
Published online 21st February, 2014

Key words:

Financial liberalization,
Real interest rate,
Savings mobilization,
Causality,
Impulse response function.

ABSTRACT

A critical review of literature reveals that the debate on financial liberalization thesis still remains largely unresolved. Thus, using a quarterly time series data, this study examines the nature of causality among financial liberalization, real interest rate and savings mobilization as well as how they interact with one another in Nigeria. Granger causality test was employed in determining the nature of causality between financial liberalization and real interest rate on one hand and real interest rate and savings mobilization on the other hand. Impulse response function of the VAR system was used to ascertain how financial liberalization, real interest rate and savings mobilization interact with one another. The granger causality test shows an absence of causality between financial liberalization and real interest rate, a scenario that was replicated between real interest rate and savings mobilization. The results of the impulse response function reveal a positive interaction between financial liberalization and real interest rate as well as a positive or direct interaction between financial liberalization and savings mobilization. We therefore recommend that the monetary authorities in Nigeria should be consistent in evolving and maintaining policies that will enhance the full maximization of the benefits of liberalization.

Copyright ©2014 Cletus Chike Aguet al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The theoretical and empirical links between financial liberalization and economic outcomes have been identified by many authors such as Schumpeter (1912), McKinnon (1973), Shaw (1973), Pagano (1993), Emilio and Price (2002), Andersen and Tarp (2003), Chaudhry (2009), Adeusi *et al.* (2012), and Akingunola and Olusegun 2013. Schumpeter (1912) in his postulations discarded the common belief at that time that money's sole function was a medium of exchange and nothing else. He disagreed with Ricardo's belief that banks cannot contribute to the process of wealth creation but emphasized that banks and all financial intermediaries are created not only for transporting money but also for granting credit. Schumpeter's pioneering work revealed that creation of credit by banks is essential for economic development, and made the assumption that only the entrepreneur needs credit. Credit provides the entrepreneur with purchasing power without which, it would be impossible to produce. Credit can therefore be seen to feed industrial development. However, credit does not just come automatically but has to be borrowed and this can be done only through financial intermediaries. Financial intermediaries are seen to perform the role of bridging the gap between products and means of production and they achieve this by providing the entrepreneur with

purchasing power. Economic development can then proceed once the entrepreneur has been empowered by credit (Fowowe, 2010).

Consequent upon this, the modern analysis of financial liberalization and financial policy in developing countries started with the seminal works of McKinnon (1973) and Shaw (1973). Both authors drew attention to the widespread "financial repression" in developing countries (Williamson, 1998). Financial repression is a term used to describe a country's environment whereby the financial system is repressed by a series of government interventions that have the effect of keeping very low (and often at negative levels) interest rates that domestic banks can offer to savers (Agenor and Montiel, 1996). On the other hand, financial liberalization is the process of breaking away from a state of financial repression. Since financial repression has been most commonly associated with government fixing of interest rates and its adverse consequences on the financial sector as well as on the economy, financial liberalization, in turn, has come to be most commonly associated with freeing of interest rates, elimination of various restrictions on the financial sector, such as the removal of portfolio restrictions on the banking sector, the reform of the external sector, as well as changes in the institutional framework of monetary policy (Ucer, 1998). Financial liberalization is also used to cover a whole set of measures, such as the autonomy of the Central Bank from the government; the complete freedom of finance to move into and

*Corresponding author: Anthony Orji,
Department of Economics, University of Nigeria, Nsukka.

out of the economy, which implies the full convertibility of the currency; the abandonment of all "priority sector" lending targets; an end to government-imposed differential interest rate schemes; a freeing of interest rates; the complete freedom of banks to pursue profits unhindered by government directives; the removal of restrictions on the ownership of banks, which means de-nationalization, full freedom for foreign ownership, and an end to "voting caps"; and so on (Patnaik, 2011). Although the imperfections and externalities existing in the financial system of developing countries due to financial repression are much more pronounced than those of the developed countries, it should be noted that financial repression is not restricted to developing countries. Governments all over the world intervene in the operations of their countries' financial systems. For instance, the U.S government intervention in the operations of the financial markets resulted in the introduction of Regulation Q which imposed interest ceilings on the deposits of Federal Reserve member Banks between 1933 and 1983. As it were, the government of Nigerian embarked upon financial liberalization as part of its Structural Adjustment Programme (SAP) in 1987 with the belief that reduction of all sorts of regulation on the financial sector would engender economic growth. A lot of studies have also been carried out in Nigeria to ascertain or investigate the nature of financial liberalization and its impact on the economy. Most of these studies have majorly focused on determining the impact of financial liberalization on economic growth. Studies by Ojo (1991), Anyanwu (1995), Obamuyi and Olorunfemi (2011), Sulaiman *et al.* (2012) and Akingunola *et al.* (2013) all show that financial liberalization helps to improve the economy in Nigeria.

However, little or nothing has been done in ascertaining how financial liberalization and its channels of transmission (i.e., interest rate structure and savings mobilization) interact simultaneously with one another and the nature of causation that exist between financial liberalization and these transmission channels. It is on this basis that this study departs from previous works. In order to bridge this gap in knowledge and also contribute to existing literature, we therefore aim to empirically investigate the nature of interactions among financial liberalization, interest rate structure and savings mobilization in Nigeria and also check for the direction of causality between liberalization, interest rate structure and private savings in Nigeria in this paper. The rest of the paper is organized as follows: The next section gives an overview of the Liberalization exercise in Nigeria while section 3 provides a review of the literature. The methodology is presented in section 4 and this is followed by analysis and presentation of results in section 5. The last section concludes the paper.

Brief Overview of Financial Liberalization Exercise in Nigeria

Prior to the introduction of the Structural Adjustment Programme (SAP) in Nigeria in 1986, the Nigerian financial sector was characterized by fixed and relatively low interest rates, mandatory sectoral allocation of bank credit and quantitative ceilings on bank credit to the private sector, all of which engendered distortions and inefficiencies. The Pre SAP period was an era of financial repression characterized by the policies of directed credit and an interest rate ceiling, believed to have

caused imperfections in the operations of the financial market (Agu, 1988; Akingunola *et al.*, 2013). Officially, the Nigerian financial sector liberalization or reforms began with the deregulation of interest rates in August 1987 (Ikhide and Alawode, 2001). Prior to this period, the financial system, as earlier stated, operated under financial regulation and interest rates were highly repressed. The resulting low or negative interest rates discourage saving mobilization and channeling of the mobilized savings through the financial system. This has a negative impact on the quantity and quality of investment and hence economic growth (Obamuyi and Olorunfemi, 2011). The expectation of the financial liberalization process was to encourage domestic savings and make loanable fund available for investment which will in turn bring about economic growth. Lewis and Stein (1997) cited in Atsedo and Adeniji (2008) asserted that liberalization of the interest rate enhanced the ability of banks to charge market-based loan rate to guarantee the efficient allocation of resources. Thus, in 1991, high level of interest rates led to the re-imposition of interest rate controls. A ceiling of 21 per cent and 13 per cent was placed on lending and deposit rates, respectively. The monetary authorities' reason for the re-imposition of interest rate controls in 1991 was that the deregulation of interest rates had been accompanied by a structure of deposit and lending rates which had been largely unresponsive to the steady decline in inflation (Odozi, 1995). Furthermore, government's observation on interest policy as highlighted in the 1991 budget is that interest rates have risen to levels which could destroy productive investments and damage the banking system if many borrowers are unable to pay their debts (Agu, 1992). However, after a year of controls, market forces were permitted again to determine all interest rates in 1992 and 1993 while in 1994, the pre-reform policy of controls has been retained. In the same year, the conditions for licensing new banks were relaxed. In contrast with the average of two entrants per year in the preceding decade, 9 ventures were launched in 1987, 16 the following year, 15 in 1989 and 25 in 1990. Of which merchant banks comprised more than half of new operations, reflecting a shift in both industry composition and the concentration of assets. The ratio of assets in commercial and merchant banks narrowed from approximately 5:1 to 3:1 within four years. The financial liberalization process in Nigeria can be aptly summarized in the Table 1.1 below:

Review of Literature

Conceptually, financial liberalization has come to be most commonly associated with freeing up of interest rates, elimination of various restrictions on the financial sector, such as the removal of portfolio restrictions on the banking sector, the reform of the external sector, as well as changes in the institutional framework of monetary policy (Ucer, 1998). Financial liberalization is also used to cover a whole set of measures, such as the autonomy of the Central Bank from the government; the complete freedom of finance to move into and out of the economy, which implies the full convertibility of the currency; the abandonment of all "priority sector" lending targets; an end to government-imposed differential interest rate schemes; a freeing up of interest rates; the complete freedom of banks to pursue profits unhindered by government directives; the removal of restrictions on the ownership of banks, which means de-nationalization, full freedom for foreign ownership,

and an end to "voting caps"; and so on (Patnaik, 2011). Interest rate structure is one of the dimensions of financial liberalization and has occupied a central position in the liberalization process (McKinnon, 1978). That is, among all the components of financial liberalization, interest rate, which is the percentage charged or paid for the use of money stands out (Amadeo, 2102). This is because the success or failure of financial liberalization to a great extent depends on the structure or regime of the existing interest rate. The stochastic behaviour of interest rate varies over time. More generally, changes in business cycle conditions and monetary policy may affect real rates and expected inflation and cause interest rate to behave quite differently in different time periods (Ang and Bekaert, 2002).

Table 1. Sequencing of Financial Liberalization in Nigeria

1986:	❖ Two foreign exchange markets established
1987:	❖ Interest rate controls completely removed. ❖ Bank licensing liberalized. ❖ Foreign exchange market unified
1988:	❖ Foreign exchanges and bureau established ❖ Bank portfolio restrictions relaxed ❖ Nigeria Deposit Insurance Corporation established
1989:	❖ Banks permitted to pay interest on demand deposits ❖ Auction markets for government securities introduced. ❖ Capital adequacy standards reviewed upward. ❖ Extension of credit based on foreign exchange deposits banned.
1990:	❖ Risked- weighted capital standard introduced and banks' required paid up capital increase ❖ Uniform accounting standards introduced for banks. ❖ Stabilization securities to mop up excess liquidity introduced.
1991:	❖ Bank licensing embargoed. ❖ Central Bank empowered to regulate and supervise all financial institutions. ❖ Interest rates re-administered.
1992:	❖ Interest rate controls removed once again. ❖ Privatization of government-owned banks begun again. ❖ Capital market deregulation commenced. ❖ Foreign exchange market reorganized. ❖ Credit controls dismantled.
1993:	❖ Indirect monetary instruments introduced. ❖ Five banks taken over for restructuring.
1994:	❖ Interest and exchange rate controls re-imposed.
1995:	❖ Liberalization of capital flows. ❖ Continuation of interest controls initiated fiscal reforms. ❖ Exchange controls relaxed. Autonomous foreign exchange market introduced.
1996:	❖ Liberalization of capital market continues. ❖ Retention of interest controls continuation of fiscal reforms. ❖ Official fixed foreign exchange market operated by government transactions continued operation of the autonomous foreign exchange market.

Source: Ikhide and Alawode (2001) and various CBN publications.

Savings, which represents cash or physical products side aside for future use must be carefully mobilized for investment and by extension economic growth to take place (Bartle, 2007). The financial sector is indispensable in the effective mobilization of savings in any given economy. According to Corsepius (1988), a functioning financial market has an important part to play in mobilizing and allocating domestic savings. As opined by Agenor and Montiel, (1996), financial repression, which is the direct opposite of financial liberalization, represses the financial sector and keeps it small. This is often evidenced by a series of government interventions that have the effect of keeping interest rates at very low (and often negative) levels. This low interest rate discourages savings, makes investment unattainable and economic growth becomes elusive. On the other hand, financial liberalization keeps the interest rate relatively free, high and competitive, thereby encouraging savings, motivates investment and engenders economic growth.

Theoretical Literature

According to McKinnon's theory of 1973, financial saving is necessary for investment and consequently for growth. In emerging markets, saving resources exist but they are badly managed. Emerging economies are fragmented so there is a greater likelihood of having investments that are less productive. Capital accumulation is discouraged by the fact that for a high inflation rate, nominal interest rates are set too low and thus real interest rates could be negative. As capital supply of banking sector is limited and banks have only specialized credit activities, people have to finance their investment projects by themselves or have to go to the informal sector where interest rates are often usurious. For McKinnon, financial liberalization lead to unified financial markets and the best strategy is to let interest rates fluctuate freely. In this case, interest rates would reflect the capital scarcity and the information costs about borrower quality. Beside, high interest rates would stop low yield investments. And the authorities should limit their role to ensure low inflation and to promote financial sector development (Mackinnon, 1973). Shaw's theory while different than McKinnon's, leads to the same conclusions. According to Shaw (1973), financial liberalization permits a centralization of the funds market, which is a necessary condition for economic development. According to him, financial repression has several negative consequences. In contrast, financial liberalization has positive effects on growth, thanks to an optimal allocation of resources with a saving price that reflects its scarcity and the unification of the domestic financial system. Moreover, it also leads to less unemployment (as the price of capital increases and as there is substitution of capital by labor), a better financial credit offer (with longer maturity for instance) and the entry of foreign capital (Shaw, 1973).

Rajah and Zingales (1998) in their hypothesis opined that if the financial sector speeds up growth, its development should influence more the branches of industry which have external sources of financing than those which finance investment with undistributed profits. They use as method the variability between sectors of the same countries to identify the effect of financial development. They concluded that the branches of industry that are relatively dependent on external financing

record a faster growth in the countries where the financial sector is most developed. King and Levine (1993) in their theory state that finance generates growth while financial development can be measured by the ratio of the credit of the financial sector to GDP, credit to the non-financial private sector over the total credit and of credit to the non-financial private sector over the GDP. They argued that the stage of development of the financial sector of a group of countries in 1960 made it possible to foresee economic growth over the following thirty years. They conclude that higher levels of financial development are associated with faster economic growth and that finance seems to lead to growth.

Empirical Literature

Several empirical studies have been done in this area but we shall constrain ourselves to review few studies in order to identify the basic gaps in the literature. Kasekende and Atingi-Ego (2003) examined the impact of financial liberalization on the conduct of banking business and its effect on the real sector in Uganda. Quarterly data from 1987Q1 to 1995Q3 for the following variables: Gross Domestic Product, Commercial Bank Credit to the Industrial Sector, Premium on Official Exchange Rate, Lending Rate, and Inflation Rate were analyzed using the Vector Autoregressive (VAR) methodology. Their findings show that financial liberalization has promoted efficiency gains in the banking industry and consequently, the increased growth of credit to the private sector following financial liberalization leads to economic growth. The study provides evidence of a positive impact and supports the Mckinnon-Shaw Hypothesis. Achy (2003) conducted a cross-country regression analysis to examine the effect of financial liberalization on savings, investment and economic growth in sample of five MENA countries (Egypt, Jordan, Morocco, Tunisia and Turkey) over the period 1970 – 1998. To examine its effect on growth, the estimated growth equation relates real GDP to a set of financial depth measures, real interest rate, private investment rate, external debt/GDP ratio, annual change of terms of trade and real exchange rate overvaluation, all proxied for financial liberalization. The study employed the Fixed-Effects Estimation which allows each country to have its own intercept. The findings suggest that financial liberalization has led to further distortion of credit allocation in favour of consumption at the expense of productive activities because the financial depth indicators fail to explain growth experience in these countries. The study shows that financial liberalization is in line with the Keynesian view and inimical to financial development.

Akpan (2004) conducted a study to theoretically and empirically explore the effect of financial liberalization in the form of an increase in real interest rates and financial deepening (M2/GDP ratio) on the rate of economic growth in Nigeria using the endogenous growth model. The study used time series annual data covering the period from 1970 – 2002. The Error Correction Model (ECM) was used to capture both the short and long run impact of the variables in the model. The finding shows a low coefficient of the real deposit rate which implies that interest rate liberalization alone is unlikely to expedite economic growth. Overall, the results show a positive impact on the economy of Nigeria. Bashar and Khan (2007) in their econometric study of Bangladesh evaluated the impact of

liberalization on the country's economic growth by analyzing quarterly data from 1974Q1 – 2002Q2 using Co-integration and Error Correction Method. The empirical results show that the coefficient of the financial liberalization policy variable (real interest rate) is negative and significant, implying that financial liberalization has had negative effect of Bangladesh's economic growth. The study discards the fact that financial liberalization foster economic growth as asserted by Mckinnon and Shaw. Using the VAR methodology, Faria, *et al.* (2009) examined the relationship among capital account liberalization, economic performance and macroeconomic stability in Brazil from 1994Q2 to 2007Q4. Two models were constructed: one with a de-jure index of financial liberalization which includes GDP, Nominal Exchange Rate, Country Risk and Interest Rate and another with a de-facto index of financial integration including GDP, Nominal Exchange Rate, Inflation Rate and Interest Rate. Their results offer no evidence that financial liberalization has generated positive effects on inflation and economic growth. Apart from raising the rate of inflation, it has an adverse effect on exchange rate. The research supports the criticism of financial liberalization that its destabilizing effects supersede its potential beneficial effects.

The study of Banam (2010) analyzed the impact of financial liberalization on economic growth in Iran through Johansen Co-integration test using time series data from 1965 to 2005 while also investigating the determinants of economic growth. The financial liberalization index was represented by the financial restraints index which includes interest rate controls, reserve requirements and directed credit multiplied by -1. The results suggest that financial liberalization has positive and statistically significant impact on economic growth measured by the gross domestic product in Iran. The findings provide support to Mckinnon (1973) and Shaw (1973), who argued that financial liberalization can promote economic growth by increasing investment and productivity. Okpara (2010) also investigated the effect of financial liberalization on some macroeconomic variables in Nigeria. Real GDP, financial deepening, gross national savings, foreign direct investment and inflation rate were selected and given pre/post liberalization comparative analysis using the discriminate analysis technique. The pre-liberalization period covers 1965 – 1986 while the post-liberalization period continued from 1987 to 2008. The findings show that the variable that impacts most on the economy owing to financial liberalization is the real GDP which recorded positively the highest contribution. This implies that financial liberalization positively increases the growth of the economy. In another study conducted in Pakistan, Munir, *et al* (2010) examined the short and long run relationship among investment, savings, real interest rate on bank deposits and bank credit to the private sector, together with the impact of financial liberalization on key macroeconomic variables for the period 1973 to 2007. They analyzed the annual time series data Using Co-integration test and Error Correction Method. Financial liberalization was proxied by a dummy variable, taking value 1 for the years of liberalization i.e. 1990 – 2007 and zero for non-liberalization years (1973 – 1989). Their findings show that financial liberalization has no positive effect on private credit and private investment because interest rate has been negative for some years due to high inflationary situation in Pakistan. The study recommended more need for the deregulation of interest

rate so that savings could be mobilized to promote capital formation which leads to economic growth. Evidence showed that financial liberalization made no significant impact; nevertheless, their results strongly favour the Mckinnon-Shaw hypothesis.

METHODOLOGY

To capture the interactions among financial liberalization, interest rate structure and savings mobilization, this study will use the Vector Autoregressive (VAR) model pioneered by Sims (1980). Here, the focus is on joint or simultaneous interactions through time among a vector of economic variables. Therefore, the model is specified thus:

$$y_t = c + \alpha_1 y_{t-1} + \dots + \alpha_k y_{t-k} + \mu_t(1)$$

Where $y_t = (y_{1t}, \dots, y_{kt})$ represents an (n x 1) order of time series variables and μ_t is an (n x 1) unobservable zero mean white noise vector process (serially uncorrelated or independent) with time invariant covariance matrix.

Equation 1 can be summarized as:

$$y_t = c + \sum_{i=0}^p \phi_i y_{t-i} + \mu_t(2)$$

In this study, y_t is a (3 x 1) vector of observations at time t on the economic variables under consideration – private sector credit as a percentage of GDP (a proxy for financial liberalization), real interest rate (a proxy for interest rate structure) and private savings in commercial banks (a proxy for savings mobilization). To check for the presence or absence as well as the direction of causality among financial liberalization, interest rate structure and savings mobilization, the granger causality test will be employed. The granger causality test between financial liberalization and interest rate can be stated thus:

$$PSCGDP_t = \sum_{i=1}^n \alpha_i RINTR_{t-i} + \sum_{j=1}^n \beta_j PSCGDP_{t-j} + U_{1t} (3)$$

$$RINTR_t = \sum_{i=1}^n \lambda_i RINTR_{t-i} + \sum_{j=1}^n \delta_j PSCGDP_{t-j} + U_{2t} (4)$$

Where; PSCGDP = private sector credit as a percentage of GDP (proxy for financial liberalization), RINTR = real interest rate (proxy for interest rate structure) and U_{1t} and U_{2t} are assumed be uncorrelated. Also, the granger causality test between interest rate structure and savings mobilization can be stated as follows:

$$RINTR_t = \sum_{i=1}^n \alpha_i PSICB_{t-i} + \sum_{j=1}^n \beta_j RINTR_{t-j} + U_{1t} (5)$$

$$PSICB_t = \sum_{i=1}^n \lambda_i PSICB_{t-i} + \sum_{j=1}^n \delta_j RINTR_{t-j} + U_{2t} (6)$$

Where; RINTR = real interest rate (proxy for interest rate structure), PSICB = private savings in commercial banks (proxy for savings mobilization) and U_{1t} and U_{2t} are assumed be uncorrelated.

DATA JUSTIFICATION AND SOURCE

Credit to private sector/GDP has been used in several studies as a proxy for financial liberalization. Examples of such studies include Pill and Pradhan (1995), Galindo *et al.* (2002). Another is Cemile (2002). Although some studies use this variable as a proxy for financial development, we are using it as a proxy for financial liberalization in this paper following Pill and Pradhan (1995) and Galindo *et al.* (2002). As earlier stated Schumpeter’s pioneering work in 1912 and Mackinnon-Shaw’s hypotheses of 1973, all agree that “creation of credit by banks is essential for economic development, and they also made the assumption that only the entrepreneur needs credit. Credit provides the entrepreneur with purchasing power without which, it would be impossible to produce. Credit can therefore be seen to feed industrial development. However, credit does not just come automatically but has to be borrowed and this can be done only through financial intermediaries”. Real interest rate as a proxy for interest rate structure or reform has also been used by Obamuyi and Olorunfemi (2011). Furthermore, Rahman (2012) used private savings, financial saving and saving rates as a proxy for financial/savings mobilization in the paper “Savings Mobilization and its Impact on Economic Growth”.

The data used in this analysis are quarterly time series data, sourced from the Central Bank of Nigeria statistical bulletin.

Presentation of Results and Discussions

Stationarity Test:

The importance of this test cannot be over emphasized since the data to be used in the estimation are time-series data. In order not to run a spurious regression, it is worthwhile to carry out a stationary test to make sure that all the variables are mean reverting that is, they have constant mean, constant variance and constant covariance. In other words, that they are stationary. The Augmented Dickey-Fuller (ADF) test would be used for this analysis since it adjusts for serial correlation. The test was done with the following hypothesis: Null hypothesis (HO): Variable contains unit root and hence is non-stationary. Alternative hypothesis (HA): Variable does not contain unit root and hence is stationary. Decision rule: If the calculated ADF Test statistic is greater than the MacKinnon critical values (both in absolute term), reject the null hypothesis of non-stationarity and accept the alternative hypothesis of stationarity, otherwise accept the null hypothesis of non-stationarity.

The results are presented in Table 1 below

Table 5.1. Adf Test Statistics

Variable	Adf Test Statistics	5% critical value	Order of integration
Pscgdp	-4.646544	-2.888669	Stationary at first difference
Rintr	-6.372558	-2.888669	Stationary at first difference
Psicb	-11.61456	-2.888669	Stationary at second difference

The results from Table 5.1 above revealed that both pscgdp and rintr are stationary at first difference while psicb is stationary at second difference. Therefore, this evidence suggests that first and second differencing are both sufficient in modeling in this study.

Cointegration Analysis

Theoretically, it is expected that a regression involving non-stationary time series variables may produce spurious (non-meaningful) results. Cointegration tests prove that the combination of such variables has a long-term relationship. Economically speaking, two variables will be cointegrated if they have a long-run or an equilibrium relationship between them (Gujarati, 2004:822). To test for cointegration among the variables, we will use the Engel Granger approach which entails performing ADF test on the regression residuals. The ADF unit root test on the residuals work with the same decision rule as unit root test. For cointegration, it tests for unit root in the residuals obtained from the ordinary least square (OLS) regression results. The cointegration test is summarized in Table 5.2 below:

Table 5.2. Cointegration Test

ADF UNIT ROOT TEST ON RESIDUALS

ADF Test Statistics	-9.819503
1% Critical Value	-3.494378
5% Critical Value	-2.889474
10% Critical Value	-2.581741

The above result shows that the ADF test statistics (-9.819503) is greater than the 5% critical value (-2.889474) in absolute terms. This implies that the residuals are stationary, leading us to conclude that the variables are co-integrated. That is, the linear combination of these variables cancels out the stochastic trend in the series. This will prevent the generation of spurious (i.e., non-meaningful) regression results.

Granger Causality: The granger causality testing procedure is stated as follows:

$$F = \frac{(RSS_R - RSS_{UR})/m}{RSS_{UR}/(n-k)}$$

Where;

m is equal to the number of lagged M terms and k is the number of parameters estimated in the unrestricted regression.

Decision rule

If the computed F value exceeds the critical F value at the chosen level of significance (5% level for this study), we reject the null hypothesis, otherwise, we do not reject. The granger causality between financial liberalization and interest rate structure is summarized in the Table 3 below:

Table 5.3. Granger Causality Between pscgdp and rintr

Null Hypothesis	Computed F value	Critical F value (5%)
RINTR does not granger causes PSCGDP	0.22559	3.00
PSCGDP does not granger causes RINTR	2.35114	3.00

Evaluating the results in Table 5.3 based on our decision rule, we conclude that there is no causality between financial liberalization and real interest rate. This outcome is in consonance with the common saying that relationship or dependence/correlation does not necessarily imply causality

(Engber, 2012; Gujarati, 2004). That is, although financial liberalization and real interest rate depends on one another, they do not cause each other.

Table 5.4. Granger Causality Between rintr and psicb

Null Hypothesis	Computed F value	Critical F value (5%)
PSICB does not granger causes RINTR	0.49736	3.00
RINTR does not granger causes PSICB	2.10259	3.00

Also, evaluating the results in Table 5.4 based on our decision rule, we conclude that there is no causality between real interest rate and savings mobilization. This means that, although there is a relationship between real interest rate and savings mobilization, one does not necessarily cause the other.

Impulse Response

Impulse response functions are very useful for studying the interactions between variables in a vector autoregressive model. The impulses represent the reactions of the variables to shocks hitting the system (Durlauf and Blume, 2008). The recursive ordering of the variables in our VAR system follows the order below: financial liberalization (pscgdp), real interest rate (rintr) and savings mobilization (psicb). Financial liberalization is ordered first because both real interest rate and savings mobilization are both expected to respond to its impulse and real interest rate is ordered second because it is the main channel of financial liberalization. As shown by figure 1 (at the appendix), financial liberalization responded with a positive movement in all the quarters under consideration to a one standard deviation positive shock or change to financial liberalization. In other words, if the current financial liberalization process in the economy is well managed and nurtured to grow, it will create a better liberalized and more efficient financial sector in the future. As expected, Figure 2 (at the appendix) reveals that a one standard deviation positive shock or innovation to financial liberalization caused real interest rate to increase right from the first quarter, depicting a positive relationship. Real interest remained positive throughout the five quarters under consideration for every positive shock or innovation received by financial liberalization, peaking at the fourth quarter. This means that as a financial sector is continuously freed from repression; interest rate would increase since strict regulation has given way for competitiveness. Savings mobilization as shown by figure 3 (at the appendix) equally responded positively to a one standard deviation positive shock or change to financial liberalization all through the five quarters of interest, climaxing at the fourth quarter. This direct relationship is expected since financial liberalization engenders high interest rate which is an incentive to savings. Therefore, the more the financial sector is liberated from government regulations, the more interest rate would increase and this will definitely encourage savings to rise as well.

Conclusion and Recommendations

This study critically examines the nature of causality among financial liberalization, real interest rate and savings mobilization as well as how they interact with one another. The Granger causality test shows that although there is a relationship between financial liberalization and real interest

rate, none causes the other. This scenario also replayed itself between real interest rate and savings mobilization. The impulse response function of the VAR system reveals a positive interaction between financial liberalization and itself, meaning that the more of financial liberalization we have today, the more liberal our financial sector would be in the future. In addition, it also shows a direct or positive interaction between financial liberalization and real interest rate, connoting that an increasing liberalization of the financial sector engenders increase in the real rate of interest. Also, the impulse response function indicates a positive interaction between financial liberalization and savings mobilization. This implies that as the financial sector is increasingly liberated from repression, more people would be encouraged to save since interest rate, which is an incentive for savings, has risen. We therefore recommend that the monetary authorities should be consistent in evolving and maintaining policies that will enhance the full maximization of the benefits of liberalization. Also, efforts should be geared towards maintaining competitive real interest rates which will encourage both lenders and borrowers. On one hand lenders will be encouraged to save more, and on the other hand borrowers will also be encouraged to access the credit for investment purposes.

REFERENCES

- Achy, L. 2003. Financial Liberalization, Saving, Investment and Growth In MENA Countries. *Middle East Economic Journal*, Vol.6.
- Adeusi, S. O., Azeez, B. A, Olanrewaju, H. 2012. "Effect Of Financial Liberalization On The Performance Of Informal Capital Market". *Research Journal Of Finance And Accounting* 3 (6) 2012.
- Agenor, P. R., and Montiel P. 1996. *Development Macroeconomics*. New Jersey: Princeton University Press.
- Agu, C.C. 1988. "On the Performance Analysis: The Definition and Measurement of Bank Output in Nigeria". *Savings and Development*, 12(2): 107-126.
- Agu, C.C. 1992. "The Financial Sector in Nigeria: Overview and Reforms in Economic Adjustment Programmes". Wales: Institute of European Finance.
- Akingunola, R.O., Adekunle, O.A., Badejo, O., and Salami, G. O. 2013. "The Effect of the Financial Liberalization on Economic Growth". *International Journal of Academic Research in Economics and Management Science*, 2(1).
- Akpan, D.B. 2004. *Financial Liberalization and Endogenous Growth: The Case of Nigeria*. Dakar: African Institute for Economic Development and Planning (IDEP)
- Amadeo, K. 2012. What is Interest Rate and how do they Work. Retrieved from www.useconomy.about.com/od/glossary/g/Interest_Rate.htm
- Andersen, T .B., and Tarp F. 2003. "Financial liberalization, financial development and economic growth in LDCs", *Journal of International Development, John Wiley & Sons, Ltd.*, 15(2): 189-209.
- Ang, A., and Bekaert, G. 2002. "Regime Switches in Interest Rates". *Journal of Business and Economic Statistics, American Statistical Association*, 20(2):63-82.
- Anyanwu J.C. 1995. "Structural Adjustment Programme, Financial Deregulation and Financial Deepening in Sub-Saharan African Economies" *The Nigeria Economic and Financial Review*, 1(1)
- Atsede, W., and Adeniji, K. 2008. How has Financial Liberalization Improved the Flow of External Finance For Smes In Nigeria? *Journal of Banks and Bank Systems*,3 (3).
- Babajide F. 2010. "Financial Liberalisation and Financial Fragility in Nigeria". *CBN Economic and Financial Review*, 48(1):71-92.
- Banam, K.C. 2010. Impact of financial liberalization on economic growth in Iran: an empirical investigation. *Journal of Middle Eastern Economics and Finance*, Vol. 7.
- Bartle, P. 2007. "Savings Mobilization". Retrieved from <http://cec.vcn.bc.ca/cmp/modules/bld-sav.htm>.
- Bashar, O.K., and Khan, H. 2007." Liberalization and growth: An Econometric Study of Bangladesh". U21 Global Working Paper, Issue 001/2007.
- Cemile, S. 2002. Financial Liberalization and Real Investment: Evidence from Turkish Firms. IMF Working Paper, WP/02/100.
- Chaudhry I.S 2009. "Financial Liberalization and Macroeconomic Performance: Empirical Evidence from Pakistan" Department of Economics at Bahauddin Zakariya University Multan, Pakistan.
- Corsepius, U.K. 1988. "Savings Mobilization in Developing Countries". Institute for Weltwirtschaft: Interconomics.
- Durlauf, S.N. and Blume L.E. 2008. "Impulse Response Function".http://www.dictionaryofeconomics.com/article?id=pde2008_I000283.
- Emilio F. and Price S. 2002. "Financial liberalisation and consumers' expenditure: 'FLIB' re-examined" Bank of England Working Paper.
- Engber, D. 2012. Why do People Love to say Correlation does not Imply Causality. Retrieved from http://www.slate.com/articles/health_and_science/science/2012/10/correlation_does_not_imply_causation.
- Faira, et al. 2009. "Financial Liberalization, Economic Performance and Macroeconomic Stability in Brazil: An Assessment of the Recent Period", UERJ/CPNq Research Paper
- Federal Reserve Bank of St. Louis. 1933. "Regulation Q". http://en.wikipedia.org/wiki/Regulation_Q
- Fowowe, B. 2010. "Financial Liberalization and Financial Fragility in Nigeria". *Central Bank of Nigeria Economic and Financial Review*, 48(1).
- Galindo A, Micco, A, Ordoñez, G.2002. "Financial Liberalization and Growth: Empirical Evidence" Inter-American Development Bank Working Paper.
- Gujarati, D.N. 2004. *Basic Econometrics* (4th Ed): New York: Mcgraw-Hill Publishing.
- Ikhide, S.I. and Alawode, A.A. 2001. "Financial Sector Reforms, Macroeconomic Instability, and the Order of Economic Liberalization: The Evidence from Nigeria". AERC Research Paper #112, African Economic Research Consortium.
- Kasekende, L. and Atingi-Ego, M. 2003. "Financial Liberalization and Its Implication for the Domestic Financial System: The Case of Uganda", Research Paper 128, African Economic Research Consortium, Nairobi *International Journal of Economics and Management Sciences* Vol. 1, No. 12, 2012, pp. 16-28.
- King R.G. and Levine R. 1993. "Finance and Growth: Schumpeter Might Be Right", *Quarterly Journal of Economics*.

- McKinnon, I.R. 1973. *Money and Capital in Economic Development*, Brookings Institution, Washington DC
- Obamuyi, T.M., and Olorunfemi, S. 2011. "Financial Reforms, Interest Rate Behaviour and Economic Growth in Nigeria". *Journal of Applied Finance and Banking*, 1(4):39-55.
- Odozi, V. 1995. "The Conduct of Monetary and Banking Policies by the Central Bank of Nigeria". *Economic and Financial Review*, 33 (1): 1-12.
- Ojo M.O. 1991. "Deregulation in the Nigerian Banking Industry: A Review and Appraisal" A Paper Delivered at the Bank directors' Seminar, 1991.
- Okpara, G.C. 2010. "The Effect of Financial Liberalization on Selected Macroeconomic Variables: Lesson from Nigeria". *The International Journal of Applied Economics and Finance*, 2010, 1-9
- Pagano, M. 1993. *Financial Markets and Growth: An Overview*, *European Economic Review*, 37: 613-622.
- Patnaik, P. 2011. "The Meaning of Financial Liberalisation". <http://mrzine.monthlyreview.org/2011/patnaik040611.html> (accessed 14 January 2011).
- Pill, H. and M. Pradhan 1995. "Financial indicators and financial change in Africa and Asia", IMF Working Paper 95/123.
- Rahman. 2012. "Saving mobilization and its impact on economic growth: a case study on Bangladesh". In: *American Canadian Conference for Academic Disciplines 2012*, 21-24 May 2012, Toronto, Canada.
- Rajan R. and Zingales L. 1998. "Financial Dependence and Growth", *American Economic Review*. 88, 559-586.
- Schumpeter, J. A. 1912. *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Cambridge: Harvard University Press.
- Shaw, E. S. 1973. *Financial deepening in economic development*. Oxford: Oxford University Press
- Sulaiman, L.A., Oke, M.O., and Azeez, B.A. 2012. *The Effect of Financial Liberalization on Economic Growth in Developing Countries: The Nigerian Experience*. *International Journal of Economics and Management Sciences*, 1(12):16-28.
- Ucer, M. 1998. *Some Observation on Turkish Inflation: A Random Walk Down the Past Decade*. Working Paper 1998/02. Bogazici University: Department of Economics.
- Williamson, J. 1998. "Whither Financial liberalization", *Keynote Address Delivered at the Second Annual Indian Derivatives Conference Mumbai, India November 12.*

APPENDIX

Response of PSCGDP to Cholesky
One S.D. PSCGDP Innovation

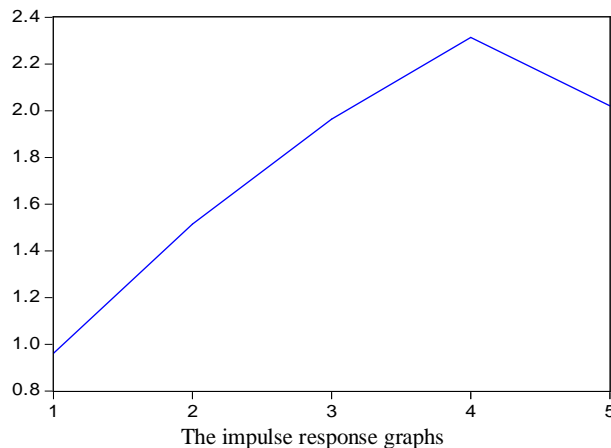


Figure 1.

Response of RINTR to Cholesky
One S.D. PSCGDP Innovation

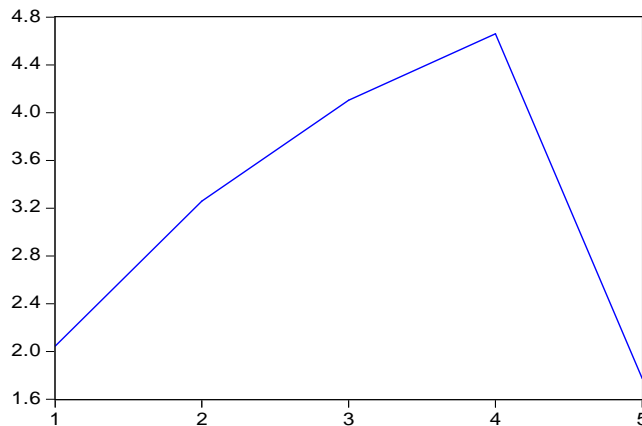


Figure 2.

Response of PSICB to Cholesky
One S.D. PSCGDP Innovation

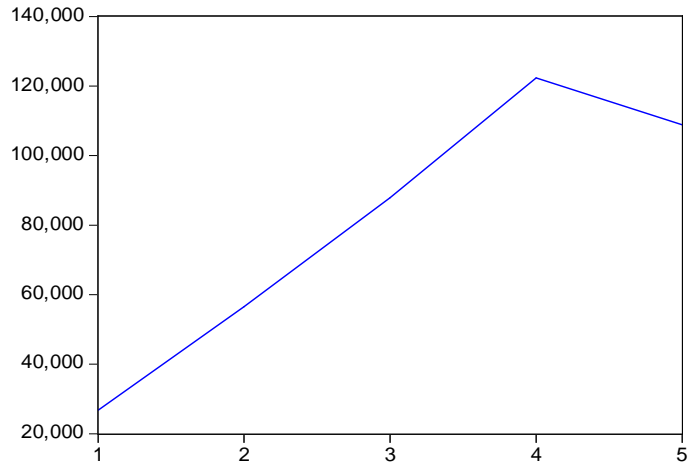


Figure 3.
