

# Determinants of Financial Savings in Nigeria: An Empirical Analysis of Monetary Policy Stability

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## Abstract

This paper critically investigate the key determinants of financials and implications of monetary policy instruments on its variability in Nigeria between 1980 and 2008 dynamic long-run econometric model. The empirical results from the Engle Granger Cointegration test show a negative influence of GDP growth per capital income (PCY), board money supply (M2), and debt service ratio (DSR) and positive influence of real interest rate (RIR), interest rate spread (SLS) and domestic inflation rate in the long-run. The Augmented Dickey Fuller (ADF) unit root test result also revealed that most of the time series incorporated in this study are not stationary at level. The paper therefore submits that effort should be geared towards improving per capita income by reducing the unemployment rate in the country in a bid to accelerate growth through savings. There should also be an intensified effort to stabilize debt service ratio at moderate levels so as to ameliorate its negative impact on financial savings level in Nigeria.

**Keywords:** Financial Savings, Determinants, Monetary Policy Stability, Long-run and Unit root.

## 1. 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/units of the economy to deficit sectors/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 to economic growth and development (Uremadu, 2006).

In Nigerian Nnanna, Englama and Odoko (2004) are of the view that 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 habit or culture of the people. According to them, another disincentive to funds mobilization is the attitude of banks to small savers.

Most banks target corporate customers and government deposits and pay little or no attention to the small saver. 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.

Therefore, as earlier said, 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 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 and deposits has always been the bane of economic growth and development.

From the foregoing discussions, it is clear that an understanding of the nature of aggregate national savings behaviour is critical in designing policies to promote savings, investment and growth (Umoh, 2003). Accordingly, for an effective mobilization of savings, it is vital to understand or capture the marrow leading determinants of savings in Nigeria. This paper therefore investigates the major leading indicators of savings and as well as the implication of monetary policy on its variability in Nigeria using time series data covering 1980-2008 period. The remaining part of this paper is divided into four sections. Section 2 provides the review of literature and empirical studies. Section 3 and 4 contain empirical methodology and result discussion respectively. The last section concludes the study and provides policy recommendations.

## 2. LITERATURE REVIEW AND EMPIRICAL EVIDENCE

Keynes (1936) defined savings as the excess of income over expenditure on consumption. Meaning that savings is that part of the disposable income of the period which has not passed into consumption (Umoh, 2003 and Uremadu, 2005). Given that income is equal to the value of current output; and that current investment (i.e Gross Capital Formation) is equal to the value of that part of current output, which is not consumed, savings is equal to the excess of income over consumption. Hence, the equality of savings and investment necessarily follow thus:

Income = Value of output = Consumption + Investments

Saving = Income – Consumption

Savings = Investment ex-post.

Keynes maintains that on the aggregate, the excess of income over consumption (otherwise called savings) cannot differ from the addition to capital equipment (i.e. Gross Fixed Capital Formation or Gross Domestic Investment). Savings is therefore a mere residual and the decision to consume and the decision to invest between them determine volume of national income accumulated in a period. In the Keynesian view therefore secularly rising income would result in higher savings rates. As a matter of fact, savings is regarded as being complementary to the consumption function. In its simplest form, the savings function is derived from the linear consumption function when the autonomous consumption expenditure is separated off (Omoh, 2003).

Keynes (1936), however, brought in the opportunity cost variable, the rate of interest; which the classical economists now regard as the major determinant of savings (see Olusoji, 2003; Chete, 1999; McKinnon, 1973 and Shaw, 1973). The classical economists regard the rate of interest as the factor that brings the demand for investment and the willingness to save into equilibrium with one another (Umoh, 2003). The classical view accepts the fact that savings and investment are equal and that aggregate savings and aggregate investment are necessarily equal (although this view is still a debatable point). They, however, held that every act of increased savings by an individual necessarily bring into existence a corresponding act of increased investments.

There is the Permanent-Income Hypothesis (PIH). This is one of the two dominant paradigms which provide the point of departure for most modern research on consumption and savings. The PIH focuses on a representative-lived consumer. While the other paradigm is the Life-Cycle Hypothesis (LCH), which is derived from the aggregation of finitely-lived overlapping generations. This theory views individual as choosing a life time stream of consumption and savings in a way that present value of their consumption equals the present value of their lifetime earning and inheritance (Deaton, 1990).

There abound numerous theoretical evidences concerning the functional relationships between savings and a wide range of causal monetary and non-monetary variables. For instance, Juster and Taylor (1975) report that savings is an increasing function of income. Moreover, Modigliani (1970), Madison (1992), Boswoporth (1993), Carroll and Weil (1993), Schmidt- Hebbel, Sarven and Solimano (1994), Modigliani (1992), Jappeli and Pugano (1994), Edwards (1995), Collins (1999) and Uremadu (2000) found negative correlation between real interest and savings. Secondly, inflation creates a feeling of uncertainty and pessimism about the future and thereby encourages savings (Deaton, 1977 and Gylfason, 1981).

Chete (1999) reports a negative and significant effect on private savings of the ratio of broad money (M2) to GDP, thereby refuting the potential for pay-offs from efforts at financial deepening. This particular finding accentuates the need to rethink current preoccupation with financial deepening as the route to growth in an enhanced savings mobilization but which contradicts Schmidt- Hebbel and Sarven (1996) who reported a negative sign on the M2 coefficient.

More so, Chete (1999) results of the impact of external debt (mirrored by the debt service ratio-DSR) on private savings conform with theoretical expectation and support of the debt overhang hypothesis. Increases in the debt service ratio influence negatively and significantly private savings. This result was robust across alternative specification and has parallels in Fry (1989) and Aghevil and others (1990). Thus, external debts accumulation as a deliberate policy has a powerful adverse effect on private savings.

In 1986, the Structural Adjustment Programme (SAP), which involved the liberation and deregulation of the banking industry, was introduced in Nigeria. Proponents of the policy change argued that government ownership, restrictions on entry\exist and other interventions in the form of interest rate ceilings and sectoral allocations of credits created highly concentrated market structures, leading to monopolistic and or oligopolistic tendencies as well as promoting other inefficiencies which caused distortions in the economy (Afolabi, Ogunleye and Bwala, 2003). For example, it was argued that interest rate ceilings could discourage savings, especially in periods of high inflation. It could also encourage people with the surplus funds to engage in investment in physical capital assets instead of depositing such funds in the banks. It was further argued that borrowers who obtained loans at relatively cheap rates could choose to invest in unnecessary capital intensive projects (Njorege, 2002). These distortions would ultimately be reflected in negative real interest rates and high intermediation margins and or spread (Shaw, 1973, Seck and El-Nil, 1993).

Unlike in the pre-deregulation era, insured banks are now allowed to fix the rates on liabilities as well as credits extended to their customers with little or no control. Supervisors and other watchers of developments in the industry have accused banks of enjoying abnormal profits by charging high rates on credits whilst paying considerably lower rates on deposits. Bankers, on their own part, have argued that the perceived high spread is necessitated by the high costs of running banking business arising from regulating costs as well as those induced by the environment where they operate such as costs of power and infrastructural decays, etc. (Afolabi, Ogunleye and Bwala, 2003 and Uremadu, 2005)

In Nigeria and other developing economies, there are other evidence that interest rate has significant effect on financial savings especially time and savings deposits while the structure of deposits was determined by differentials in deposits rates as has been demonstrated in (Ndekwa, 1991). He also showed using monthly data that interest rates deregulation in Nigeria have a positive impact on financial savings during the period, 1984-1988. In Ghana, during the period 1976-1980, negative real interest rates resulted in decline of financial savings in real terms. In Malaysia, on the other hand, a steady policy of positive inflation-adjusted interest rate led to growth in real terms and savings deposit. In Turkey, the deregulation of interest rates in 1981 resulted in a substantial increase in time and savings deposits in real terms (Ndekwa, 1991).

Apart from the above evidence, some other studies have shown a negative relationship between the rate of interest and the volume of savings through financial intermediaries. Gupta (1970), in particular, in the study of personal savings in developing countries argued that high real interest rate increased savings. While, Ajayi (1978) in his study concluded that savings deposit rates in a deregulated regime is not important in explaining the demand for savings deposit.

### 3. METHODOLOGY

In analyzing precisely the determinants of savings and implications of monetary stability instruments in Nigeria between 1980 and 2008 which covers different periods of deregulations in the financial sector, the Keynesian, Classical as well as more recent and less conventional models were incorporated in the formulated model for this study. Particularly, the econometric model of Umoh (2003), Chete (1999) and Olusoji (2003) are adopted and modified in explaining the leading indicators of financial savings in Nigeria.

#### 3.1 Model Specification

The domestic total financial savings/GDP at current market prices ratio (ie. Gross national savings) is regressed on a set of monetary policy variables to form the empirical model for this study. The model is specified as follows:

$$TFSY_t = \phi_0 + \phi_1 PCY_t + \phi_2 RIR_t + \phi_3 M2Y_t + \phi_4 SLS_t + \phi_5 INF_t + \phi_6 DSR_t + u_t \quad (1)$$

#### 3.2 Variables and Data Description

**TFSY** = Total savings\GDP ratio at current market prices derived from gross national savings figures for 1980-2008 period.

**PCY** = This refers to the GDP per capita at current naira income of the people. Increase in per capita income will impact positively on their savings ability (Uremadu, 2006b).

**RIR**= This is the real interest rate, defined as the nominal interest rate from savings deposits minus annual inflation rate. It impacts positively on total savings.

**M2Y** = This refers to broad money supply, defined as the degree of financial deepening captured by broad money (M2) as ratio to GDP. Financial deepening means increase in volume of all monies in circulation in the economy. Efficient financial will have a salutary effect on the economy as well as a positive effect on savings mobilization.

**SLS** = This is interest rate spread. It is defined as interest rate differential between maximum lending rate and savings deposits rate. It has a negative impact on savings. Interest rate determination is a critical factor in the loanable funds market given its role in the mobilization and allocation of financial resources or credit in an economy (Uremadu, 2006b).

**INFR**= This rate is defined as a macroeconomic instability represented by annual rate of inflation. It impacts negatively on private savings mobilization. It should well be noted that the inflationary expectations play an important role in the supply of and demand for loanable funds.

**DSR**= Ratio of debt servicing to total exports, defined as the external debt services measured as ratio of actual debt services to total exports. It has a negative effect on total savings accumulation in the country.

Prior to the estimation of the specified model 1, the time series characteristics of the variables incorporated are examined using the Augment Dickey Fuller (ADF) unit root test. While, the long-run relationship between savings rate and monetary policy stability is established using the Engle-Granger Cointegration test. The time series data used in this study is sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the Annual Abstract of Statistic of National Bureau of Statistics (NBS).

### 4. EMPIRICAL RESULTS DISCUSSION

This section analyzes the results of the regression model estimated using E-Views 5.1. The analysis of the time series properties is based on the following system of equations:

For Intercept:

$$\Delta X_t = \delta_0 + \delta_1 \Delta X_{t-1} + \sum_{i=1}^n \gamma_i \Delta X_{t-i} + \varepsilon_{t1} \quad (2)$$

For Linear Trend:

$$\Delta X_t = \delta_0 + \delta_1 \Delta X_{t-1} + \delta_2 t + \sum_{i=1}^n \gamma_i \Delta X_{t-i} + \varepsilon_{t2} \quad (3)$$

The result of the ADF unit root test is presented in table 1. The table reported that all the time series variables incorporated are found to accept the null hypothesis of no stationary at level for both intercept and linear trend test models excluding total financial savings as a ratio of GDP (TFSY) and real interest rate (RIR) which were integrated of order zero.

**Table 1: Unit Root Test Results**

Variable	ADF Tau Statistics		Order
	Intercept	Trend	
TFSY	-3.973*(1)	-3.890**(1)	0
PCY	-4.220* (1)	-4.203** (1)	1
RIR	-3.346**(1)	-3.279*** (1)	0
M2Y	-2.993**(1)	-4.159**(5)	1
SLS	-5.414* (1)	-5.344* (1)	1
INF	-4.967*(1)	-4.959*(1)	1
DSR	-3.904* (2)	-3.712** (3)	1
U	-4.246* (6)	-5.297* (6)	0

Note: Significant at (\*)-1%, (\*\*)-5%, and (\*\*\*)-10% McKinnon Critical values. The values in parenthesis is the number of lag used for the test which is based on the minimum AIC and SIC.

After several iterations based on the number of lag and differencing, per capita income (PCI), broad money supply as ratio of GDP (M2Y), interest rate spread (SLS), inflation (INF) and debt servicing as ratio of total export (DSR) were found to reject the null hypotheses at first difference with different lag for both intercept and linear trend test models. This implicates that the time series variables integrated of order one are not consistent in trend and are found to be mean reverting. For the essence of the subsequent test the entire variables are assumed to be of the same order of cointegration.

The result for the specified empirical model (1) is presented in table two.

**Table 2: Cointegrating Regression Result**

Dependent Variable: TFSY				
Sample: 1980 – 2008				
Observation: 29				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.431942	0.417854	1.033714	0.3125
PCY	-0.000102	0.000101	-1.002652	0.3269
RIR	0.010471	0.007478	1.400254	0.1754
M2Y	-0.184812	0.405716	-0.455521	0.6532
SLS	0.003538	0.004497	0.786584	0.4399
INF	0.008949	0.007161	1.249777	0.2245
DSR	-0.224615	0.382517	-0.587203	0.5630
R-squared	0.170651	Mean dependent var		0.094961
Adjusted R-squared	-0.055535	S.D. dependent var		0.102378
S.E. of regression	0.105182	Akaike info criterion		-1.459735
Sum squared resid	0.243394	Schwarz criterion		-1.129698
Log likelihood	28.16616	F-statistic		0.754471
Durbin-Watson stat	1.367178	Prob(F-statistic)		0.612745

Source: Author's Computation

The Engle-Granger (1987) cointegration test is employed to determine if the variables incorporated in model (1) are cointegrated or linearly stationary. The unit root properties of the residual series generated from the model (1) is examined using the Augmented Dickey-Fuller unit root test. The test is based on the error term derived as:-

$$u_t = TFSY_t - (\phi_0 + \phi_1 PCY_t + \phi_2 RIR_t + \phi_3 M2Y_t + \phi_4 SLS_t + \phi_5 INF_t + \phi_6 DSR_t) \quad (4)$$

The result presented in table 1 revealed that the residual ( $U_t$ ) reject the null hypothesis of no-stationary

at levels for both intercept and linear trend test models at 1% MacKinnon (1996) one-sided p-values. This indicates that there exists long-run relationship between financial savings and its determinants in Nigeria during the review period. The estimated model (1) is the cointegrating regression which result is presented in table 2 represent. The cointegrating regression revealed that per capital income (PCY), broad money supply to GDP (M2Y), and debt service ratio (DSR) exert negative and insignificant influence on the ratio of financial savings to GDP (TFSY) and 1% change in these factors will lead to 0.01%, 18.5% and 22.5% proportionate negative change in financial savings to GDP in Nigeria. Based on the expected signs of effect, per capital income (PCY) and broad money supply to GDP (M2Y) does not conform with theoretical expectation. While, real interest rate (RIR), interest rate spread (SLS) and inflation rate (INF) were found to enhance financial savings in Nigeria positively. Although, the effect of inflation (INF) and interest rate spread (SLS) on ratio of gross national saving to GDP based on sign does not conform with theoretical expectation.

In examining the structural stability of the model (1) that explains the link between financial savings and its determinants in the long-run the F-Statistic and R-Square are used. The F-statistic result shows that the estimated parameters of the cointegrating regression are simultaneously insignificant and this is further confirmed by the low explanatory power of the determinants of financial savings in Nigeria which stood at 17.1% based on the R-squared result. This implies that the cointegrating regression is structurally unstable in the long-run.

## 5. CONCLUSION AND RECOMMENDATIONS

In conclusion, it can be argued that while introduction of economic policy reforms in the Nigerian economy encouraged growth of nominal savings and widened sophistication of financial institutions, the relative growth of financial savings to GDP ratio is rather not encouraging especially after deregulation. This is because it has been rising and failing over the years studied. Besides, broad money supply (M2) to GDP (a mirror of financial deepening) was not thus justifying the McKinnon-Hypothesis (MSH) for cautions fiscal discipline in order to engender desire economic growth (Uremadu, 2006b). Also, some theoretically unexpected variables were found to exert positive and negative influence on financial savings in Nigeria due to their stationary status.

It is therefore recommended that efforts should be geared towards reducing debt service ratio to arrest its negative impact on financial savings level; there should also be improvement on the per capita income, of the people via reducing the unemployment rate in the country and investment consequent upon increased capital formation in a bid to accelerate growth through savings. Finally, there should be determined effort by the monetary authorities to bridge the widened gap existing between lending rate and savings rate, foster a moderate rise in nominal rates and stabilize inflationary pressures so that the people will be fully motivated to save in a bid to generate needed loanable funds for investment in Nigeria.

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