AN EMPIRICAL ANALYSIS OF THE IMPACT OF FINANCIAL DEEPENING ON AGGREGATE SAVINGS IN NIGERIA

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Abstract

In this paper, we ascertained empirically the impact of financial deepening on aggregate savings in Nigeria. To this end, we specified and estimated an empirical model in which we utilized the ratio of broad money supply to GDP as a proxy variable for financial depth of the economy. In addition, we included a battery of other control variables thought crucial to the determination of aggregate savings in Nigeria. These variables were the interest rate (prime lending rate) of the country, the naira/ US dollar exchange rate, the growth of the country's real income and the SAP dummy variable introduced to capture the effect of financial deregulation on aggregate savings in Nigeria. In a nut shell, the results obtained in this study show amongst others that the financial depth of the economy bears significant and positive impact on aggregate savings in Nigeria. In this regard, we recommend the need to engage in some downsizing of the informal sector in favour of an expansion of the formal sector which in turn could help boost the mobilization of aggregate savings in Nigeria.

1. Introduction

Financial shallowness has been a problem that is peculiar to developing countries in the world. According to Burkett (1987), it is as a result of the "weak" control of both the money and capital markets and various institutions operating in these markets with their respective instruments. Indeed, the ceiling on interest rates and credit expansion, selective credit policies, foreign exchange controls and the restrictions on entry into both markets are all clear evidences in this regard. A conglomerate of these distortions in the form of administrative direct controls in the financial market is what has been referred to as financial repression (Gurley and Shaw, 1968). Such repressions reflect in low investment and capital deficiency and these in turn, lead to adverse effects on the growth of the national economy. It recognized that Nigerian financial system prior to the Structural Adjustment Programme (SAP) adopted in 1986, had been impeded in its pivoted role of financial intermediation by an environment where by market forces had not been permitted to determine market price (Adebisi, 2000). But since the inception of the SAP in July 1986 which marked the beginning of phase in the evolution of the financial sector in Nigeria (Odusola, 2003), a lot of competition and developments in the country's financial markets came on board. These competitions can only be sustained if savings mobilization is accorded its deserved priority attention through a wide range of financial institutions.

One of the major problems as far as survival of the country is concerned is savings mobilization and investment that ought to increase the productive capacity of the country. This is because a deficiency in national savings, immediately put investment on the lower end. It is therefore that savings mobilization via financial deepening has a greater potential for becoming a major source of capital funds in both the corporate and government sectors. Indeed, Anyanwu and Oaikhena (1995) observed that savings is one of the macroeconomic aggregates in an economy. Its importance derives from the fact that savings are crucial in determining the equilibrium level of employment and hence, aggregate income. Thus, changes in aggregate savings of the economy imply a multiplied repercussion on the level of national income, but it is however pertinent to mention here that financial depth of the economy is still very much narrow as a result of the various problems facing the financial sector in the economy. The sector is narrow in terms of size and sophistication and also not well developed. For example, the Nigerian Stock Market is still an emerging one and this has made it difficult for long term funds to be mobilized and channeled adequately into productive investment by the issuance of equities and interest bearing securities. The objective of this paper therefore, is to examine empirically the impact of financial deepening on aggregate savings on Nigeria. In addition to the introductory section, this paper contains four other sections. Section 2 is devoted to a review of the literature while section 3 deals with the theoretical framework, model including the sources of data as well as the estimation technique. We present the empirical analysis in section 4 while section 5 summarizes and concludes the paper.

2. A Review of the Literature

Financial deepening can be referred to as growth of financial intermediation leading to the creation of assets for real sector development (Buffie, 1984). This implies the growth of domestic savings, which provides the real sectors of the economy, the opportunity for creation of diversified financial claims. It is also the active operation of the financial institutions in the financial market, which in turn, demand the supply of quality instrument and financial savings, hence, the diversified stock of financial asset (Sergio, Petrioli and Sabai, 1973). These diversified stocks create indicators that can be used as measurement for financial deepening.

According to World Bank (1989), financial deepening can be seen as an increase in the stock of financial "asset". Such increase usually occurs as a result of growth in financial intermediation. Shaw (1973) noted that the use of financial assets is diversified so that borrowers may adjust their debt structures and render their portfolios by relatively small degrees at the margin. The increase in the use of financial assets, which Shaw (1973) explained "increases the real size of monetary system, and generate opportunities for the profitable operation of other institutions, from bill dealers to industrial banks and insurance companies"

agrees with the earlier works done by Goldsmith (1969) who identified the key processes involved in financial development and the conditions under which financial system systematically "deepens" over time. Goldsmith showed that as income rises and economic activities expand, financial intermediation leads to the progressive "layering" of assets and liabilities. The intermediation is due to an expansion of traditional banking service and increase in the role of non bank financial intermediaries (Goldsmith, 1969).

In the view of Ary (1988), financial deepening therefore, presumes the growth of domestic savings which provides the real structure for the creation of diversified financial claims. It also presumes active operation of the financial institutions in the financial market, which in turn, demands the supply of quality instruments and financial services. But this actually underscores the prevalence of the market forces in the economy in other to permit efficient resource allocation and mobilization. It explains why Gurley and Shaw (1968). McKinon (1988) and Shaw (1973) insisted on liberalization of the financial system which is erstwhile regressed on administrative controls (Ndekwu, 2000).

Financial deepening is a multi – facet concept which possesses various indicators that it can be measured with. This is as a result of its definfition, i. e., an increase in the stock of financial assets (World Bank, 1989). Financial assets can be termed to be both financial capital and framework. These financial assets exist in all financial markets, i. e., money used in operating the market creates most of these financial assets, hence their increase indicates evidence of their deepening structure. The intermediary role of the financial institutions is to create the supply of money. According to the Central Bank of Nigeria (2000), money supply is currency outside the bank plus privately held demand deposit with both other banks and Central Bank. The growth of money provides the structure upon which the financial structures are constructed, indicating monetary development. Thus, its growth is of primary importance to the growth of the financial system. Shaw (1973) noted increase in the real size of the monetary system, generates opportunities for the profitable operation of the other institutions from bill dealers to industrial banks and insurance companies.

Lynch (1993) noted that quantity indicators based on monetary and credit aggregates are the traditional measures of financial deepening. These are proxy measures of savings and credit intermediation in an economy and are expected to increase in response to improved price ceiling, represented primarily by the establishment of positive rate of interest. The financial savings constitute the accumulated savings with these financial institutions which are mainly form the banking sector. These savings constitute deposit liabilities to these banks. McKinon (1973) in his analysis presented an alternative view of the relationship between money and physical capital in developing countries with regards to demand for money in accumulating capital. This theoretical centered on the need for more laissez faire financial policies. This analysis suggests that interest rate ceiling (without taking into cognizance inflation rate) creates a represented level

of private savings. It thus assumes that private savings is quite sensitive to the real return of physical and financial assets and their stability. McKinon and Shaw (1973) contended that low interest rates reduce the level of private domestic savings through financial institutions in particular. Financial repression arising from discouraging or failing to stimulate savings, results in an insufficient amount of mobilized savings. This then has to be retained in an efficient manner to a small group of favoured borrowers. According to them, intervention by the authorities in the money and capital markets has effect of distorting the flow of credit as well as indirectly sustaining the apparent excessive risk aversion of financial intermediation in developing counties. They assume that domestic savings are quite sensitive to the real rate of returns on physical and financial assets.

Having known that domestic savings are quite sensitive to the real rate of return of physical and financial assets, Shaw (1973) observed that a saver's response through self – finance as yield to wealth, fluctuate between negative and positive levels that are reported. He also noted that savers may ignore possible transitory increase from say 4 percent to 6 percent in the rate of return but such savings are less likely to maintain consumption pattern when the rate of returns rises from 10 percent to about 15 percent or more.

3.   Theoretical Framework

Bearing in mind that the financial depth of an economy alone cannot account for the mobilization of savings in Nigeria, a host of other control variables such as real rate of interest, naira/dollar exchange rate, real income growth and SAP dummy are included in the theoretical framework. Thus our interest is to ascertain the impact of these variables on aggregate savings. The ratio of broad money supply to GDP which measures the financial depth of the economy is expected to impact positively on aggregate savings. It is expected that a financial depth is a pointer to the fact that a substantial portion of the over all economy falls with the formal sector which in turn, makes savings mobilization possible (Oaikhenan and Udegbunam, 2000). The real interest rate on its part is expected to bear positively on aggregate savings in Nigeria. The reason is that high rate of interest deposits facilitate future deposits. Also, a positive relationship is expected to exist between aggregate domestic savings and the growth rate of income. According to Anyanwu and Oaikhenan (1995), savings depend upon the size of national income hence; an increase in growth rate of income goes a long way to facilitate domestic savings. Nnanna and Bego (1988) explained that the inception of SAP in 1986 brought an explosion in the number of banks and non – bank financial reforms. Thus it is appropriate to expect that this development should bear positively on the mobilization of aggregate domestic savings in the country. Lastly, depreciation of the naira exchange rate vis-à-vis the American dollar is expected to intensify the mobilization of aggregate savings in the country.

The Model

The model to be estimated empirically in this study is;

SAV = f (INT, EXTR, RGDP, SAPD, M2/GDP) ……………………………….(1)

But in a form suitable for empirical testing, equation (1) above is further specified as

$SAV = \partial 0 + \partial 1 INTR + \partial 2 EXTR + \partial 3 RGDP + \partial 4 SAPD + \partial 5 M2/GDP$………..(2)

Where

SAV   =   aggregate savings

INTR = interest rate , i. e., prime lending rate

EXTR = naira /US dollar exchange rate

RGDP = growth rate of real-income

SAPD   =   SAP dummy variable, capturing the effects of structural deregulation
         of the   financial sector.

M2/GDP = ratio of broad money supply to gross domestic product, a proxy
         variable for the financial depth of the economy

U   =   error-term assumed to be Gaussian white noise, satisfying the usual
         properties of zero mean, constant i.e. unit variance and zero co-variance.
         The error-term has been incorporated in the specification to reflect the
         stochastic nature of the model specification.

4. Data Definition, Sources and Estimation Technique

In the model specified above, the key variable under study, i.e, financial deepening is proxied by the ratio of board money supply (M2) to Gross Domestic Product (GDP) given as M2/GDP. The gross domestic product is Nigeria's GDP at 1984 Factor cost. This rte of interest is the prime lending rate in the country. Exchange Rate is the dollar and naira official rate of exchange. The variable RGDP measures the growth rate in GDP taking into cognizance, the rate of inflation in the domestic Economy. Data on these variables were got from secondary sources including various issues of Central Bank of Nigeria's Annual Report and Statement of Account and also various issues of the CBN's statistical bulletin. The model was estimated using the OLS, (Ordinary Least Squares) estimation techniques with the MFIT 4.1 computer software package (see pesaran and pesaran, 1997). Data used covered the 1975-2004 period. The sap dummy variable assumes zero values from 1975-1985 and unit values from 1986-2004.

5. Empirical Analysis

The results obtained from the estimation exercise are presented as follows:

Table 1:   OLS Estimation Results

Dependent variable	Explanatory variable	Coefficient	T-variables
SAV	INPT	-408080	-3.71
	INTR	329.41	0.10
	EXTR	3117.8	6.77
	RGDP	3.3381	3.62
	SAPD	-30197-9	-0.87
	M2/GDP	5596.8	3.52
R- BAR squared = 0.957; F (5;24) = 730.25			
See = 45278.3; DW – statistic = 1.22			
Mean of Dependent variable = 142041.1			

Table 1 shows that the adjusted counterpart of the coefficient of Multiple determination (R'BAR squared) stood at 0.957. This measures the Goodness of fit of the estimated equation. The overall model is statistically significant easily passing the significance test at the 1% level. Thus, it validates the hypothesis of a significant linear relationship between aggregate savings, deposit interest rate, exchange rate, income growth, SAP dummy and the financial depth of the economy. On the basis of the low ratio of (see), the standard error of estimation to the mean of the dependent variable, it is easily verified that the estimated model has a smaller variance of the error of prediction. This, thus, implies a high forecasting power of the estimated model. Considering the explanatory variables namely; exchange rate; real income and the ratio of broad money supply to GDP passed the significance test. These variables are statistically significant at the 1% level since their calculated t-values of 6.77; 3.62; and 3.52 all exceed the critical t-value of 2.61 at the said level of significance. The results indicate that a unit increase in the deposit increase rate will engender 329.4 units increase in aggregate savings while a similar rise in exchange rate will bring about 3117.8 unit rise in an aggregate savings in Nigeria. Also, a unit increase in the growth of real GDP (proxy variable for income) will generate about 3.34 units rise in savings while on its part, a unit rise in SAP dummy (a proxy variable for structural changes in the national economy will reduce the savings rate up to the tune of 30197.9 units. On the part of board money as a ratio of GDP, a unit increase in its value engenders 5576.8 units increase . The results show that with the exception of structural effect as contained in the SAP dummy variable, all other explanatory variables contribute positively in general to high financial savings in Nigeria. However , the estimated set of regression are not devoid of the problem of serial correlation as indicated

by a DW- statistic of 1.22; hence an attempt to correct this problem necessitated the use of Cochrane-Orcutt method AR(2) which converged after the 4th iteration. The results obtained under the Cochrane-Orcutt method are presented below:

Table 2: **Results of Cochrane-Orcutt Approach**

Dependent variable	Explanatory variable	Coefficient	T-value
SAV	INPT	-428402.4	-3.42
	INTR	786.21	0.20
	EXTR	3066.4	6.0
	RGDP	3.46	3.41
	SAPD	-31249.8	-0.84
	M2/GDP	5771.1	3.08
R-BAR squared = 0.96; F (7,20) = 96.54 See = 43923.6; DW- Statistics = 2.04 Mean Dependent variable = 142041.8			

A close examination of the Cochrane-Orcutt results in Table 2 reveals a better fit of the savings model to the data. The adjusted coefficient of determination accounted for 96 percent of the total variation in financial savings in the country, including a good fit of the model. Beside, the model passes the overall significance test at the 1% level, ad this again justifies the hypothesis of a significant relationship between aggregate savings and the explanatory variables. The implication here, is that the estimated model has a high forecasting power. This is further reinforced by the low ratio of the standard error of estimation to the mean of the dependent variable. This ratio stood at 0.3 implying a smaller variance of the error of prediction especially when only an infinitesimal variation of about 4% in aggregate savings in Nigeria was unexplained and as a result, captured by the error in the model. An inspection of statistical significance of the individual parameters shows that three out of the five explanatory variables are significant and these are the ratio of board money supply to GDP, growth of income, and the exchange of the naira vis – a vis the American dollar, while the remaining two explanatory variables namely; deposit interest rate and SAP dummy variable fail the test of significance. At the 1% level of significance, the exchange rate variable is significant statistically since the calculated t-value of 6.0 exceed the critical t-value of 2.61. The calculated t-value associated with the coefficient of real income growth is 3.41 and this also exceeds the table value of 2.61 implying that the said variable is statistically different from zero at this level.

On its part, the observed t-value for the ratio of broad money supply to Gross Domestic Product (GDP), a proxy variable for the financial depth of the Nigeria economy is 3.08 and this is also greater than the table t-value of 2.61. The results thus indicate that the aforementioned variables (exchange rate, real

income growth, proportion of broad money supply to GDP) are the key determinant of savings behaviour in Nigeria. For example, a unit rise in exchange rate will generate about 3066.4 unit increase in the level of aggregate saving in Nigeria. Also, a unit increase in the proportion of broad money supply to GDP engenders 5.771 units increase in the level of financial savings in Nigeria. On the basis of the calculated DW statistics of 2.04, it is obvious that the problem of serial correlation associated with the preliminary Ordinary Least Squares (OLS) regression result has been eliminated and this further confirmed the statistical unbiasedness of the standard error of estimation as well as the coefficient estimates.

6. Policy Implications

The policy implications of the results are obvious. The results provide empirical evidence to show that exchange rate, real income growth and the level of financial debt of the economy are key determinations of financial savings in Nigeria. Specifically, the findings in this research provide adequate evidence in support of the fact that depreciation in the rate of exchange is a *sine-qua non* and in fact, a desideratum in attracting financial savings in Nigeria. Thus, to mobilize sufficient savings in Nigeria, exchange rate depreciation has to be embraced as a policy tool. Also, the financial depth of the economy bears some significant influence on aggregate savings in Nigeria. This aptly implies some downsizing of the informal sector as against the expansion of the financial sector of the national economy. Thus, it calls for the establishment of more financial institutions in the country as a policy tool which could bear positively and very significantly on domestic savings mobilization in Nigeria. The findings also suggest the need for policy makers to device strategies that would enhance the growth rate of real income. This is as a result of the fact that the market size variable impacted positively and significantly in determining the level of aggregate savings in Nigeria. Thus, fiscal imbalance and/or irresponsibility have to be curtailed as a way of boosting domestic savings. One would have thought that the SAP induced deregulation of some sectors of the national economy, including the financial sector, would play a significant role of determining savings in Nigeria. But the results show that the structural adjustment further reduced the level of financial savings in the economy. Indeed, this is an empirical finding which has failed to corroborate the result of other empirical researches. In a nutshell therefore, further deregulation by the authorities in charge will lead to possible further aggregate savings mobilization.

7. Summary and Conclusion

The objective of this paper was to ascertain the impact of financial deepening on aggregate savings in Nigeria. To this end, an empirical model which utilized the ratio of broad money supply to GDP as a proxy variable for financial depth of economy was specified and estimated. In addition, a battery of

other control variables thought crucial to the determination of aggregate savings in Nigeria was included. These variables were interest rate (prime leading rate) of the country, the Naira/ US dollars exchange rate, the growth rate of the country's real income and SAP dummy variable introduced to capture the effect of financial deregulation on aggregate savings in Nigeria. Finally, the results obtained in this study show amongst others that the financial depth of the economy bears significant and positive impact on aggregate savings in Nigeria, hence the need to engage in some downsizing of the informal sector in favour of an expansion of the formal sector which in turn, could help expand the financial sector of the national economy.

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