

Core Determinants of Financial Savings in Nigeria: An Empirical Analysis for National Monetary Policy Formulation

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This paper investigates the core leading determinants of financial savings in Nigeria using ordinary least square (OLS) econometric framework. The empirical results show a positive influence of GDP growth per capita income (PCY), spread (SLS), broad money supply (M2), and debt service ratio (DSR) and negative influence of both real interest rate (RIR) and domestic inflation rate. 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 stabilise inflation at moderate levels so as to ameliorate its negative impact on real rates, spread and financial liberalisation and/or financial deepening in Nigeria.

Field of Research: Financial Economics, Savings Mobilization and Developing Economies

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 mobilisation 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 mobilisation 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 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.

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Therefore, as earlier said, the role of savings in the economic growth of any country cannot be over-emphasised. 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 mobilise savings deposit on which they pay certain interest. To effectively mobilise savings in an economy, the deposit rate must be relatively high and inflation rate stabilised 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.

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 mobilisation of savings, it is vital to understand or capture the core leading determinants of savings in Nigeria. This paper therefore investigates the major leading indicators of savings in Nigeria using time series data covering 1980-2001 period. This research is thus designed to explore how to mobilize adequate financial savings in order to fill the gap which currently exists between savings and investment in Nigeria.

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 (ie. 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:

$$\text{Income} = \text{Value of output} = \text{Consumption} + \text{Investment}$$

$$\text{Savings} = \text{Income} - \text{Consumption}$$

$$\text{Savings} = \text{Investment ex-post.}$$

Keynes maintains that on the aggregate, the excess of income over consumption (otherwise called savings) cannot differ from the addition to capital equipment (ie. Gross fixed capital formation or gross domestic investment), so to speak (see CBN Statistical Bulletin, Vol.15, December, 2004, pp.xvii-xviii). 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 (Umoh, 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's 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 earnings and inheritance (Deaton, 1990).

There abound numerous theoretical evidences concerning the functional relationships between savings and a wide range of causal variables. For instance, Juster and Taylor (1975) report that savings is an increasing function of income. Moreover, Modigliani (1970), Madison (1992), Bosworth (1993), Carroll and Weil (1993), Schmidt-Hebbel, Sarven and Solimano (1994), Modigliani (1992), Jappeli and Pugano (1994), Edwards (1995), Collins (1991) and Uremadu (200) maintain that there exists a positive relationship between savings and income growth rates. Aghevli (1990) in Ozigbo (1999) reported that there is consensus that the level of savings is largely determined by the level of income.

In addition, studies dealing with savings and interest rates are categorized into two. Those who argue that high interest rates induce savings include McKinnon (1993), Shaw (1993), Molho (1986), Balassa (1989), Soyibo and Adekanye (1991), Gupta (1970) and Chaudavarkar (1971). Conversely, Williamson (1968), Boskin (1978), Juster and Taylor (1975), Howard (1978) and Uremadu (2006) found negative correlation between real interest rates and national savings. Inflation has been found to exert dual influences on savings. First, it encourages the holding of real assets rather than assets fixed in normal values, and thus reduce savings (Howard, 1978). 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 mobilisation but contradicts Schmidt-Hebbel and Sarven (1996) who reported a negative sign on the M2 coefficient.

Moreso, Chete (1999)'s 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 specifications and has parallels in Fry (1989) and Aghevli and Others (1990). Thus, external debt accumulation as a deliberate policy has a powerfully 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/exit and other interventions in the form of interest rate ceilings and sectoral allocation 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 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 acquired 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 evidences that interest rate has significant effect on financial savings especially time and savings deposits while the structure of deposits was determined by differentials in deposit 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 evidences, 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 a 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

The methodology deals with model specification, data requirements and sources of data. The model encompasses a number of alternative consumption/savings motives. Empirical implementation of the model makes use of macroeconomic data covering 21 years (1980-2001) to determine the core determinants of financial savings in Nigeria. Our model encompasses the Keynesian, the Classical as well as more recent and less conventional models. Particularly, we have adopted and modified the models of Umoh (2003), Chete (1999) and Olusoji (2003) to come up with our model 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) equation to be estimated is specified as follows:

$$\text{TFS/GDP} = f(\text{PCY}, \text{RIR}, \text{M2}, \text{SLS}, \text{INFR}, \text{DSR})$$

$$\qquad\qquad\qquad (+) \quad (+) \quad (+) \quad (-) \quad (-) \quad (-) \quad \dots(1)$$

where

TFS/GDP = Total savings/GDP ratio at current market prices derived from gross national savings figures for 1980-2001 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.

M2 = 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 intermediation will increase financial deepening. Effective financial deepening 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 = Inflation rate is defined as a macroeconomic instability represented by annual rate of inflation. It impacts negatively on private savings mobilisation. 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.

It is noteworthy here that these six variables are by no means the only variables that do influence savings mobilisation in an economy. But they have been sieved out and selected via downward sequential elimination simulation process in a study conducted by this researcher earlier. Hence, they are being selectively chosen and tested in the above model as core leading variables determining financial savings in Nigeria (Uremadu, 2006b).

From the above implicit function we derive an explicit function for the core determinants of savings in Nigeria as follows:

$$TFS/GDP = \alpha_0 + B_1 PCY + B_2 RIR + B_3 M2 - B_4 SLS - B_5 INFR - B_6 DSR + e \quad \dots(2)$$

where

$\frac{TFS}{GDP}$ or $\frac{TFS}{Y}$ is the dependent variable; B_1, B_2, \dots, B_6 , are the estimated

linear coefficients of the independent variables; α_0 is the autonomous estimate of the savings function and e is the random error term.

3.2 Data Requirements, Sources and Limitations

The data utilized for this paper include GDP at current market prices, total institutional savings (ie. Mirror of gross national savings), value of imports and exports, external debts, inflation rates and interest rates (ie. Lending and savings deposit rates), broad money supply (M2) and GDP per capita (PCY)

The required secondary data to be used for the analysis were obtained from CBN Statistical Bulletin, and Annual Reports and Statement of Accounts (Various Years); International Financial Statistics of the IMF as well as the Nigerian Annual Abstract of Statistics, published by the Federal Office of Statistics (FOS), Abuja. Moreover, the data used in this study is limited to those available and accessible within official statistical limitations.

4. Empirical Results, Discussion of Findings and Recommendations

In this section, we shall analyze results from our regression of the model, to establish our findings as well as simultaneously make recommendations for policy formulation and implementation.

Hence, Table 1 displays results from the OLS modeling of core determinants of financial savings in Nigeria.

Table 1: Modeling TFS Function by OLS

<u>Variable</u>	<u>Coefficient</u>	<u>St. Error</u>	<u>t-Statistics</u>	<u>Prob</u>
α_0 (constant)	15.90251	45.27943	0.351208	0.7321
PCY	36.66466	9.746922	3.761665*	0.0031
RIR	-8.778388	4.083947	-2.149486***	0.0547
M2	0.440222	1.052998	0.418066	0.6839
SLS	12.61905	3.831344	3.293635*	0.0072
INFR	-11.42543	3.771634	-3.029305**	0.0115
DSR	1.212907	1.187850	1.021095	0.3291

$R^2=0.875137$; R^2 Adjusted = 0.807030; SE=48.72607; Sum square resid =26116.53; DW Stat = 1.898133; F-statistic=12.84943; Prob (F-Statistic) = 0.000209

Key: * Coefficient significant at 0.00% level
 ** Coefficient significant at 1% level
 *** Coefficient significant at 5% level

The outcome of our regression for the model equation (2) is thus stated hereunder:

$$\begin{aligned}
 \text{TFS/GDP} &= 15.90251 + 36.66466\text{PCY} - 8.778388\text{RIR} + 0.440222\text{M2} \\
 &\quad (0.35) \quad (3.76) \quad (-2.15) \quad (0.42) \\
 &\quad +12.61905\text{SLS} - 11.42543\text{INFR} + 1.212907\text{DSR} + e \quad \dots \\
 (3) \quad &\quad (3.29) \quad (-3.03) \quad (1.02) \\
 R^2 &= 0.875137 \\
 \text{Adj } R^2 &= 0.807030 \\
 \text{-----} \\
 \text{DW Stat} &= 1.898133 \\
 \text{F-stat} &= 12.84943
 \end{aligned}$$

*, **, *** indicate 0, 1 and 5% levels of significance, where the variables are the student t-ratio values.

From the results depicted in Table 1 above, the descriptive statistics (R^2 , Adj. R^2 , F-Statistics and DW-Stat) are significant as they are within acceptable bounds. Specifically, R^2 reveals that the explanatory variables account for 87.51% of the variables in volume of financial savings mobilized in Nigeria

within the period under review. This is a good fit. Equation (2) also shows that it is a useful model as specified in that the whole equation was found to be statistically significant as F-Statistic = 12.84943; Prob(F-Statistic = 0.000209; R^2 = 87.51%; R^2 Adj = 80.70%, although the intercept was never significant. The value of DW Stat= 1.898133 demonstrates the null hypothesis of no serial correlation is not rejected at the 5% level of significance.

In line with a priori economic thinking, GDP per capita (PCY) and interest rate spread (SLS) are super significant at 100% confidence level in influencing financial savings mobilisation in Nigeria. While domestic inflation rate (INFR) and real interest rate (RIR) are very significant at 95% confidence level in explaining mobilisation of financial savings in Nigeria. As such a 1% change in per capita income and or spread will have a more than a proportionate impact on the quantum of savings mobilised in Nigeria either positively or negatively. It then implies that an increase in people's disposable income would lead to an increase in savings made within the period they are considered.

Empirical results from Table 1, also reveal that three of the variables (PCY, M2, INFR) are correctly signed in line with their hypothesized signs, while the other three (RIR, SLS, DSR) had the wrong signs. These reverse signs expectations could be due to the following reasons (i) on the part of the real interest rate, a possibility for it not having a positive impact on savings as hypothesized may be due to the fact that it is high nominal interest that do indeed influence savers in Nigeria rather than the real rate. This is in agreement with Uchendu (1993)'s finding "that nominal savings interest rate is the main determinant of financial savings in Nigeria".

However, real rate is still significant in impacting on savings mobilization in Nigeria. Reduction in inflation rate and proper sensitisation of savers on the vital role real interest rate play on savings mobilization may make investors give due attention to real rate while trying to save or invest in deposit accounts. Second, the positive impact on spread (SLS) on savings could only be due to the fact that people consider some other reasons for financial savings other than spread and or yields. Third, the positive impact of debt service on financial savings is antithetical to debt overhang though non-significant from the result of our test (Chete, 1999). Hence, since DSR, which is a mirror of Nigeria's external debt accumulation, has a positive relationship with financial savings, there should be prudent management of the nation's external debt. This will lead to growth in the economy (see Uremadu, 2006b).

Significance of GDP per capita (PCY) is proper and good for the economy because growth in GDP per capita income of the people will engender high savings and investment which will further lead to more growth in capital formation and re-investment.

Besides, domestic inflation rate (INFR) is negatively significant in impacting on volume of savings mobilized in Nigeria, hence there is need to reduce its bad effect via minimising all inflationary pressures on the economy. Its rise

also affects negatively on both the real interest rate and spread, twin factors that policy makers have to always keep on guard while formulating policies to accumulate adequate savings for investment.

Finally, results of modeling equation (2) revealed level of broad money supply (M2) to have a positive though insignificant association with savings. Its insignificance here could only be attributed to what McKinnon-Shaw hypothesis postulated that government intervention and or regulation in the banking industry, could cause distortions in the economy; and that financial liberalization would indeed foster economic growth (see McKinnon, 1973 and Shaw, 1973). Hence, cautious fiscal discipline is suggested in this case for policy makers.

5. Conclusion

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 falling over the years studied. Besides, broad money supply (M2) to GDP (a mirror of financial deepening) was not significant in explaining variations in financial savings but has positive sign thus justifying the McKinnon-Hypothesis (MSH) for Nigeria for cautious fiscal discipline in order to engender desired economic growth (Uremadu, 2006b). Again, the positive influence of debt service will only be profitable if the debt is expended on productive venture or sector of the economy that will lead to growth in real terms and capital formation.

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; 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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