INFORMALITY AND DOMESTIC SAVINGS IN NIGERIA: LESSONS FROM TIME SERIES ANALYSIS

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ABSTRACT*: Following the dearth of empirical evidence on the response of domestic savings to informality in Nigeria, this study examined the impact of informality on domestic savings in Nigeria for the period 1970 to 2011 as a means of providing evidence based policies that will enhance the growth and development of the Nigerian economy. The study employed time series analysis using the OLS estimation procedure. The estimation results of the long run model indicate that informality hinders the growth of domestic savings, while the degree of financial depth impacts significantly and positively on domestic savings in Nigeria. It was also found that the growth rate of real per capita income impacts positively on domestic savings, even though it is not statistically significant in the long run. Based on these findings, we recommended that policy makers and the government should seek to improve the linkage between the formal and informal sectors in Nigeria as this would have a strong positive impact on domestic savings. Deposit money banks and the monetary authority should evolve policies aimed at reaching the unbanked informal sector agents, especially the rural households and the urban informal production units in order to deepen the financial sector and assist in mobilizing the much needed savings that will engender investment and growth in Nigeria. Also, development policy in Nigeria should focus on increasing the productive base of the economy in order to promote real income per capita growth and reduce unemployment.*

KEYWORDS: Informality; Domestic Savings; Time Series; CBN; Nigeria

INTRODUCTION

In recent times, there has been a growing concern among economists, researchers and policy makers in Nigeria over the relatively low saving rate in Nigeria. This concern is due to several reasons. One, domestic savings is of vital importance in the sustenance and reinforcement of the savings-investment-growth chain in developing economies (Nwachukwu, 2011). Two, countries that save more tend to grow faster, provided that their financial system is deep (World Bank, 1989). Three, increasing saving and ensuring that they are directed to productive investment are central to accelerating economic growth and development (United Nations, 2005). Furthermore, higher saving leads to capital accumulation, which in turn leads to economic growth and development (Solow, 1956). Hence, the enormous importance of saving in the overall growth and development of the Nigerian economy cannot be over stressed.

In Nigeria, Olusoji (2003) identified financial institutions such as deposit money banks as the main agents of savings mobilization. To effectively mobilize deposits, the deposit money banks should offer relatively high deposit rates while inflation rate should be relatively stable. Unfortunately, the deposit rates offered by banks in Nigeria have been generally low in the last five decades with an average of 9%; while inflation rate has been relatively high with an average of 19% in the last decade. Furthermore, a trend analysis of the ratio of total savings to GDP in Nigeria shows that the saving rate has been fluctuating over time. The savings/GDP ratio was 2% in 1960. It increased to 7.8% and 11.6% in 1970 and 1980, respectively. In 1990 and 2000, it declined to 11.1% and 8.4% respectively. In 2011, the savings/GDP ratio in Nigeria stood at 17.4% (CBN, 2011). Clearly, the relatively poor rates at which domestic savings in Nigeria is growing is a source of worry to policy makers in Nigeria.

Recent empirical evidences in Nigeria point to a growing informal sector (Ogbuabor & Malaolu, 2013; Ariyo & Bekoe, 2012; Oduh et al, 2008). This can seriously hamper the savings mobilization efforts of deposit money banks and other financial institutions in Nigeria due to the fact that most informal sector transactions are conducted in cash to avoid official detection (Oduh et. al, 2008; Buehn & Schneider, 2008). Unfortunately, none of the existing studies in Nigeria has in any way examined how domestic savings respond to informality in Nigeria. This study seeks to address this research gap. Accordingly, the primary objective of this study is to empirically examine the impact of informality on domestic savings in Nigeria in order to provide evidence based policies that will enhance the growth and development of the Nigerian economy.

This study is strongly justified by the assertion of Soludo (2004) that many banks in Nigeria have abandoned their essential intermediation role of mobilizing savings and inculcating banking habit at the household and micro enterprise levels. Savings mobilization at the grass-roots level has been discouraged by the unrealistic requirements by many banks for account opening. Worse still, the indifference of banks towards small savers and informal sector operators, particularly at the grass-roots level, has compounded the problems of low domestic savings and high bank lending rates in the country, and also reduced access to relatively cheap and stable funds that could provide a reliable source of credit to the productive sectors at affordable rates of interest. This study is therefore a major step towards promoting saving, investment and growth in Nigeria.

THEORETICAL LITERATURE

Several theories have been developed in the attempt to understand the concept of saving. The life-cycle theory developed by Modigliani and Brumberg (1950) is based on the observation that individuals make consumption decisions based on the resources available to them over their life time and their current stage in life. The theory predicts that the age composition of a country's population should influence its savings behavior in such a manner that the higher the proportion of a country's population that is not in the active labour force, the lower its savings rate should be. In other words, individuals will dissave when they are young and have low income, save during their productive years, and once again dissave when they retire.

The bequest theory developed by Yaari (1965) stipulates that if individuals have positive bequest motives, they will tend to save some wealth for their heirs. Thus, aggregate savings are influenced by the demographics of the population. The theory of optimal saving stipulates that individuals should save early to create a buffer stock to cushion bad income draws and limit the negative internality from habit formation. A key proponent of this theory is Fisher (1930), who stated that income uncertainty increases current saving. The traditional economic theory of savings developed by Simon (1959) posits that people act as if they make ex-ante optimal savings decisions under uncertainty, discounting future utilities exponentially, given their beliefs about future income and other structural parameters. The Ricardian equivalence hypothesis (theory) assumes that saving behavior does not experience any uncertainty and that capital markets are perfect. The theory posits that government can finance its expenditure through taxes or borrowing; hence, the only thing that affects the economy is the time path of government expenditure and not the taxes that finance such expenditure (Ricardo, 1817).

The dynamically inconsistent preferences theory of Brown, Camerer and Chua (2006) stipulates that consumers know how to save optimally, but cannot resist short-term temptations to consume some products. The bounded rationality theory developed by Marshak (1955) stipulates that consumers save suboptimally because their rationality is bounded. In other words, it is possible that consumers simply cannot figure out or learn over time how to save optimally. Clearly, there are numerous theories of savings apart from the ones stated above.

EMPIRICAL LITERATURE

Nwachukwu and Odigie (2011) examined the determinants of private saving in Nigeria during the period 1970-2007 using the ECM procedure. The results of the analysis show that the saving rate rises with both the growth rate of disposable income and the real interest rate on bank deposits; while public saving seems not to crowd out private saving, suggesting that government policies aimed at improving the fiscal balance have the potential of bringing about a substantial increase in the national saving rate. Also, the degree of financial depth has a negative but insignificant impact on saving behaviour in Nigeria.

Akpan, Udoh and Aya (2011) used two-stage least squares method of simultaneous equation modeling to examine the factors that determine household saving of rural agro-based firm workers in the south-south region of Nigeria. The results indicate that income, tax, job experience, education, family size and membership of a social group influence saving attitude of workers.

Soyibo and Adekanye (1992) used data for the period 1969 – 1989 to examine financial system regulation, deregulation and savings mobilization in Nigeria by adopting an ex-post analysis of the Nigerian banking system. The results indicate that ex-post real interest rate is a significant determinant of both savings and real stock of money demand in Nigeria.

Babatunde, Fakayode, Olorunsanya and Gentry (2007) examined the determinants of saving among cooperative farmers in Ondo State, South-western Nigeria. They obtained data from 150 cooperative farmers using structured questionnaires. The results of their study indicate that

household size, years of cooperative membership, interest rate on loan, gender and the amount of money borrowed are the significant determinants of savings among the cooperative farmers. Nwachukwu and Egwaikhide (2007) examined the determinants of private saving in Nigeria by comparing the estimation results of the ECM model with those of partial-adjustment, growth rate and static models. They found that real interest rate on bank deposits has a significant negative impact while external terms of trade, inflation rate and external debt service ratio have positive impact on private saving. They also found that savings rate rises with the level of disposable income; and that the ECM performed better than the other models.

Osei (2011) examined the functional relationships between financial savings and macroeconomic variables in Ghana using trend analysis and ECM methodology. The study found that level of investment, deposit rate, and level of income have significant positive impact on savings.

Igbatayo and Agbada (2012) investigated the relationship between inflation, savings and output in Nigeria, employing Vector Autoregression (VAR) approach. The results indicate that inflation tends to reduce Output while savings actually stimulates output in Nigeria.

Temidayo and Taiwo (2011) employed descriptive statistics in carrying out a qualitative analysis of the relationship between domestic savings and economic growth in Nigeria, using annual secondary data obtained from World Data Indicator (WDI), World Bank publication and Statistical Bulletin of the Central Bank of Nigeria for the period of 1970 to 2006. The study concluded that the problem with Nigeria's economy is not that of mobilizing domestic savings but that of intermediation; and thus recommended that government should adopt policy enhancing intermediation between savings and investment in the economy by providing regulating and coordinating role to ensure effective intermediation between savings and growth in the economy.

Eregha and Irughe (2009) examined the impact of foreign aid inflow on domestic savings in Nigeria using an OLS methodology. The results indicate that both the short run and steady state foreign aid inflow to Nigeria have positive effect on domestic savings. Ogwumike and Ofoegbu (2012) used an ARDL estimation technique to examine the impact of financial liberalization on Nigeria's domestic savings, 1970-2009. The study concluded that interest on deposit induced by liberalization was not the major determinant of savings.

Research Gap / Contribution to Knowledge

In spite of the numerous empirical studies on the determinants of domestic savings in Nigeria including the ones enumerated above, no empirical study known to the authors of this paper has examined the impact of informality on domestic savings in Nigeria. This study is therefore the first empirical attempt to fill this gap in the literature. Furthermore, this study will deepen our understanding of the consequences of the phenomenon called informality in Nigeria.

METHODOLOGY

We adopted time series analysis for this study, using the ordinary least squares estimation procedure. Our estimation procedure began by testing the time series properties of the data using

the Zivot –Andrews unit root test technique since most economic variables have been shown to be non-stationary. This technique provides a more robust result than the usual ADF test and also accounts for structural break (Andrews & Zivot, 1992). The test of stationarity was then followed by the Johansen cointegration test which sought to establish whether or not the dependent variable is cointegrated with the explanatory variables. Here, the confirmation of cointegration relationship means that our long run model cannot be spurious.

This study covered the period 1970 to 2011 (a total of 42 observations) in line with the availability of data. Following Nwachukwu and Odigie (2011), we specify our model as follows:

$$\textbf{SAV} = \alpha_0 + \alpha_1\textbf{INFO} + \alpha_2\textbf{RIR} + \alpha_3\textbf{FBAL} + \alpha_4\textbf{DFD} + \alpha_5\textbf{GPGDP} + \mu \qquad \textbf{. . .} \qquad \textbf{(1)}$$

Where: SAV = total savings to GDP ratio (obtained from CBN Statistical Bulletin, 2011);

INFO = growth rate of the size of the informal sector in Nigeria (obtained from Ogbuabor & Malaolu, 2013)

RIR = real interest rate (obtained by subtracting the inflation rate from the nominal interest rate on bank deposits as obtained from CBN Statistical Bulletin, 2011)

FBAL = fiscal balance (which is the overall surplus/deficit of the federation as percentage of GDP obtained from CBN Statistical Bulletin, 2011)

DFD = degree of financial depth (proxied by the ratio of broad money (M2) to GDP obtained from CBN Statistical Bulletin, 2011)

GPGDP = growth rate of real per capita GDP (obtained from http://www.tradingeconomics.com/nigeria/gdp-per-capita)

α_i are the parameters of the model while μ is the error term. Our a priori expectation includes $\alpha_2, \alpha_4, \alpha_5 > 0$ and $\alpha_1, \alpha_3 < 0$.

1. Results and Discussion

Testing for the existence of unit roots is a main requirement in time series analysis. Table 1 below presents the results of our Zivot-Andrews unit root tests for all the variables in our model.

Table 1: ZANDREWS Unit Root Test Results

Variable	Test Statistic	5% Critical Value	Order of Integration
SAV (Dependent variable)	-6.739	-4.80	I(1)*
INFO	-6.446	-4.80	I(0)*
RIR	-5.364	-4.80	I(0)**
FBAL	-5.815	-4.80	I(0)*
DFD	-6.854	-4.80	I(1)*
GPGDP	-5.164	-4.80	I(0)**

Key: * Stationarity at 1%; ** Stationary at 5%;

Source: Authors computations using STATA 11

The unit root test results in Table 1 show that all the variables are I(0), that is stationary before differencing at 5% level of significance, except SAV and DFD, which are I(1) variables (stationary after first differencing) . The results further indicate that since SAV has the same order of integration with DFD at 5% level of significance, there was need for cointegration test in order to establish whether there is a stable long run relationship between the series so that we can avoid spurious regression problem.

The result of the Johansen cointegration test is presented in Table 2 below.

Table 2: Johansen Test for Co-integration Between SAV and the explanatory variables

Maximum Rank	Trace Statistic	5% Critical Value
0	121.3996	94.15
1	81.9627	68.52
2	48.0338	47.21
3	25.0962*	29.68
4	11.9509	15.41
5	4.5185	3.76

Source: Author's computation using STATA 11

The result in Table 2 above indicate that there are at least three cointegrating vectors. In other words, the Trace statistics rejected the null hypothesis of no cointegration at the 5% level. This means that a linear combination of all the six series was found to be stationary and thus, they are said to be cointegrated. This reconfirms our earlier conclusion that there is long run relationship between SAV and the explanatory variables. We therefore conclude that there is a stable long-run relationship between the series and so we can avoid both the spurious and inconsistent regression problems which otherwise would occur with regression of non-stationary data series. The result for the long run relationship is now presented in Table 3 below.

Table 3: Estimated Long Run Regression Result for the Domestic Savings model

Variable	Coefficient	t-statistic	Probability
Constant	-2.885202*	-2.76	0.009
INFO	-0.0076431	-0.32	0.749
RIR	-0.0076431	-0.27	0.791
FBAL	0.0449808	0.65	0.517
DFD	0.6279804*	13.74	0.000
GPGDP	0.051063	1.20	0.237

* Significance at 1% level; R^2 = 0.8741; F(5, 36) = 49.99; Prob > F = 0.0000;
Source: Author's computation using STATA 11

The coefficient of the informality variable (INFO) conforms to our a priori expectation, even though it is not statistically significant at 5% level. An increase in the informality variable by 1% leads to a 0.76% reduction in domestic savings in Nigeria. The implication is that any policy that

encourages the integration of the formal and informal sectors in Nigeria would have a strong positive impact on domestic savings.

Contrary to the findings of Nwachukwu and Odigie (2011), the degree of financial depth not only attained statistical significance in the saving function but also conformed to our a priori expectation. This provides empirical support for the view that the development of the financial sector has contributed to the growth in domestic savings. The implication is that financial deepening can bring about improvement in the saving rate. Here, a unit increase in DFD leads to 62.8% increase in domestic savings in Nigeria.

The GPGDP variable also conformed to a priori expectation. However, RIR and FBAL did not conform to a priori expectations and also failed to attain statistical significance at 5% level. Overall, the model is statistically significant as seen from the probability of the F-statistic. The R^2 of 87% indicates that the explanatory variables have adequately and substantially explained the variations in domestic savings rate in Nigeria.

CONCLUSION AND POLICY RECOMMENDATIONS

Following the lack of empirical evidence on the dynamic response of domestic savings to informality in Nigeria, this study examined the impact of informality on domestic savings in Nigeria for the period 1970 to 2011 as a means of providing evidence based policies that will enhance the growth and development of the Nigerian economy. The estimation results of the long run model indicate that informality hinders the growth of domestic savings in Nigeria. The results further indicate that financial depth impacts significantly and positively on domestic savings in Nigeria; while the growth rate of real per capita income impacts positively on domestic savings, even though it is not statistically significant in the long run.

A major policy recommendation which can be drawn from the above findings is that the linkage between the formal and informal sectors in Nigeria should be strengthened towards full elimination of dualistic market in Nigeria. Policy makers and the government should encourage the integration of the formal and informal sectors as this would have a strong positive impact on domestic savings. Deposit money banks and the monetary authority should evolve policies aimed at reaching the unbanked informal sector agents, especially the rural households and the urban informal production units. This will deepen the financial sector and assist in mobilizing the much needed savings that will engender investment and growth in Nigeria.

Development policy in Nigeria should focus on increasing the productive base of the economy in order to promote real income per capita growth and reduce unemployment. This can be achieved through a properly articulated and implemented program of diversification of the country's resource base, such as a return to agriculture, reform of the energy sector, establishment of a viable iron and steel industry, promotion of small- and medium-scale enterprises and improvement in information technology.

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