

## REAL INTEREST RATE AND SAVINGS MOBILIZATION IN NIGERIA

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**Abstract:** *This study empirically assessed the impact of real interest rate on savings mobilization in Nigeria. The Vector- Auto Regression (VAR) was employed, using the time series data from 1980 to 2008. The study revealed that real interest rate has negatively impacted on the level of savings mobilization in Nigeria. The need for government in Nigeria to bridge the existing gap between the lending and savings rates and increase per capita income level of the populace, to stimulate savings for investment and economic growth were revealed by the study. Therefore, efforts should be geared towards reducing domestic inflation rate to arrest its negative impact on real rates in Nigeria.*

**Keywords:** Vector Auto Regression, Real Interest rate, Lending rate, Inflation rate, Savings Mobilization and Nigeria.

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## INTRODUCTION

Banks are statutorily vested with the primary responsibility of financial intermediation in order to make funds available to all economic agents. The intermediation process involves moving funds from surplus sectors or units of the economy to deficit sectors or units (Uremadu, 2002; Nnanna, Englama and Odoko, 2004). The extent to which this could be done depends on the level of development of the financial sector as well as the savings habit of the populace. The availability of investible funds is therefore regarded as a necessary starting point for all investments in the economy which will eventually translate into economic growth and development (Uremadu, 2006).

In Nigeria, the level of funds mobilization by banks is quite low due to a number of reasons, ranging from low savings deposit rates to the poor banking habits or culture of the people (Nnanna, Englama and Odoko, 2004). Also, another disincentive to funds mobilization according to these authors is the attitude of banks towards small savers. That is most banks target corporate customers and government deposits and pay little or no attention to the small savers. Admittedly, the services rendered to the small savers are more tasking on the banks, but there is need to encourage them to save. As a matter of fact, the funds from household savings are relatively cheaper and more stable than government deposits that are very volatile and expensive. However, the role of savings in the economic growth of any country cannot be over-emphasized. Conceptually, savings represent that part of income not spent on current consumption. When applied to capital investment, savings increase output (Olusoji, 2003). Institutions in the financial sector like deposit money banks (DMBs) or commercial banks mobilize savings deposit on which they pay certain interest. To effectively mobilize savings in an economy, the deposit rate must be relatively high and inflation rate stabilized to ensure a high positive real interest rate which motivates investors to save from their disposable income. In Nigeria, the problem of mobilizing savings and deposits has always been the bane of economic growth and development. In developing economies, savings rate has been declining since the first oil shock and in the early 1990s (Chete, 1999). However this trend conceals a large and increasing dispersion of savings rate, particularly among developing countries. The large heterogeneity in savings behavior is associated to country and time differences in levels of development, growth performance, and fiscal and financial policies. The interest rate reform policy under financial sector liberalization was also to achieve efficiency in the financial sector and engendering financial deepening.

In Nigeria, financial sector reforms began with the deregulation of interest rates in August 1987 (Chete, 1999). Prior to this period, the financial system operated under financial regulation and interest rates were said to be repressed. According to McKinnon (1973) and Shaw (1973), financial repression arises mostly when a country imposes ceiling on deposit and lending nominal interest rates at a low level relative to inflation. The resulting low or negative interest rates discourage 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. Therefore, the expectation of interest rate reform was that it would encourage savings and make loanable funds available to the banking institutions. But, the criticism has been that the “tunnel-like” structure of interest rate in Nigeria is capable of discouraging savings and retarding growth in view of the empirical link between savings, investment and economic growth (Ojo, 1976). The link between them has been emphasized such that if individuals

or firms save, that means there is a greater possibility of investing in the near future. The more you save, the more resources available for investments i.e. the disposable income is either saved or consumed. Consequently, a higher level of investment is capable of creating brighter chances of economic growth.

### ***Problem Identification***

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 dwell on the effects of some macroeconomic variables like interest rate, inflation rate, exchange rate, gross domestic products 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) that an understanding of the nature of aggregate national savings behavior is critical in designing policies to promote savings, investment and growth.

## THEORETICAL AND EMPIRICAL REVIEW

### *Theoretical Review*

The classical theory of interest otherwise called the demand and supply theory of interest, maintained that the rate of interest is determined by the demand for and the supply of funds by businessmen and households respectively. The supply of funds is governed by the time preference and the demand for capital by the expected productivity of capital. The classical theory fails to proffer solution hence indeterminate. Meanwhile, the Keynesian liquidity preference theory is a stock theory. The theory determines the interest rate by the demand for and supply of money. It emphasizes that the rate of interest is purely a monetary phenomenon as distinct from the real theory of the classicals. It is a stock analysis because it takes the supply of money as given in the short-run and determines the interest rate by liquidity preference or demand for money. In discussing the modern theory of interest, the Hicks-Hansen ISLM model evidently shows that no single theory of interest rate is adequate and determinate. An adequate theory to determine interest rate must take into consideration both the real and monetary factor that influences the interest rate. Recall that  $M_d = M_s(i) + M_t(Y)$ .

Thus, money demand is also a function of output Y. When output rises, the money demand curve will also rise and therefore the equilibrium level of interest rate ( $r^*$ ) rises as well. In like manner, the McKinnon-Shaw Hypothesis expressed in McKinnon and Shaw (1973) argued that financial repression and indiscriminate distortions of financial prices including interest rates reduces real rate of growth. One of the basic tenets of McKinnon-Shaw model is that investment function responds negatively to the effective real loan rate and interest, and positive to the growth rate. McKinnon-Shaw school expects financial liberalization to exert a positive effect on the rate of economic growth in both the short and long run. In addition to the classical theory of interest rate, the study also reviews the loanable funds theory to provide the theoretical justification for the relationship between real interest rate and savings mobilization. The concept of loanable funds in economics is central to the theory of interest rate. It explains how the demand for and supply of credit decides the financial market interest rate. Bannocks, et al (1998) defined loanable funds as money available for lending to individuals, government and institutions in the financial markets. It comprises the current savings of private individuals and firms, as well as any increase in money supply made available by the actions of depository institutions, governments and monetary authorities in the financial markets. Thus, loanable funds represent a flow of money into the financial markets for loans of all kinds. According to Pearce (1992), loanable funds or credit is strictly the term used for funds that are available for lending in the money and capital market, and is

usually considered within the context of the theory of interest rate. According to Uremadu (2005), loanable funds results out of planned and mobilized savings. Accumulated savings when invested translate into capital formation which is a stock of real productive asset.

### ***Empirical Review***

A number of authors have investigated the effects of real interest rate on savings mobilization. In Nigeria and other developing economies, interest rate has shown significant effect on financial savings especially time and savings deposits while the structure of deposits was determined by differentials in deposits rates (Ndekwa, 1991). Through further investigation using monthly data, Ndekwa discovered that interest rate deregulation in Nigeria have a positive impact on financial savings between 1986 and 1988 and in Ghana between 1976 and 1980. Consequently, negative real interest rates resulted in decline of financial savings in real terms. But on the contrary, the Malaysian economy witnessed a steady policy of positive inflation-adjusted interest rates which led to growth in real term savings deposits. Also in Turkey, the deregulation of interest rate in 1981 resulted in a substantial increase in time and savings deposits in real terms (Ndekwa, 1991). Apart from the above evidences, some other studies have shown negative relationship between the rate of interest and the volume of savings through financial intermediaries For instance Ogaki, Jonathan and Reinhart (1995), in a study of personal savings in developing countries argued that high real interest rate increased savings while Ajayi (1978) in his own study concluded that savings deposits rate in a deregulated regime is not necessary in explaining the demand for savings deposit. Also, Abu (2006), using two partial models to investigate the impact of investment on GDP growth rate and the relationship between interest rate and investment in the case of the Romanian economy, found out that the behavior of the national economic system and the interest rate-investment-economic growth relationship tend to converge to those demonstrated in a normal market economy. But the study of Oosterbaan, et al. (2000) estimated the relationship between the annual rate of economic growth and the real rate of interest and shows the effect of a rising real interest rate on growth and equally claimed that growth is maximized when the real rate of interest lies within the normal range of say -5% to +15%.

However, the World Bank reports, cited in Oosterbaan et al. (2000), show a positive and significant cross-section relationship between average growth and real interest rates over the period 1965 to 1985. While From the study of Grilli and Milesi-Ferretti (1995), Rodrick (1998) and Kraay (2000), on the effect of financial liberalization on savings and growth, it was discovered that financial liberalization does not affect savings and growth,

but Levine(2001), Bekaert et.al.(2003) and Bonfiglioli and Mendicino (2004),found that the effect was positive. Also, in a similar study, Eichengreen and Leblang (2003), found the effect to be negative while Bakaert et. al. (2003), Chinn and Ito (2003) and Edwards (2001), discovered those effects to be heterogeneous across countries at different macro-economic frameworks. Modigliani (1966), argues that a higher income raises aggregate savings because it would increase the aggregate income of those working relative to those not earning labour income (i.e. retired persons living off their accumulated assets). Carroll and Weil (1994), also confirmed that lagged values of income growth seem to explain higher saving rates; they argue that the usual consumption models with either uncertainty or liquidity constraints are not sufficient to explain this result and advance instead the hypothesis of habit persistence, according to which higher income takes some time to be reduced when income falls back. Moreover, empirical research has reported mixed results, paralleling the theoretical ambiguity. For instance, Bosworth (1993) found a positive interest rate coefficient in time-series estimation for individual countries, but a negative coefficient in a panel (cross-country) estimation for developing countries. Giovannini (1985) also concludes that in most cases the real interest elasticity is zero but given that financial liberalization may have changed the interest rates effects, it is not too surprising that results are not robust.

## METHODOLOGY

### *The Model*

In line with the classical theory of interest rate which emphasized savings as a function of interest rate with the modifications of Giovannini (1985), in Bwire et. al. (2009) in a model where they predicted that nominal national savings, (measured as the ratio of domestic savings to GDP) is determined by financial intermediation ratio, (FR) (measured by the ratio of M3 to GDP), the real deposit rate of interest, (RDR) (measured as nominal deposit rate of interest minus inflation). Therefore, the model specified for this study is explained functionally as follows;

$GNS = f (INT, EXR, INF, GDP, \mu)$ . Explicitly, the model to determine the core determinants of gross national savings in Nigeria is written as follows;

$$GNS = \beta_0 + \beta_1INT + \beta_2EXR + \beta_3INF + \beta_4GDP + \mu_i$$

Where; GNS = Gross national savings which is simply defined as the sum of private and public savings in the economy. It is equal to a nation's income minus consumption and government purchases. It could be referred to as the amount of remaining money that is not consumed.

INT = Real interest rate. This also is the rate of interest an investor expects to receive after allowing for inflation. It is approximately the nominal interest rate minus the inflation rate.

EXR = Exchange rate. In finance, the exchange rate (also known as the foreign exchange rate, forex trade) between two currencies specifies how much one currency is worth in terms of the other.

INF = Inflation rate. This has been referred to as the rise in the general level of prices of goods and services in an economy over a period of time. This basically reflects erosion in the purchasing power of money.

GDP = National Income. This has been regarded as the monetary value of all goods and services produced in a country over a particular period of time usually a year.

### ***Analytical Method***

In order to establish the relationship among the variables used in this study, the Vector Auto Regressive Analysis (VAR) was employed. From the literature, different techniques have been adopted to capture the impact of various macro-economic indicators on particular variables. For example, Nyong (1997) used ordinary least square regression analysis (OLS) to analyse the impact of real interest rate which later failed to distribute the response of industrial production to the various macro-economic variables used.

A better technique suggested by Gujarati (2007), is the vector auto regression technique (VAR). The superiority of the VAR model over the OLS is quite clear. The OLS assumes a particular variable to be endogenous while the rest are exogenous. Vector Autoregression (VAR) is a statistical model used to capture the linear interdependencies among multiple time series. All variables in a VAR model are treated symmetrically in a structural sense; (although the estimated quantitative response coefficients will not in general be the same) each variable has an equation explaining its evolution based on its own lags and the lags of the other model variables.

### ***Data Requirements, Sources and Limitations***

The data for this study include sum of private and public savings to capture GNS, GDP at current market prices, Gross national savings (i.e. Mirror of total institutional savings), inflation rates and interest rates (i.e. Lending and savings deposit rates), and exchange rate. Other required secondary data were obtained from CBN Statistical Bulletin and Annual Reports and Statement of Accounts specifically between 1980 and 2009. Moreover, the data used in this study is limited to those available and accessible within official statistical limitation

#### 4.0 RESULTS AND DISCUSSIONS

Table 1: Vector Auto Regression (VAR) Estimates

	GNS	INT	EXR	INF	GDP
GNS(-1)	1.109521	-8.30	-7.29	3.81	0.644175
GNS(-2)	0.759096	6.03	2.08	1.23	-4.377242
INT(-1)	-1111.398	0.402384	1.114240	0.359883	7629.459
INT(-2)	1806.114	0.403280	-0.479699	1.261062	-19911.23
EXR(-1)	-479.8823	-0.057288	0.886566	-0.293071	12662.96
EXR(-2)	-2511.470	0.062192	0.072467	0.189841	4459.888
INF(-1)	126.3931	0.053120	-0.083346	0.458980	11619.83
INF(-2)	-586.1276	-0.107338	-0.142755	-0.503501	19.45101
GDP(-1)	0.024959	-1.98	-9.72	3.71	0.761791
GDP(-2)	-0.019387	2.65	1.89	-1.11	0.674569
C	-3476.046	6.031319	0.042603	4.529813	-203176.6
$R^2$	0.996625	0.605547	0.958707	0.539087	0.996293
$F$ -stat.	472.4215	2.456252	37.14732	1.871373	429.9983

Source: Author's computation, 2012.

#### Vector Auto Regression (VAR) Analysis

From the VAR estimates above, the result portrays the level of endogeneity or direction of causality of the endogenous variables, comparing the F-statistic values and the coefficient of multiple determinations ( $R^2$ ). From the result, it was revealed that GNS, GDP and EXR are more endogenous than exogenous having the  $R^2$  of about 99.6%, 99.6%, and 95.9% and  $F$ -statistics of 472.4, 429.998 and 37.15 respectively. However, INT and INF are less endogenous as they have  $R^2$  of about 60.6% and 54% respectively. This is further analysed, using the impulse response and the variance decomposition. The impulse response analysis of the VAR traces the effect of one standard deviation shock to one of the innovations on current and future value of the endogenous variables. The impulse response table is presented below and it's used to forecast the behaviour of the endogenous variables to a standard deviation shock on the gross national savings in Nigeria.

***The Impulse-Response Analysis******Table 2: Impulse Response to One S.D. of GNS***

<b>PERIOD</b>	<b>GNS</b>	<b>INT</b>	<b>EXR</b>	<b>INF</b>	<b>GDP</b>
1	54314.27	0.000000	0.000000	0.000000	0.000000
2	60999.77	-4335.963	-7556.585	4068.003	9886.467
3	115329.4	-5872.952	-36113.67	1752.996	13725.09
4	184873.4	-23721.58	-72710.13	13045.34	35617.09
5	314576.4	-41448.96	-130642.9	29755.13	56648.53
6	519008.4	-78019.74	-226088.2	58695.86	94724.22
7	867020.2	-130578.8	-382958.0	95722.66	150518.5
8	1442317	-221645.9	-641854.3	155808.3	238947.8
9	2406753	-372263.8	-1055610	251475.1	381135.7
10	4020043	-627214.7	-1801543	409609.0	613353.3

***Source: Author's Computation, 2012.***

From the impulse-response table, a standard deviation shock on gross national savings (GNS) brings about a gradual increase in the gross national savings (GNS) in the ten periods under consideration. This implies that all other factor hold constant, the value of the gross national savings in Nigeria will continue to increase. Also, the response of GNS revealed the innovation in GNS, as the INT reduces from about -4335.96 in the second period to about -627214.7 in the tenth period. Also, the innovation will also lead to a persistent reduction in EXR up to the tenth period as it reduced from -7556.585 in the second period to about -1801543 in the tenth period. However, inflation and gross domestic product tends to increase positively from an initial value of 4068.003 and 9886.467 to about 409609 and 613353.3 respectively in the tenth period. The variance decomposition measures the proportion of forecast error variance in one variable explained by innovations in it and other variables. But it should be noted that the VAR was estimated with sets of contemporaneous structural restriction specified in the equation. The result of the variance decomposition is therefore presented below.

**The Variance Decomposition Analysis.***Table 3: Variance Decomposition of GNS*

PERIOD	S.E	GNS	INT	EXR	INF	GDP
1	54314.27	100.0000	0.000000	0.000000	0.000000	0.000000
2	82832.40	97.22799	0.274013	0.832244	0.241192	1.424563
3	147283.4	92.06852	0.245672	6.276363	0.090454	1.318988
4	251314.2	85.73633	0.975328	10.52625	0.300516	2.461568
5	430114.3	82.76203	1.261645	12.81948	0.581822	2.575025
6	723870.7	80.62730	1.607109	14.28116	0.862913	2.621512
7	1212946	79.81042	1.731322	15.05456	0.930127	2.473578
8	2023362	79.49403	1.822152	15.47304	0.927228	2.283546
9	3374978	79.42549	1.871556	15.71841	0.888465	2.096074
10	5633308	79.43392	1.911434	15.86921	0.847604	1.937833

**Sources: Author's Computation, 2012.**

From the result, it was observed that the variation in the gross national savings (GNS) explained by the inflation rate (INF) assumed a peak of 93% in the seventh period and thereafter decline to about 84.8% in the tenth period. In the same vein, the variance in GNS explained by GDP reached its peak in the sixth period with 2.62% which later declined to 1.93% in the tenth period. On the other hand, the influence of INT and EXR to gross national savings in Nigeria easily observed to be increasing slightly from the first period to the tenth period. The result also indicates in itself weakened continuously from 100 per cent in the first period to 79.4% in the tenth period. The result implies that the gross national savings (GNS) will continue to decline in future. The implication of the results analysed above however, is that the level of income exert a greater and significant influence on the level of Gross national savings as evident from the VAR estimates, Impulse response and variance decomposition analyses. The outcome is in line with the findings of Carroll and Weil (1994) who confirmed that previous level of income growth seems to explain the higher savings rates. The result also depicted that the interest rate (INT) is less endogenous in the VAR estimates which could be tandem with the findings of Grilli and Milesi-Ferretti (1995), Rodrick (1998) and Kraay (2000) where it was revealed that financial liberalization does not affect savings. Likewise, the relative but not significant influence of exchange rate and inflation rate as evident from the VAR estimates and variance decomposition could be argued that while the introduction of various economic policy reforms in the economy encouraged the growth of the nominal savings and widened sophistication of financial institutions, the real interest rates show possibility of not having a significant impact on savings as earlier hypothesized. This may be as a result of high nominal interest that indeed influences savers in Nigeria rather

than the real rate. This is in-line with Uchendu (1993) findings that “nominal savings interest rate is the main determinant of financial savings in Nigeria”.

### ***Contribution to Knowledge***

This study, unlike the similar ones succeeded in extending the frontiers of both the literature and analytical techniques. The prominence given to recent literature in this study and the advancement in analytical techniques such as Vector-Auto Regression, Impulse-Response and Variance Decomposition Analyses were indication of remarkable contribution of the study to the existing body of knowledge. The study further x-rays the real interest rate as one of the strong macro-economic variables in the determination of savings and the overall economic performance in Nigeria.

## **CONCLUSION AND RECOMMENDATIONS**

This study summarily concludes that the interest rate liberalization vis-à-vis real interest rates has really contributed to the current declining level of savings mobilization in Nigeria and consequently the low level of capital formation in the economy. It could also be concluded that real rate is still significant in impacting on savings mobilization in Nigeria. It is therefore recommended that efforts should be geared towards reducing domestic inflation rate to arrest its negative impact on both real rates and spread; these could also bring improvement in per-capita income of the people via reducing unemployment rate and improved investment in the country. The monetary authorities should also embark on routine efforts at bridging the widened gap between lending and savings rates to foster a moderate rise in nominal rates and stabilize inflationary pressure. This encourages savings and generates needed loanable funds for investment in Nigeria.

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