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An Empirical Investigation of the Determinants of Aggregate National Savings in Nigeria

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For over two decades, countries of the world, especially developing ones have become more interested in economic growth and development. The main focus has been to tackle the basic problems of savings generation, capital accumulation, growth, material progress and the improvement of living standards. All the above require the sustained expansion of national products over time. In the view of Schmidt-Hebbel, Serven and Solimano (1994), the issues of capital formation, technical progress and supportive savings have been at the core of economic analysis for a long time now.

Most analysis on savings and growth have concentrated on two important issues: the effect of higher savings on long-run growth; and the impact of an increase in domestic savings on investment (Edwards 1995). Neoclassical models inspired by the work of Solow (1956) suggest that an increase in savings ratios generates higher growth only in the short run, during the transition between steady states. Relatively recent models based on theories of endogenous growth developed by Romer (1986) and Lucas (1988) predict that higher savings and corresponding increase in capital accumulation – can lead to permanent increase in growth rates.

A converse argument maintains that especially in an open economy, increase in domestic savings may not necessarily be translated into higher domestic investment. It is argued that if capital is internationally mobile, changes in domestic savings and investment can be independent. There is, however, abundant empirical evidence to suggest that domestic savings are highly correlated with aggregate investment. (Frankel, 1985; Feldstein and Bacchetta, 1991 and Montiel, 1994).

From the foregoing discussions, it is obvious that an understanding of the nature of aggregate national savings behaviour is critical in designing policies to promote savings, investment and growth. Accordingly, for an effective mobilisation of savings, it is important to understand the determinants of saving. This paper investigates the determinants of savings in Nigeria using time series data. It has been established that the problem of capital accumulation, investment and growth has taken the centre stage in economic management in the past three decades, especially in less developed countries (LDCs). It has

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also been established that the more attractive the process of accumulating capital, the greater the incentives to invest. In Nigeria, the growth performance since independence and mostly after the oil boom has been generally dismal, with savings and investment rates too low to act as the bedrock of any meaningful and sustainable expansion in output and employment.

In line with sub-Saharan African figures, Nigeria has low savings and investment rates as some other less developed countries. The savings – investment gap has expanded. The country has, therefore, fallen back on foreign savings, foreign aid as well as debt management to finance its unimpressive capital formation. Such reliance on foreign savings is not sustainable because of the possibility of withdrawal or decline in concessionary capital inflow due to donor fatigue and increased competition for these resources as well as the general lack of credit worthiness of most sub-Sahara African countries. There is, therefore, the need to internalize the process of capital formation. To achieve these through domestic saving, the savings function must be well defined and understood. Moreover, for government monetary, fiscal and other policies to be effective in influencing saving mobilization for investment and growth, the factors that influence savings must be known.

This paper analyses empirically the factors that determine aggregate national savings in Nigeria. First it reveals the extent to which different relevant variables influence savings either in per capita terms or in aggregate terms. Second, we try to determine whether the nature of the savings function for Nigeria conform with economic theory on one hand and those of the developed and other developing countries on the other hand. Using information from National account and other necessary data, the empirical research is expected to shed light on the factors that drive (or inhibit) saving in Nigeria.

The data has been taken over a period of 30 years (1970 –1999) and the paper is organized in five sections. Following this introductory section, the second section explores the theoretical framework and literature review. Section three dwells on methodology while section four deals with empirical analysis. Section five concludes the paper and proffers recommendations.

2.0 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Theoretical Framework

Keynes (1936) defines savings as the excess of income over expenditure on consumption. This means that savings is that part of the income of the period that has not passed into consumption. Given that income is equal to the value of current output; and that current investment 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:

Income = value of output = consumption + investment.
Saving = income - consumption
Saving = investment ex-post

Keynes maintains that in the aggregate, the excess of income over consumption (savings) cannot differ from the addition to capital equipment (investment). Savings is, therefore, a mere residual and the decision to consume and the decision to invest between them determine income. In the Keynesian view, therefore, secularly rising income would result in higher savings rates. In 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.

Savings is, therefore, regarded as a constant proportion of income and can be expressed as

$$S_t = sY_t$$

Where

S_t = aggregate national savings
$s = S^1(Y)$ = marginal propensity to save $0<s<1$
Y_t = Gross domestic product as a proxy for national income.

Keynes however brought in the opportunity cost variable, the rate of interest; which the classical economists regard as the major determinant of savings. 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. The classical view accepts the fact that savings and investment are equal and that aggregate savings and aggregate investment are necessarily equal. They held that every act of increased savings by an individual necessarily brings into existence a corresponding act of increased investment. Hence a proposition is made that if the level of income is assumed to be given, we can infer that the current rate of interest must be at the point where the demand curve for capital corresponding to different rates of interest cuts the curve of the amounts saved out of the given income corresponding to different rates of interest. In the classical postulation, aggregate savings is an increasing function of the rate of interest. The classical saving function in its simplest form can be expressed as

$$S = S(r)$$

Where:

S = aggregate savings
r = rate of interest

In addition to the keynesian and classical frameworks, there are other less conventional but more recent models. These include models that emphasize slow changing consumption habits, uncertain incomes, and consumers' value of both consumption and wealth.

The permanent - income hypothesis (PIH), one of two dominant paradigms, provides the point of

departure for most modern research on consumption and saving. The PIH focuses on a representative infinitely - lived consumer. The other paradigm is the life-cycle hypothesis (LCH), derived from the aggregation of finitely - lived overlapping generations.

2.2 Literature Review

There are several studies on the saving functions of developed and developing countries of Latin America, Asia, Europe as well as sub-Saharan Africa. With regards to the developing countries, a number of writers have pointed to the inadequacies and lack of comparability of data on saving. Most of the studies are undertaken with data derived from national product data at market prices.

Furthermore, no completely consistent cross country information is available for the major components of savings among developing countries apart from gross domestic savings. Time series data has been observed to be even scarcer so that very little has been done on savings behaviour of developing countries of the world in general and Africa in particular using consistent long-range time series data.

Most estimates of the gross domestic savings are derived as residual as a result of deducting from the gross capital formation, current account deficit (Schmidt - Hebbel and Serven 1996). Gross private saving in turn is derived by subtracting from gross domestic savings, government savings or government revenue minus current government expenditures (excluding expenditures of both net additions to and replacement of physical capital). In most developing countries the national product accounts are derived from commodity flows and consumption is derived as a residual. Since data on national expenditure or income are scarcely available, there is no way of checking the consistency of national accounts derived from commodity flows. This is exemplified by Chile's national accounts in which published estimates of household saving have been negative annually for more than two decades.

Aggregate saving estimates in most countries is, therefore, subject to a wide margin of error among other implications of the above analysis. This calls for caution in the evaluation of the results of cross - section analysis of the savings behaviour based on aggregate savings data for a number of developing countries. It becomes desirable that sufficient data be generated for deriving aggregate savings estimates.

There are 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), Caroll and Weil (1993), Schmidt

– Habbel, Seven and Solimano (1994), Modigliani (1992), Jappelli and Pagano (1994), Edwards (1994) and Collins (1991) maintain that there exists a positive relationship that between savings and income growth rates.

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 Chandavarkar (1971). Conversely, Williamson (1968), Boskin (1978), Juster and Taylor (1975) and Howard (1978) 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 reduces savings (Howard, 1978). Secondly, inflation creates a feeling of uncertainty and pessimism about the future and thereby encourages savings (Deaton 1977, Gylfason, 1981).

Modigliani (1970) and Leff (1969) maintain that a high dependency ratio may affect savings negatively. The logic of this inverse relationship is that high dependency ratio will impose a constraint on the society's potential for savings. Therefore, a country's aggregate savings rate is lower, ceteris paribus, to the extent that it has more dependants in its population. The hypothesis that foreign investment increases internal savings was tested for the Brazilian economy by Leff (1968). He found that savings is a decreasing function of foreign investment. Other studies with same result are Chenery and Stout (1966), Fry (1978, 1980), Giovannini (1985) as well as Schmidt-Habbel et al (1992). However, family savings surveys of the Israeli economy by Kellman (1971) showed positive savings out of capital inflow to be nearly 6 per cent.

There are two categories of findings on the relationship between export earnings and savings. Akpokodje (1998), Stewart and Venieris (1985) found negative relationship while Knudsen and Parnes (1975) found a positive relationship between them.

3.0 METHODOLOGY

This section of the paper deals with model specification, data requirement 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 30 years (1970 – 1999) to determine the determinants of 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 model of Muradoglu and Taskin (1996) in explaining the determinants of savings in Nigeria.

3.1 Basic Assumptions of The Model

The following are the basic assumptions of the model.

(i) The rate of interest is determined exogenously by the monetary authorities.

(ii) Gross domestic savings (GDS) is the residual from what is consumed out of gross disposable income. GDS is, therefore, affected by economic activities, the opportunity cost of deferring present consumption into the future and the complimentary effect of foreign saving.

(iii) Financial saving in Nigeria increases with nominal savings rate in contrast to real rate as in Reichel (1991) and other studies. High nominal interest rates motivate depositors to increase savings because of money illusion about a high return from their funds. The paucity of information on expected inflation increases this illusion.

(iv) Consumption is a function of permanent income that is computed based on past income and it is assumed that any positive difference between current and permanent income in saved.

(v) Inflation is measured by the consumer price index (CPI)

(iv) Economic agents do not adjust continuously to exogenous shocks. There is a relative inertia in the behaviour of people. Therefore, as shown by Houthakker and Taylor (1966), the savings rate at pervious period has an important effect on the current saving and consumption behaviour.

(vii) Investment is constrained by hard currencies. Therefore, an inflow of capital may alleviate this binding constraint and trigger a higher investment volume than initial capital flow and thus help boost savings. Investment permitted by capital inflows may spawn a high growth of GDP if this happens with marginal propensity to save higher than the average propensity to save, capital inflows will affect indirectly the average propensity to save.

3.2 Model Specification

The gross national savings equation to be estimated is specified as follows

$$S_t = f(Y_t, R, F, INFL, S_{t-1}, G, D, W, X) \ldots\ldots\ldots \quad (3.1)$$

Where

S_t = Real gross national savings in the current year;

Y_t = Real Annual Gross Domestic Products (GDP) in the current year;

R = Interest rate;

F = Real Foreign savings (external borrowing);

INFL = Inflation rate;

S_{t-1} = Real gross national savings in the previous year;

G = Real GDP growth rate;

D = Dependency ratio;

W = Real wealth to income ratio;
x = Real export volume;
From the above implicit function we derive an explicit function for the determinants of saving in Nigeria as follows:

$$S_t = \alpha + \beta_1 Y_t + \beta_2 Y^2 + \theta R - \lambda F - \varphi INFL$$

$$+ \chi S_{t-1} + \Pi G + \psi D - \gamma W + \Delta X + \mu \ldots\ldots\ldots\ldots \quad (3.2)$$

Where $\beta, \theta, \lambda\lambda \varphi, \chi, \Pi, \psi,$ and Δ are the estimated linear coefficient of the independent variables; α is the autonomous estimate of the savings function and μ in the random error term.

3.3 Data Requirements, Sources and Limitations

The data for this paper include GDP at factor cost, gross national savings, the GDP deflator, external borrowing, inflation rates and interest rates. Others include dependency ratio, wealth to income ratio, real value of exports and real GDP growth rate. The required data were obtained from Central Bank of Nigeria Statistical Bulletin, International Financial Statistics yearbook of the IMF as well as the Nigerian Annual Abstract of Statistics, published by the Federal Office of Statistics.

Moreover, the data used in this work is limited to those available and assessable. The dependent variable is gross national saving. However, for the avoidance of doubt and for clarity, we define savings in Nigeria as a residual rather than expenditure approach or commodity flow as is obtainable in some other countries. Before estimating the model, we first test for the unit root characteristics of the variables and the extent to which the variables are co- integrated. This is done using the Dickey-Fuller (DF) and the Augmented Dickey-Fuller (ADF) tests.

4 EMPIRICAL ANALYSIS

4.1 Stationarity Tests

The stationarity tests results of the variables are presented in tables

Table 4.1: Test for Order of Integration of Variables using DF and ADF (Lag length = 3)

Variables	DF	ADF (Lag Length)			Decision
		1	2	3	
INFL	-2.3854	-2.7746	-1.5789	-1.4615	I (1)
ΔINFL	-4.2910**	-4.9630**	-3.4835*	-3.9378**	I (0)
R	-1.4036	-1.3049	-1.2447	-1.7756	I (1)
ΔR	-4.8178**	-3.3330	-1.2627	-0.8876	I (0)
D	-2.0880	-2.4561	-1.4913	-1.2815	I (1)
ΔD	-4.6794**	-4.8162**	-4.0459**	-3.5435*	I (0)
W	-0.2034	-0.9111	-0.6423	-0.7302	I (1)
ΔW	-3.4772*	-3.2649*	-2.2680	-1.9356	I (0)
G	-4.6022**	-2.9595	-1.4214	-1.7605	I (1)
ΔG	-8.4134**	-8.2938**	-3.2452*	-2.7586	I (0)
Y	-2.2964	-1.9468	-1.3960	-1.4921	I (1)
ΔY	-5.6320**	-4.6329**	-3.1648*	-3.5942*	I (0)
S	-1.2416	-1.7802	-1.1663	-1.1309	I (1)
ΔS	-3.8967**	-4.2060**	-3.0184*	-2.5671	I (0)
F	-1.9648	-1.4009	-1.2864	-1.5228	I (1)
ΔF	-6.7618**	-4.0441**	-2.1926	-1.9316	I (0)
X	-0.9756	-1.4763	-0.7390	0.1462	I (1)
ΔX	-4.2945**	-4.0758**	-4.2448**	-3.5591*	I (0)
Y^2	-1.6521	-1.0045	-0.5886	-0.7644	I (1)
ΔY^2	-6.2419**	-4.4643**	-2.8647	-2.8659	I (0)

- Critical Values 5% = - 3.004; 1% = -3.767
- * significant at 5%
- ** significant at 1%

Moreover the Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF) estimates were evaluated at 5 per cent and 1 per cent significant levels. Specifically, inflation rates, real interest rates, dependency ratios, wealth to income ratios, real gross domestic product, real external borrowing, and real value of exports, exhibit non-stationary relationships. All the variables are stationary after first difference, implying that they are integrated of order one i.e. I (1). The critical values at 5 per cent and 1 per cent are -3.004 and -3.767 respectively.

4.2 Cointegration: Unit Root Tests of Residuals of Savings

Table 4.2 shows the test results on the residuals of the static model of the dependent variable (Savings) and the regressors. The table shows a long-run economic relationship between savings and its explanatory variables. The static relationship accepts cointegration between savings and real GDP (Y) and rejects cointegration between savings and R, INFL, D, W and F individually. Furthermore, cointegration is accepted between savings R and INFL jointly. Moreover, in an equation specifying savings on X, INFL, R, Y and Y2, cointegration is accepted at the indicated levels of significance. This implies that the savings equation containing these variables must be estimated at their first differences with the lagged residuals as additional explanatory variables. The critical values at 5 percent = -2.991 and 1 percent = -3.734.

Table 4.2: Cointegration: Unit Root Test of Residuals of Savings

Variables	Long run coefficient	DF	ADF (Lag length			Cointegration accepted/ rejected
			1	2	3	
S on Y	-0.204 (-0.798)	-2.4057	-3.0424*	-2.3852	-2.3113	Accept
S on Y^2	-0.0002 (-0.802)	-2.4816	-3.0390*	-2.4638	-2.3970	Accept
S on R	0.1553 (1.552)	-1.6693	-2.1448	-1.5828	-1.5764	Reject
S on INFL	-0.0189 (-0.485)	-2.0644	-2.6346	-2.1166	-2.0621	Reject
S on D	2.198 (0.469)	-1.8392	-2.3685	-1.8845	-1.8084	Reject
S on W	34.779 (10.562)**	-1.9013	-2.1728	-1.8307	-1.7324	Reject
S on F	0.0359 (1.886)*	-1.8561	-2.0268	-1.6322	-1.7477	Reject
S on R	0.3657 (2.576)**					
INFL	-0.0788 (-1.844)	-1.7505	-3.3003*	-1.6879	-1.6059	Accept
S on X	-0.1424 (-2.545)					
INFL	-0.0743 (-1.736)					
R	0.6465 (4.144)**	-4.5556**	-5.1535**	-	-	Accept
Y	0.0984 (0.973)			3.9574*	3.3794**	
Y^2	-0.0007 (-0.726)			*		

- t-statistic in parenthesis
- Critical values 5% = -2.991; 1% = -3.734
- * significant at 5%
- ** significant at 1%

4.3 The Error - Correction Model Results

Table 4.3 shows the long-run estimates of savings function and it is presented for comparison with table 4.4, which are estimates of the error-correction model of savings. It is obvious from most of the estimates that the error-correction model shows superior results to the long run estimates, which are computed at their levels.

Table 4.3: Long-Run Estimate of Savings Function

Variables	Coefficient	t-value
Constant	-7.400	-2.830
S-1	0.310	2.252*
INFL	-0.047	-3.288
R	-0.065	-0.871
D	4.666	3.056**
W	30.115	6.292**
G	0.029	1.086
Y	-0.047	-1.619
F	0.005	0.364
X	0.019	1.049
Y^2	0.0005	1.828*
R^2	0.973	
F(11, 15)	48.739	
SER	0.767	
DW	1.83	
AR 1-2 F(2, 13)	2.723	
ARCH 1 F(1, 13)	0.173	
Normality X^2 (2)	0.786	
Reset F(1, 14)	0.097	

* = significant at 5%
** = significant at 1%
df = 27

Table 4.4: An Error-Correction Model of Savings

Variables	Model 1		Model 2	
	Coefficient	t-value	Coefficient	t-value
Constant	-0.052	-0.298	-0.080	-0.502
ΔS_{-1}	-0.089	-0.480		
G	0.181	2.897	0.184	3.081
ΔINFL	-0.031	-1.630	-0.038	-2.944
ΔR	-0.039	-0.351	-0.070	-0.790
ΔD	-1.451	-0.827	-1.375	-0.816
ΔW	39.711	7.464**	37.925	10.334**
ΔY	-0.112	-3.088	-0.113	-3.221
ΔY_{-1}	-0.090	-2.447	-0.094	-2.730
ΔF	0.112	4.079**	0.111	4.209**
ΔF_{-1}	0.073	3.550**	0.073	3.711**
ΔX	0.065	2.103*	0.069	2.436*
ΔY^2	0.002	3.450**	0.002	3.597**
ΔY^2_{-1}	0.0006	1.685	0.006	1.965*
ECM-1	-0.391	-3.264	-0.411	-3.790
R^2	0.959		0.958	
F(15, 10)	15.548		(14, 11) 17.893	
SER	0.622		0.600	
DW	2.00		2.02	
AR1-2 F(2, 8)	0.041		F(1, 10) = 0.035	
ARCH 1 F(1, 8)	0.116		F(1, 9) = 0.283	
Normality X^2 (2)	12.873*		$X^2(2) = 13.746$	
Reset F(1, 9)	0.078		F(1, 10) = 0.113	

* = significant at 5%
** = significant at 1%
df = 27

As seen in table 4.4, the behaviour of the model is observed in terms of R^2, the t-values, Durbin Watson (D.W) statistic, standard error of regression, F statistic as well as the statistical significant of the parameter estimates, whether or not their signs are consistent with a priori economic theory. The explanatory power of model is high, as R^2 is higher than 95 per cent. The predictive

ability of the model can be appreciated in terms of the low standard errors.

The value of DW statistic in the model indicates that the statistic is within the region of the absence of auto-correlation or serial correlation. The value of ECM-1 in the model shows evidence of cointegration among the variables as well as significance of the t-values.

The F statistic shows the overall joint significance of the explanatory variables. In the model, at 5 per cent level, the F statistic indicates that the explanatory variables are jointly significant. In which case the explanatory variables jointly explain variations in the dependent variable.

In the model, the variables W, F, F_{-1} and Y^2 are all significant at 1 per cent level while X and Y^2_{-1} are significant at 5 per cent level. The other variables S_{-1}, R, INFL, D, Y^2_{-1}, G, and Y are not significant.

4.4 Savings and Gross Domestic Product

From our error-correction model of Savings (Table 4.4) it is evident that there exists a positive and significant relationship between savings and real gross domestic product in Nigeria. This is in line with a *priori* theoretical expectation. It is however notable that our income variable which has produced the positive and significant relationship is the quadratic specification. This was experimented with to permit for a positive but decreasing effect of income in the model.

The model however indicates that only 0.002 of real gross national savings in Nigeria is determined by gross domestic product. The implication is that real GDP growth in Nigeria has negligible effect on real national savings. This could arise from the fact that Nigerians may have been adjusting their current consumption upwards in anticipation of higher future incomes, such that increased consumption inhibits savings and growth. Moreover, income distributional pattern in Nigeria since the period of oil boom has placed a very high percentage of national income in the hands of a negligible percentage of the population while the majority of the citizens live in poverty. It is also unfortunate that most wealthy Nigerians keep their wealth outside the country. This result is also evident in the GDP growth rate.

Our results indicate that growth rate of GDP has no significant influence on aggregate national savings. These results can be attributed to the fact that households in Nigeria are relatively poor compared to households in advanced countries and therefore even increases in their permanent incomes are channeled to consumption rather than savings through the alteration of consumption patterns.

4.5 Interest Rate and Savings

Table 4.3 and 4.4 indicate insignificant and negative relationship between interest rate and savings. This implies that savings is a decreasing function of interest rate and changes in the level of aggregate

national savings are not explained by changes in the rate of interest. Our results are in line with earlier studies on Nigeria's savings function. The negative and insignificant relationship between real interest rates and savings is explained by the fact that real interest rates have been negative for most of the period under study. This is, however, due to the pervasive rates of inflation in Nigeria over time. It is therefore difficult to know whether the prevailing interest rates were optimum in engendering savings, investment and growth in the economy. It is therefore desirable to take actions towards further reduction in the inflation rate. Nevertheless, economic growth can be promoted by improving the financial environment. In this case and in line with Mckinnon-Shaw (1973), interest rate policy would be useful in stimulating investment, thereby engendering economic growth in Nigeria. Administered low interest rate would be detrimental to increased savings and hence investment demand, while high interest rates induces savings given adequate information.

4.6 Real Wealth to Income Ratio and Savings

Our results on the relationship between real wealth to income ratio and savings fit our theoretical expectation of positive and significant relationship between real wealth to income ratio and savings. Our result shows a positive and highly significant relation between real wealth to income ratio and savings.

4.7 Real External Borrowing and Savings

There is a significant and positive relationship between real foreign savings and gross national savings. This implies that external borrowing impacts positive promotional effects on domestic entrepreneurs. It supplements and induces domestic savings. For Nigeria, therefore, our positive coefficients reflect crowding - in effect of external borrowing on savings.

4.8 Exports and Savings

The results of the relationship between exports and savings are significant at 5 per cent level. Our export coefficient also carries the expected positive sign. This indicates a positive relationship between the value of export earnings and savings in Nigeria. A major implication of our finding is that trade shocks should be taken seriously. Given the wasting nature of Nigeria's major export (oil), there is need to transform its resources into some permanent form through savings and investment. These would expand the economy's productive capacity and infrastructure base.

4.9 Inflation and Savings

Macroeconomic disequilibrium theory predicts that inflation will tend to decrease savings. Our result is insignificant and negative showing an inverse relation between inflation and savings. This result is explained by the fact that inflationary tendencies in

Nigeria have persisted for a long time since the oil boom period of the 1970s. Therefore, since inflation is expected, an increase in such expected rate of inflation must be having increased effect on consumption at the expense of savings. It could therefore be concluded that, for Nigeria, the intertemporal choice effect may have dominated the pigou effect such that high rates of inflation were accompanied by low savings rate overtime.

4.10 Dependency Ratio and Savings

Finally, the coefficients of our error-correction model show that dependency ratio has no significant influence on savings. However, the result confirms our expectation of an inverse relation between dependency ratios and savings that the life-cycle model predicts. This implies that age composition of our population may be influenced through a check on the birth rate. By so doing, the working population would be relieved of high ratio of dependants and thereby relieve the constraint on the nation's potential for saving, investment and growth.

5.0 RECOMMENDATIONS AND CONCLUSIONS

5.1 Recommendations

Regarding the mobilization of savings there is need for increased productivity in all sectors of the economy. To achieve this, it is recommended that productive resources be put into full and proper use. Such is likely to result in an increase in the GDP. Since variations in GDP exert significant influence on aggregate savings, more savings would be converted into investment to enhance economic growth and development.

Our parameter estimates of the wealth variable (the ratio of real balances to income) reflect the demand management policies which tightened the liquidity constraint on consumption for over a decade and therefore increased saving. Demand management policies must therefore be maintained to tackle inflationary tendencies and also to influence savings positively. The impact of inflation rate is significant but the inverse relation with savings is weak. Be that as it may, the implication is that higher inflation rates may reduce the savings ratio via money illusion. Perhaps the low coefficient of inflation explains the fact that households in Nigeria that have experienced persistent higher inflation rates adjust to past inflation rapidly so that the probability of money illusion becomes lower. Our submission however is that government can adopt cost reducing policies which together with demand management strategy would curb high rates of inflation.

The inclusion of demographic variable (dependency ratio) in our model did not alter the results of the parametric estimates. However, the coefficient of dependency ratio conformed to most of the literature on the relationship between demographic variables and savings. Our results indicate that high

dependency ratios would dampen savings. The implication for Nigeria is that the birth rates are high and the age composition of the population changes rapidly. It follows that as the dependency ratio decreases, higher savings rates are expected to become a substitute for the benefits expected from children. In Nigeria the issues of population control has taken political as well as moral dimensions. Therefore efforts at the control of births should better be undertaken through persuasion.

Our results for exports indicate the need for export promotion as well as inward looking policies that would minimize imports. The findings of this study could have far reaching implications for economic policy in Nigeria. For any economy, and for a developing economy like Nigeria in particular, the need for increased investment cannot be over-emphasized. The most effective means of promoting investment, innovation and growth is to provide a supportive policy environment and institutions. Essentially, macroeconomic stability, undistorted prices, well-defined and well-enforced property rights, an environment that minimizes business costs and political institutional structures which foster socio-political consensus and stability must be put in place to engender savings, investment and growth in Nigeria.

The public sector (government) has a responsibility to provide adequate infrastructure and invest in human capital. The private sector can also help in this direction. In the face of sustainable domestic macroeconomic policy framework, effectively regulated and supervised domestic banking sector and unwillingness on the part of government to provide guarantees on foreign credit flows, foreign saving inflows should be given impetus to support domestic investment, even if they are partially mischanneled to finance consumption.

Empirical evidence suggests that interest rates, if well managed are capable of improving financial intermediation, the quality of portfolio choices and the quality of investment through influence on savings. In fact one should expect higher national savings in response to interest rate liberalization.

5.2 Conclusions

This study is an attempt to empirically investigate the determinants of savings in Nigeria using time series data. From our findings, the determinants of savings in Nigeria include, real wealth to income ratio, real external borrowing, real gross domestic product and exports. These variables may, therefore, be manipulated by government through appropriate policies to influence savings and thereby direct the economy on the path of desired growth. This exposes the need for government and the private sector to take the issue of rekindling investment serious. The issue of capital accumulation should go beyond technological transfer. It should encompass innovation as well as investment in human capital. Furthermore, the public sector must be able to overcome the

limitations imposed by administrative and institutional bottlenecks. Government would possess the capacities to target the right investment options and avoid rent seeking.

In the Nigerian situation particularly, gross national savings may be affected by important factors not captured in the regression analysis. This involves the creation of an institutional environment that instills confidence in savers. Finally, gross national savings is also positively affected by the creation of social and political institutions that reduce political instability.

REFERENCES

Akpokodje, G. .1998. "The Effect of Export Earnings Fluctuation on Capital formation in Nigeria" AERC Final Report. pp. 11-13.

Azam, J. P. .1995. "Savings and Interest rates. The case of Kenya" Savings and Development.

Balassa, B. .1989. "The Effects of Interest Rates on Savings in Developing Countries" World Bank Working Paper No. 56, September.

Boskin, M. J., M. S. Robinson, and A. M. Huber .1989. "Government saving, Capital Formation, and Wealth in the United States, 1947 - 85," in R. E. Lipsey and H. S. Tice

Boskin, M. J. .1978. "Taxation, saving and the Rate of Interest" *Journal of Political Economy,* 86, part 2, April (pp. 523-527).

Bosworth, B. P. .1993. "Saving and Investment in a Global Economy." Brookings, Washington D. C.

Carroll, C. and D. Weil .1993. "Saving and Growth: A Reinterpretation". NBER Working paper 4470.

Chenery, H. B. and W. Strout .1966. "Foreign Assistance and Economic Development". *American Economic Review* 66: 679-733.

_____ and P. Eckstein .1970. "Development Alternatives for Latin America," *Journal of Political Economy* 78 (4): 966-1006.

_____ and M. Syrquin .1975. *Patterns of Development: 1950-1970.* Oxford University Press.

Chandavarkar, A. J. .1971. "Some Aspects of Interest Rate Policies in Less Developed Economies: the Experience of selected Asian countries" *IMF Staff papers,* March.

Collins, S. M. .1991. "Saving Behaviour in Ten Developing Countries," in B. D. Douglas and J. B. Shoven, (eds): *National Saving and Economic Performance.* National Bureau of Economic Research, University of Chicago Press.

Deaton, A. .1995. "Growth and Savings: What do we know, what do we need to know, and what might we learn?", *Manuscript,* the World Bank, March.

Deaton, A. .1977. "Involuntary saving through Unanticipated Inflation," *American Economic Review,* 67, December, (pp, 899-910)

Edwards, S. .1995. "Why are Saving Rates So Different Across Countries? An International Comparative Analysis," *NBER Working Paper* No. 5097.

Feldstein, M. and P. Bacchetta .1991. "National Saving and International Investment" in D. Bernheim and J. Shoven (eds.), *National Saving and Economic Performance,* Chicago, NBER/ University of Chicago Press.

Frankel, J.1985. "International Capital, Mobility and Crowding out in the U.S. Economy," NBER Working Paper No. 1993, December.

Fry, M. J. .1978. "Money and Capital or financial deepening in economic development". *Journal of Money, Credit and Banking* Vol. 10, No.4 November, 1978, pp. 464-475.

Fry, M. J. .1980. "Taiwan's Current Account Surplus: Incipient Dutch Disease?" *International Economic Journal.* 4 (3) Autumn. pp. 93-112

Gavin, M. .1993. "Adjusting to a terms of trade shock: Nigeria, 1972-88" In Dornbusch, E. (eds.), Policy making in the open economy, Oxford: Oxford University press, for the World Bank.

Ghosh, A. R,. and J. Ostry .1994. "Export instability and the external balance of developing countries" IMF staff papers, Vol. 41, No. 2, pp. 214-235.

Giovannini, A. .1985. "Saving and the real interest rate in LDCs" *Journal of Development Economics.* Vol. 18, No. 23, August, pp. 197-217.

Gupta, K. L. .1970. "Personal saving in Developing Nations: Further Evidence" *Economic Record,* 46, June (pp. 243-249).

Gylfason, T. .1981. "Interest Rates, Inflation and the Aggregate Consumption Function," *Review of Economics and Statistics* Vol. LXIII, No. 2, May, pp. 233-245.

Houthakker, H. S. and L. D. Taylor .1966. "Consumer Demand in the United State." *Cambridge.* Harvard Economic Studies.

Howard, D. H. .1978. "Personal saving Behaviour and the Rate of Inflation" *Review of Economics and Statistics,* 60, November pp. 547-554.

Japelli, T. and M. Pagano .1994. "Saving, Growth, and Liquidity constraints" *Quarterly Journal of Economics,* 109, 83-109.

Juster, F. T. and L. D. Taylor .1975. "Towards a theory of saving Behaviour," *American Economic Review* 65, May pp. 203-209.

Kellman, M. 1971. "Comments" *Economic Development and Cultural Change,* October, pp. 144-147.

Keynes, J. M. .1936. "The General theory of Employment, Interest and Money," *Macmillan and Company Ltd.* London.

Knudsen, O. and A Parnes .1975. "Trade Instability and Economic Development." Lexington: Mass.

Lee, J. K. .1971."Exports and the propensity to save in Less Developed countries", *Economic Journal* June, pp. 341-351

Leff, N. H. .1969. "Dependency Rates and Savings Rates", *American Economic Review;* 59, December, pp. 886-896.

Little, I. M. D, R. M. Cooper, W. M. Corden and Rajapatirana .1993. "Boom, Crises and adjustment: the Macroeconomic experience of developing countries", Oxford University Press, for the World Bank.

Lucas, R. .1988."On the Mechanics of Development Planning", *Journal of Monetary Economics* 22 pp. 3 -42.

Maddison, A. .1992. "A Long-Run Perspective on Saving" *Scandinavian Journal of Economics* 94, 181-196.

McKinnon, R. J. .1973. "Money and Capital in Economic Development." Brookings, Washington D. C.

Molho, Lazaros E. .1986."Interest Rates, Savings, and Investment in Developing Countries: A Re-Examination of the Mc Kinnon-Shaw Hypotheses," *IMF Staff papers,* Vol. 33, No. 1, pp. 90 - 116.

Modigliani, F. .1970. "The Life-Cycle Hypothesis of saving and Intercountry Differences in Saving Ratio" in W. Eltis et al; eds. *Induction, Trade and Growth: Essays in Honour of Sir Roy Harrod.* Oxford: Clarendon Press.

Montiel, P. .1994. "Capital Mobility in Developing Countries", *World Bank Economic Review,* Vol. 8, September.

Modigliani, F. .1992. "Saving in Developing Countries": Income, Growth and other Factors", *Pacific Basin Capital Markets Research* 3, 23-35.

Moran, C. .1983. "Export fluctuations and economic growth" *Journal of Development Economics,* Vol. 12, pp. 195-218.

Muradoglu, G. and F. Taskin .1996. "Differences in Household Savings Behaviour: Evidence from Industrial and Developing Countries" *The Developing Economics* XXXIV - 2, June. 138-151.

Ostry, J. and Reinhart, C.1992. "Private Saving and Term of Trade Shocks; Evidence from Developing Countries," Staff Papers, International Monetary Fund, 39, 495-517

Reichael, Richard .1991. "The Macroeconomic Impact of Negative Real Interest Rates in Nigeria: Some Econometric Evidence," *Savings and Development,* Vol. XV. No. 3, Pp. 273-282.

Romer, P.1986. "Increasing Returns and Long-Run Growth", *Journal of Political Economy* 4, pp. 1002-1017.

Schmidt-Hebbel, K., S. Webb and G. Corsetti .1992. "Household Saving in Developing Countries: First Cross - Country Evidence," *World Bank Economic Review,* 6, 529-547.

Schmidt-Hebbel, K, L. Serven .1996. "Saving in the World: Puzzles and Policies" The Research proposal. World Bank.

Schmidt-Hebbel, Serven and Solimano .1994."Saving, Investment and Growth in Developing Countries - An Overview". Policy Research working paper 1382, The World Bank.

Shaw, E. S. .1973. "Financial Deepening in Economic Development." Oxford University Press, Oxford.

Solow, R. .1956. "A Contribution to the Theory of Economic Growth", *Quarterly Journal of Economics,* Vol. 70, February.

Soyibo, A and F. Adekanye. .1991. "Financial System Regulation, Deregulation and Savings Mobilization in Nigeria" *African Economic Research Consortium* Research paper, Final Report, Nairobi, Kenya.

Stewart, D. B. and Y. P. Venieries .1985. "Socio-political instability and the behaviour of savings in less developed countries". *The Review of Economics and Statistics*, Vol. 67.

Williamson, J. G.1968. "Personal Saving in Developing Nations: An Intertemporal Cross-Section from Asia", *Economic Record,* 44, June pp. 194-210.