

SELECTED MACROECONOMIC DETERMINANTS OF SAVINGS: EMPIRICAL EVIDENCE FROM NIGERIA (1991 to 2014)

Atseye, Fidelis Anake¹; Nedozi, Fidelis O.²; Obasam, Jude O.³

¹Government Technical College, Mayne Avenue, Calabar, Nigeria.

²Institute of Continuing Education, PMB 1051, Benin City, Nigeria.

³Department of Economics, Ambrose Ali University, Ekpoma, Nigeria.

ABSTRACT

Savings is presumed as ‘deferred consumption’, being income left over for future consumption on capital investments, precautionary and speculative motives. The decision to save is usually determined by both micro and macro economic factors. This study examined some macroeconomic determinants of savings for Nigeria using the Johansen cointegration and error correction methodology. Four hypotheses were formulated and tested. Data employed were collated from various sources such as the Central Bank of Nigeria statistical bulletins for the period, 1991 to 2014. The unit root test was conducted for the series and the results showed that they were stationary at various levels. The estimated results revealed that inflation rate, financial deepening and deposit interest rate were not major determinants of savings during the study period. Only income was found to be a significant macroeconomic determinant of savings. Also, the coefficient of error correction mechanism (ECM) is negatively signed and significant at 0.05 per cent critical level. This showed that about 64 per cent disequilibria in Nigeria’s savings in the previous year are corrected for in the current year. Consequent upon this, the study recommends that government and policy makers in Nigeria should encourage increase in the productive base of the economy in order to promote real income growth and marginal propensity to save.

Keywords: Savings, Determinants, Distress, Economic Growth and Development

1.0 INTRODUCTION

Economists have long recognized the fundamental role of savings in the promotion of economic growth and development in both primitive and modern economies. In a market-driven economy such as Nigeria’s, every economic unit constitutes a savings unit. Savings from different economic units must be added to the available stock of capital and channelled into investments for the growth and development of the economy. This underscores the rationale for capital

formation through the mechanism of financial intermediation. Theoretical literature distinguishes between three forms of savings, namely: voluntary savings, involuntary savings and forced savings (Thirlwall, 2011). Voluntary savings are savings that do arise as a result of a deliberate and voluntary reduction in one's disposable income. Households and the business sector could be a good source of voluntary savings. Involuntary savings are savings arising from involuntary reductions in consumption, due to taxes, social insurance contributions and schemes leading to reductions in consumption. Forced savings occur when people save guard against the consequences of inflation.

According to Alao (2004) Nigerian economy is facing the problem of macroeconomic instability with high unemployment rate, drop in oil prices, drop in market capitalisation, increase in inflation rate, increase in budget deficit and depreciation of the naira. The introduction of the structural adjustment programme (SAP) in 1986 and the privatisation programme in 1989 were responses to failed institutional measures to promote growth and development. Uche (2000) pointed out that SAP was designed to reduce heavy dependence on consumer goods, imports and crude oil exports, the non oil export base to sustain growth in the economy. Ojo (1991) rationalized government's policy of deregulation on grounds of stagnant growth, raising inflation, unemployment, food shortage and mounting external debt burden. Malunond (2007) asserted that depending on foreign sources to finance investment makes the country highly sensitive to external shocks.

Available data show that the saving culture in Nigeria is very poor relative to other developing economies. For instance, during the period 1991 to 1994, domestic savings averaged 8.03 percent of GDP (CBN, 2000). With the distress in the financial sector of the 1990s, the rate of aggregate savings declined significantly. The rationales for the distress in the banking system were legion: conflicting government policies, fraudulent practices by banks and bankers, lack of ICT and above all, political instability occasioned by the annulment of June 12, 1993 presidential elections. In the past, government actions have precipitated financial crises. The twin banking regulations of 1991 - the CBN and BOFI Decrees gave the Central Bank unprecedented powers over the commercial and merchant banks (Uche, 1996). The CBN decree of 1991, for instance, made it possible for the Central Bank to report directly to the President rather than through the Minister of Finance. Again, the 1991 BOFID further empowered the bank with the sole responsibility for licensing both banks and non-banks financial institutions. This led to proliferation of banks and other financial institutions. The emergence of Umana .E. Umana pyramid finance scheme of the early 1990s when thousands of Nigerians lost their life savings to the scam was one of the instances that brought the depository industry to its knees. The "Umana miracle bank" coupled with other systemic failures launched Nigeria into an era of wild cat banking characterised by widespread financial panic and shattered public confidence.

Consequent upon the distress in the Nigerian banking system, the Federal Military Government promulgated the Failed Banks (Recovery of Debts) and Financial Malpractices in Banks Decree 18 of 1994 to ameliorate the financial deterioration in the system. The distress syndrome also resulted in a significant fall in domestic savings in the period 1995 to 2004, with the saving to GDP ratio dropping to 5.63 percent (CBN, NBS, 2010). Obadan and Odusola (2001) asserted that, the low level of savings in Nigeria was as a result of high incidence of poverty and low level of disposable income, under developed savings channels, reflecting underdeveloped capital markets, conspicuous consumption and unfavourable economic environment characterised by high unemployment and inflation.

The average savings to GDP ratio between 2005 and 2012 was 15.8 percent giving evidence to slow growth. There is need to indentify probable determinants of savings during the period under consideration with a view to reversing the trend and return the growth trajectory on a positive path through aggressive investment in the form of savings. Several studies have attempted to analyse the determinants of savings in an economy. For example, Doshi (1994) study focused on life expectancy as a determinant of savings performance. Uanguta, Haiyambo, Kadhikwa and Chimana (2004) reviewed the developments in savings and investments in Namibia over a period of seventeen years. See also for instance, Victorious and Abiola (2004), Nwachukwu and Egwaikhide (2007), and Igbatayo and Agbada (2012). Arising from the foregoing, the period 1991-2014 is significant in many respects. Theoretical and empirical evidence reviewed further provides gaps in understanding the major macroeconomic determinants of savings in Nigeria.

2.0 LITERATURE REVIEW

2.1 Conceptual Issues

The portion of disposable income not consumed but reserved for future consumption opportunities is known as savings. Aggregate savings is the sum of all savings from the different economic units. According to Igbatayo and Agbada (2012) savings is defined as the excess of income over consumption in an economy. Anyawu and Oaikhenan (in Imoughele 2014) defined savings as the amount of income per capital time period that is not consumed by economic units. For the household, it represents that part of disposable income not spent on domestically produced or imported consumption goods and services. For the firm, it represents undistributed business profits. Ozioma (2013) opined that the reverse of savings is when current expenditure exceeds current income and is termed dissavings. Feldstein (2011) opined that gross national savings is the source for additions to stock of tangible assets, including investment in homes as well as in business inventories, plant and equipment. The author stated further that gross savings equals gross investments in the entire economy.

2.2 Theoretical Issues

There are four widely accepted theories that explain the savings behaviour of economic agents. These theories are Absolute Income Hypothesis (AIH) by Keynes (1936), Relative Income Hypothesis (RIH) by Duesenberry (1949), Permanent Income Hypothesis (PIH) by Friedman (1957) and Life-Cycle Hypothesis (LCH) by Modigliani (1963).

The Keynesian Theory of Absolute Income Hypothesis holds that consumption and savings are an increasing function of absolute / disposable income. Keynes postulated that consumption will decrease as income increases other things being constant. This implies that part of the income will be saved at an increasing rate as the disposable income increases. Generally, the Keynesian savings function takes a form of linear function with constant Marginal Propensity to Save (Keynes in Thomas 2005)

$$S_t = \pi + \beta y_t \dots\dots\dots (1)$$

Where S_t and y_t denote the real value of savings and total disposable income, respectively at time t . β is the Marginal Propensity to Save which is expected to be constant and positive but less than unity, so that the higher income leads to higher savings. Moreover, Keynes postulated that as the level of income rises, the Average Propensity to Save ($APS = s/y$) also rises. π is constant with value less than zero. Hence, with $y_t = 0$, savings is negative or very low and in general, income-savings relationship is not proportional. Other things being constant, the theory assumes that rich people save more than poor people (Alimi, 2013; Keynes in Thomas, 2005)

Duesenberry Relative Income Hypothesis (RIH): Duesenberry (1949) (in Thomas, 2005) believed that a household consumption function depends on household income in relation to other household income. As a result, for any given relative income distribution, the percentage of income saved by a household will tend to be unique, invariant and an increasing function of its percentile position in the income distribution. The RIH assumes that the percentage of income saved will be independent of the absolute level of income. Hence, the aggregate saving ratio will be independent of the absolute level of income (Alimi, 2013).

This implies that the MPS of an individual would be higher if his percentile position in the income distribution is higher. Moreover, the RIH suggests that if there is an upward change in income of a household, it would not aspire for a similar upward change in consumption level than the one already achieved implying that its saving rate will increase due to increase in income.

Milton Friedman's Permanent Income Hypothesis (PIH): The core of Friedman's PIH is that individuals are rational and they seek to maximize their lifetime utility subject to the constraint

that all their lifetime resources must be spent. In this hypothesis, income and consumption are divided into two major components: the transitory and permanent components. This is because an individual as a economic agent is thought to plan his expenditures on both income received during the current period and income expected during his lifetime. Friedman argues that, permanent income should be considered when studying the savings and consumption behaviour of economic agents, not absolute income as Keynes suggests (Friedman, in Thomas 2005)

According to Friedman's PIH, the savings function at time t in its simplest form given the transitory and permanent income can be expressed as:

$$S_t = \pi + \beta y^p + \beta y^t \dots\dots\dots (2)$$

Where $Y = y^p + y^t$, and β is the Marginal Propensity to Save given permanent income (y^p), β is the Marginal Propensity to Save given transitory income (y^t). Friedman hypothesized that individuals consume virtually no transitory income implying that $\beta = 1$. This shows that past behaviour will determine the consumption spending. However, changes in transitory income will lead to changes in savings, that is, the higher the transitory income, the higher the saving rate (Tesha, 2013).

Life-Cycle Hypothesis (LCH): Ando and Modigliani in Simon-Oke and Jolaosho (2013) postulate a life-cycle hypothesis of consumption of an individual in a specified period of time. According to this hypothesis, the individuals have an income stream which is relatively low at the beginning and the end of their life, when their productivity is low and high during the middle of their life (Branson, in Baranzini, 2005). This model suggests that in the early years of a person's life they are net borrowers. In the middle years, they save to repay debts and provide for retirement. Borrowing will always attract interest rate. The life cycle model predicts that a higher interest rate increases the current price of consumption vis-à-vis the future price, thus leading to an increase in savings. In the light of life-cycle analysis, GDP growth will result in an increase of aggregate savings, because it increases the lifetime earnings and savings of younger age groups relative to older age groups (Athukorala & Sen, 2004).

2.3 Empirical Issues

There are a number of empirical studies that have been done in developed and developing countries in the light of determinants of savings behaviour. Some studies concentrated mainly on fixed-effect models using Ordinary Least Squares (OLS) estimates to explain the variations in savings performance among countries (Salotti, 2008). Other studies such as Orji (2012), Kibet, Mutai, Ouma and Owuor (2009); Sandri, Ashoka and Ohnsorge (2012) applied co-integration analysis, which allow for heterogeneity in parameters and dynamics across countries, to arrive at

their conclusion. Generally, some of these studies concentrated more on the demographic factors such as life expectancy, infant mortality and dependency ratio and macroeconomic factors such as income, education, service charge, money supply, real interest rate, disposable income, inflation and deposit rate.

At a multi country study level, the determinants of aggregate household savings in a panel of 18 developed countries for the period 1980-2005 were investigated by Salotti (2008) giving much focus to the role played by wealth. Results of the Fully Modified Ordinary Least Squares (FMOLS) estimation technique indicated that an increase in wealth negatively affects household savings. Du Plessis (2008) investigated the determinants of household savings behaviour in South Africa by conducting one-on-one interviews with the selected economists so as to gauge each participant's opinion. Major findings of the study showed that household savings is impacted negatively by the prevalence of cultural aspiration in which consumption is encouraged by access to credit facilitated by South Africa's financial sector. More so, governmental policies with regard to wealth distribution and welfare payments are regarded to contribute to the creation of a culture of dependence and a reduction in household savings. Sandri et al. (2012), in a study titled "Precautionary Savings in the Great Recession" found that greater labour income uncertainty was significantly associated with higher household savings.

Within the context of some developed economies, Kibet et al. (2009) by using small scale farmers, entrepreneurs and teachers in rural areas of China investigated the determinants of household savings using (OLS). The results indicated that savings is determined by the level of education, dependency ratio, service charge, transport costs, credit access and type of occupation, household income, age and gender of household head. Aktas, Guner, Gursel and Uysal (2012) evaluated the structural determinants of Household savings in Turkey. The results indicated that dependency ratios of households are important determinants of savings.

Agrawal, Sahoo and Dash (2010) investigated the determinants of savings behaviour in India using co-integration procedures. On one hand, the study found that higher income per capita, as well as, greater access to banking facilities significantly improved savings in India during the period under consideration. On the other hand, the study found foreign savings and public savings to have negative impacts on both private and household savings. One apparent policy implication arising from this study is the need for higher rates of growth in order to encourage and mobilise greater domestic savings in the economy. In developing economies, Doshi (1994) study on life expectancy as a determinant of savings performance, demonstrated that life expectancy is a statistically significant and important factor affecting savings levels in less developed countries. Ayalew (2013) reviewed the developments in saving and investment in Namibia over a period of seventeen years. The study employed co-integration and error

correction techniques to assess the determinants of savings and investment in Namibia. The study found that private savings in Namibia is significantly influenced by real income, while it is very doubtful if bank deposit rates have any influence on saving in Namibia. In particular, real lending rates, inflation, real income and government investments were found to be important determinants of investments in Namibia. Davis (2013) analysed the structure and nature of savings in Ghana. The study revealed that contractual savings which consist of pension fund contributions and life insurance premiums dominated the structure of domestic savings in Ghana and indeed do account for about sixty (60) per cent of the total private domestic savings. This is closely followed by commercial banks savings, which account for approximately 38 per cent of the total private domestic savings in Ghana. This high degree of domestic savings does not seem to have been utilised sufficiently to propel domestic investment.

The studies by Odhiambo (2008) and Ndanshau (2012) on interest rate reforms, financial deepening and savings in Tanzania concluded that there is no strong evidence on the effect of real interest rate on national savings in Tanzania. In an earlier study by Giovannini (1985) on the impact of real interest rate on savings in less developed countries, suggested a presence of very low responses of aggregate savings to changes in real interest rate. Victorious and Abiola (2004) found that the variable that influence aggregate savings in Nigeria include lagged savings – income ratio and dummy variable that captures financial liberation. Nwachukwu and Egwaikhide (2007) used an error correction to investigate the determinants of savings in Nigeria. The estimation results indicated that the level of per capita income, terms of trade changes, public saving rate, external debt service ratio and the inflation rate has positive and significant influences on domestic saving while real interest rate and growth rate of income have a negative impact on the saving rate.

Furthermore, Gobna and Nurudeen (2009) employed error correction analysis to ascertain the long run determinants of savings in Nigeria during the period 1981 to 2007. The findings showed that financial deepening, bank density, real interest rate, inflation and real income per capital are the major determinants of savings in Nigeria. Orji (2012) investigated the determinants of bank savings in Nigeria as well as examined the impact of bank savings and bank credits on Nigeria's economic growth from 1970- 2006. Adopting Distributed Lag-Error Correction Model (DL-ECM) and Distributed Model, the results showed a positive influence of values of GDP per capita, financial deepening, interest rate spread and negative influence of real interest rate and inflation rate on the size of private domestic savings. Nwachukwu (2012), employing time series data for Nigeria for the period covering 1970 to 2010 examined the determinants of private savings in Nigeria. He relied upon co-integration procedures to estimate savings rate function for Nigeria within the framework of the Life Cycle Hypothesis. The results of the analysis showed that the saving rate rises with both the growth rate of disposable income and the real interest rate

on bank deposits. The degree of financial deepening was also observed to have a negative impact on savings behaviour in Nigeria.

3.0 METHODOLOGY AND DATA

The study adopted *ex-post facto* research design. Data employed here a time series collated from the CBN Statistical Bulletin, National Bureau of Statistics (NBS), International Financial Statistics(IFS) and Yearbooks by the International Monetary Fund(IMF). The theoretical framework adopted in this study is rooted in the life-cycle and Permanent-Income Hypothesis (PIH) developed by Hall (1978) and later modified by Epaphera (2014). Data were analysed using OLS regression. E-view 8.1 econometric software package was used for the regression. Unit Root Test was conducted using Augmented Dicker-Fuller (ADF). The variables were also tested for co-integration, to examine their convergence status. The ECM was deployed to determine the speed of adjustment to equilibrium given that a long run relationship exists among the data series.

3.1 Model Specification

The paper follows the footsteps of Life-Cycle Hypothesis (LCH) and Permanent-Income Hypothesis (PIH) developed by Hall (1978) and later modified by Epaphera (2014). See also for example Agrawal et al (2010), Orji(2012), Ayaew(2013) and Imoughele(2014).

$$S_t = \pi + \beta y_t \dots\dots\dots (3.1)$$

Where;

- S_t = The real value of savings
- y_t = Total disposable income, respectively at time t .
- β = The Marginal Propensity to Save

$$S_t = \pi + \beta y^p + \beta y^t \dots\dots\dots (3.2)$$

Where;

- y^p = Permanent income.
- y^t = Transitory income
- βy^p = The Marginal Propensity to Save given permanent income (y^p),
- βy^t = The Marginal Propensity to Save given transitory income (y^t).

Equation (3.1) and (3.2) are the life-cycle and permanent-income hypothesis developed by Hall (1978). This theory, also known as the random-walk hypothesis, combines the lifecycle and permanent income variables. Therefore,

$$S_t = \pi_0 + \pi_1 PG_t + \pi_2 C_t + \pi_3 GR_t + \pi_4 Y_t + \pi_5 DR_t + \pi_6 INFR_t + \pi_7 LE_t + U_t \dots \dots \dots \quad (3.3)$$

Where;

- S_t = Total savings as a percentage of GDP
- PG_t = Population growth rate
- C_t = Consumption expenditure of government
- GR_t = Growth Rate of Gross Domestic Product
- Y_t = Disposable income
- DR_t = Deposit Interest Rate
- t = Time
- $INFR$ = Inflation rate, measured as the growth rate of consumer price index as a proxy of macroeconomic stability
- LE = Life expectancy
- U_t = Disturbance (Error) Term. Equation (3.3) was modified and consequently we have:

$$S_t = \pi_0 + \pi_1 Y_t + \pi_2 DR_t + \pi_3 FD_t + \pi_4 INFR_t + U_t \dots \dots \dots \quad (3.4)$$

Where;

- S_t = Total National Savings
- Y_t = Income proxied by real GDP
- DR_t = Deposit Interest Rate
- FD_t = Financial Deepening
- $INFR_t$ = Inflation rate, measured as the growth rate of consumer price index as a proxy of macroeconomic stability
- t = Time

The error correction (ECM) specification of the above equation is presented as equation 3.5 below.

$$S_t = \pi_0 + \pi_1 Y_t + \pi_2 DR_t + \pi_3 FD_t + \pi_4 INFR_t + \pi_5 ECM + U_t \dots \dots \dots \quad (3.5)$$

Where;

S_t , Y_t , DR_t , FD_t and $INFR_t$ are as earlier defined, and

ECM = Error Correction Model

U_t = Disturbance (Error) Term

π_0 = Autonomous term

π_1 = Measures the elasticity of savings with respect to Income.

π_2 = Measures the elasticity of savings with respect to Deposit Interest Rate.

π_3 = Denotes the elasticity of the savings with respect Financial Deepening, and

π_4 = The elasticity of savings with respect to Inflation Rate.

π_5 = The coefficient of the Error Correction Model (ECM).

The apriori expectations are:

$$\pi_1, \pi_2, \pi_3 \ \& \ \pi_4 > 0; \ \pi_5 < 0$$

4.0 RESULTS AND DISCUSSIONS

4.1 Unit Root Test

The variables in the model, being macroeconomic aggregates may be non stationary, so regression models using these aggregates, most likely will generate spurious result; and the outcome will be biased towards finding a significant relationships among variables (Granger, 1986). To overcome this undesirable outcome, the time-series aggregates were subjected to unit root test by testing for the presence or absence of stationarity using Augmented Dicker-Fuller (ADF) test. The results are summarized in Table 1 below.

Table 4.1: Augmented Dicker-Fuller (ADF) test.

Variable	ADF calculated value in Level	5%	Order of Integration	Decision
S_t	12.11635	-3.0199	$I(0)$	Stationary
Y_t	4.288073	-3.0038	$I(0)$	Stationary
DR_t	-6.678180	-3.0199	$I(2)$	Stationary
FD_t	-4.262622	-3.0114	$I(1)$	Stationary
$INFR_t$	-4.457007	-3.0199	$I(2)$	Stationary

Source: Author's Regression Output, 2015.

As shown in Table 4.1 above, Savings (S_t) and Income (Y_t) are stationary at levels $I(0)$, Financial Deepening (FD_t) is stationary at first difference $I(1)$. While Inflation Rate ($INFR_t$) and Deposit

Interest Rate (DR_t) are stationary at second difference $I(2)$. This means that the data converged at levels, first and second order differences. This therefore clears the variables from the presence of unit root in the data.

4.2. Johansen Co-integration Test Result

The result of Johansen co-integration test for the model is shown in Table 4.2 below.

Table 4.2: Co-integration Rank Test Assuming Linear Deterministic Trend for Macro Determinants Model

Series: $S_t, Y_t, DR_t, FD_t, INFR_t$			
Eigen value	Likelihood Ratio	5 Percent Critical Value	Hypothesized No. of CE(s)
0.146162	3.476296	3.76	None
0.491810	14.89179	3.76	None *
0.210825	5.208867	3.76	None *
0.048010	1.082406	3.76	None
0.243116	6.128007	3.76	None *

* denotes acceptance of the hypothesis at 5% significance level

Sources: Author’s Regression Output, 2015

The result shows that there exist three (3) co-integrating equations at 5% level of significance for Income, Deposit Interest Rate and Inflation Rate. This is because the likelihood ratio is greater than critical values at 5%. This shows that there is a relationship between Income, Deposit Interest Rate and Inflation Rate as macro determinants of savings in Nigeria. The result indicates that, the dependent variables can be efficiently anticipated using the specified Income, Deposit Interest Rate, Inflation Rate and Deposit Interest Rate.

4.3 Regression Output

Table 4.3 Regression Output

Dependent Variable: S_t

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1810264.	1047006.	1.728991	0.1031
Y_t	0.000235	1.84E-06	127.6774	0.0000
DR_t	-177411.1	199189.6	-0.890665	0.3863
FD_t	8498.807	55549.21	0.152996	0.8803
$INFR_t$	14580.64	43034.14	0.338816	0.7392
R-squared	0.889894	Mean dependent var		73432651
Adjusted R-squared	0.789854	S.D. dependent var		3.19E+08
S.E. of regression	3854554.	Akaike info criterion		33.41320
Sum squared resid	2.38E+14	Schwarz criterion		33.75878
Log likelihood	-377.2518	F-statistic		25108.13
Durbin-Watson stat	2.042196	Prob(F-statistic)		0.000000

Source: Author's Regression Output, 2015.

The result shows that the independent variables explain 89% systematic variation of the dependent variable (Savings), while 11% is unexplained. This is validated by the R-bar-square of 79%. This suggests that the multi-regression data fit the lines. The F-statistic which is used to test for the overall significance of the estimated equation shows that all the explanatory variables are not equal to zero. Under 5% significance levels, it means that at least one of the explanatory variables indeed affects or could explain the dependent variable. Using the rule of thumb, only Income (Y_t) was individually statistically significant.

All the independent variables agreed to apriori expectation except Deposit Interest Rate. With the coefficient of the constant as 1810264, it implies that when the independent variables (Income, Inflation rate, Financial deepening and Deposit interest rate are held constant, National savings will be at 1810264 units.

The coefficient of Income (Y_t) shows a positive value of 0.000235, implying that one unit increase in real GDP (Y) will bring about an increase in savings by 0.000235 units. This positive relationship is in line with some literatures (Olusoji, 2003; Nwachukwu, 2012 and Ayalew,

2013), that believes that increase in per capita income of the households will induce them to save more.

Deposit Interest Rate (DR_t) shows a negative value of 177411.1, implying that one unit increase in Deposit Interest Rate (DR_t) will bring about a decrease in savings by 177411.1 units. The relationship between interest rate on deposit and savings is supposed to positive for a developing economy like Nigeria.

Financial Deepening (FD_t) shows a positive value of 8498.807, implying that one unit increase in Financial Deepening (FD_t) will positively gyrate the Nigerian saving rate by 8498.807 unit. This means that increase in Financial Deepening (FD_t) will increase savings in Nigeria. Financial development is assumed to enhance the savings rate.

Inflation rate ($INFR_t$) shows a positive value of 14580.64, implying that one unit increase in Inflation rate ($INFR_t$) will positively gyrate savings by 14580.64 unit. The sign of inflation can either be here or there (ambiguous). In advanced economies, Inflation rate is expected to have a positive impact on savings, as economic agent in such an environment would try to hedge risk by saving (Ozcan et al., 2003). However, higher anticipated inflation in developing countries such as Nigeria could reduce savings.

The result of the DW statistic of 2.0422 shows the absence of auto-correlation and it indicates that the model is unbiased. In order to correct the inherent disequilibrium in ordinary least square, error correction model (ECM) was employed. This is shown below.

Table 4.4: ECM Regression Output

Dependent Variable: S				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2127514.	9573037.	0.222240	0.8279
Y_t	0.000241	1.90E-06	126.8855	0.0000
$d((DR_{t-2}))$	521908.4	1208054.	0.432024	0.6734
$d(FD_t)$	36009.84	238125.4	0.151222	0.8823
$d((INFR_{t-2}))$	-167092.0	443709.1	-0.376580	0.7131
ECM	-0.640366	0.160396	-3.992413	0.0004
R-squared	0.739677	Mean dependent var		88873230
Adjusted R-squared	0.719515	S.D. dependent var		3.51E+08

S.E. of regression	7722532.	Akaike info criterion	34.83449
Sum squared resid	7.16E+14	Schwarz criterion	35.18244
Log likelihood	-323.9277	F-statistic	6181.102
Durbin-Watson stat	2.107843	Prob(F-statistic)	0.000000

Source: Author's Regression Output, 2015.

The result shows that the independent variables explain 74% systematic variation of the dependent variable (Savings), while 16% is unexplained. This is validated by the R-bar-square of 71%. This suggests that the multi-regression data fit the lines. The F- statistic which is used to test for the overall significance of the estimated equation shows that all the explanatory variables are not equal to zero. Under 5% significance levels, it confirms that at least one of the explanatory variables indeed affects or could explain the dependent variable.

All the independent variables agreed to apriori expectation. Although, the sign of inflation rate from literature is neither here or there (ambiguous). With the coefficient of the constant as 2127514, it implies that when the independent variables (income, inflation rate, financial deepening and deposit interest rate) are held constant, savings will be at 2127514 units.

The coefficient of Income (Y_t) shows a positive value of 0.000241, implying that one unit increase in Income (Y_t) will bring about an increase in savings by 0.000241 units. This is in line with literature, that believes that increase in per capita income of the households, will induce them to save more. High incomes improve the per capita income of the households, which will induce them to save more. Thus, richer people can afford the luxury of saving for their future consumption. The poor on the other hand, have low incomes that only allow them to consume at the maximum level. It therefore follows that higher incomes enhance the saving's ability of households and consequently raises the national savings.

Deposit interest rate (DR_t) shows a positive value of 521908.4, implying that one unit increase in Deposit interest rate (DR_t) will bring about an increase in savings by 521908.4 units. The relationship between interest rate on deposit and saving is positive for a developing economy (Nigeria). Higher real interest rate on savings raises the stream of future income and wealth, thus raising the current consumption level. On the other hand, higher returns on savings are expected to encourage households to increase savings because postponing the current consumption would imply larger future consumption out of current income.

Financial Deepening (FD_t) shows a positive value of 36009.84, implying that one unit increase in Financial Deepening (FD) will positively gyrate the Nigerian savings rate by 36009.84 unit. This means that increase in Financial Deepening (FD_t) will increase savings in Nigeria. Financial

development is assumed to enhance the saving rate. It consists of elimination of credits ceilings, interest rate liberalization, enhanced prudential guidelines and supervision; and the development of the capital market. However, increased financial development itself significantly increase overall propensity to save but depends on the extent of substitution between saving and other items in the household asset portfolio.

Inflation rate ($INFR_t$) shows a negative value of -167092.0, implying that one unit increase in Inflation rate ($INFR_t$) will negatively gyrate savings by 167092.0 unit. Some economic studies focusing on the demand for long – term loanable funds have argued that investment is stimulated when inflation is accelerating because the real costs of interest and principal payment are lowered. If nominal interest rates are controlled real interest rate might even become negative. Therefore, the sign of inflation can either be here or there. In advanced economies, inflation rate is expected to have a positive impact on savings, as economic agent in such an environment would try to hedge risk by saving (Ozcan et al., 2003). However, higher anticipated inflation in developing countries such as Nigeria could reduce savings.

The speed of adjustment is the coefficient of the error correction variable. This indicates that 64 percent departure from the long-run equilibrium is corrected. The ECM is highly significant. The coefficient of ECM of -0.6404 suggests fast adjustment. Nearly 64 percent of the disequilibrium of the previous year's shock adjusts back to equilibrium in the current year. The results showed that the error correct term ECM is correctly specified. It satisfies a-priori expectations and statistically significant at the five percent level. The negative sign confirms that savings and its regressors (determinants of savings) are indeed cointegrated, and the statistical significance of the error correction term implies disequilibrium in the long-run. Durbin Watson value of 2.1078 shows absence of auto-correlation.

4.5 Results of Hypotheses

The statistical test for significance of the individual parameter estimates (ie t-Statistics) using 95% Confidence interval and 21 degree of freedom ($n-k = 25 - 4 = 21$) gave 2.080 from the statistic table.

Hypothesis One: *Income has no significant impact on savings in Nigeria.*

From the t-statistic result of 126.8855 which is greater than t-statistic table value of 2.080 implies that income is a significant macroeconomic determinant of savings in Nigeria. This is in line with Olusoji (2003), Nwachukwu (2012), Orji (2012) and Ayalew (2013) who found that rising savings is associated with rising income.

Hypothesis Two: *Deposit Interest rate is not a significant macroeconomic determinant of savings in Nigeria.* From the t-statistic result of 0.4320 is less than t-statistic table value of 2.080, implies that, the null hypothesis that deposit interest rate is not a significant macroeconomic determinant of savings in Nigeria is accepted. This result is corroborative of the findings of Nwanchukwu and Eghwakhide(2007) and Orji (2012).

Hypothesis Three: *Financial deepening has no significant impact on savings in Nigeria.* The t-statistic result of 0.1512 is less than the t-statistic table value of 2.080, therefore financial deepening is not a significant macroeconomic determinant of savings in Nigeria. This result refute those of Gobna and Nurudeen (2009) and Orji (2012). **Hypothesis Four:** *Inflation rate has no significant impact on savings in Nigeria.* From the t-statistic result of -0.3766 is less than t-statistic table value of 2.080, implies that, the null hypothesis is accepted. This study does not agree with Ozcan, Gunay and Ertac's (2003) who saw inflation as a determinant.

5.0 CONCLUSION AND RECOMMENDATIONS

Conceptually, savings represents that part of income not spent on current consumption. Literature evidence abounds that, the relationship among savings, investment and growth has historically been very close; hence, the unsatisfactory growth performance of several developing countries including Nigeria has been attributed to poor savings and investments. This poor growth performance has generally led to a dramatic decline in investments. The study revealed that inflation rate, financial deepening and deposit interest rate were not major determinants of savings under period investigated. Rather income was a significant macroeconomic determinant.

The findings have some serious policy implications the growth and development of the nation. The following recommendations are put forward:

Government should encourage policies that would reduce inflation, impact on savings and enhance the present value of the naira. Policy makers in Nigeria should initiate policies and programmes aimed at increasing the productive base of the economy, promoting real income growth and stemming the tides of unemployment. Monetary policy should increase the abysmally low real interest rate on bank deposits in order to stimulate savings and justify time value of money. The Central Bank of Nigeria should strengthen the existing regulatory framework in order to protect savings in the formal and informal sectors.

REFERENCES

- Agrawal, P., Sahoo, P. and Dash, K. (2010). "Saving Behaviour in India: Co-integration and Causality Evidence". *The Singapore Economic Review*, Volume 55, Issue 2. P.273-295.
- Aktas, A. Guner, D, Gursel, S and Uysal, G. (2012). "Structural Determinants of Household Savings in Turkey: 2003-2008". *Betam Working Paper Series #007*.
- Alimi R. S. (2013). *Keynes' Absolute Income Hypothesis and Kuznets Paradox*. Adekunle Ajasin University, Akungba-Akoko, Ondo State Nigeria.
- Athukorala, P, and Sen, K. (2004). "The Determinants of Private Saving in India", *World Development*, Volume 32, Issue 3, P. 491-503.
- Ayalew, H.A. (2013). "Determinants of domestic saving in Ethiopia: An autoregressive distributed lag (ARDL) bounds testing approach". *Journal of Economics and International Finance*, Volume 5, Issue 6, P. 248-257.
- Banks and other Financial Institutions Decree (BOFID). 1991.
- Baranzini, M. (2005). "Modigliani's Life-cycle Theory of Savings Fifty Years Later", *BNL Quarterly Review*, Volume LVIII, Issue 12, P.233-234
- Central Bank of Nigeria, (various years). Central Bank of Nigeria, Annual Report and Statement of Accounts. CBN, Abuja, Nigeria.
- Davis, A. L. (2013). "The Long Run Determinants of Private Domestic Savings in Ghana: A Co-integration Approach". *Journal of Economics and Sustainable Development*, Volume 4, Issue 4. P. 125-137.
- Doshi, F. R. (1994). "Life expectancy as a determinant of savings performance". *WEEJS International Journal of Arts and Combined Sciences*, Volume 1, Issue 2. P.31-38.
- Du Plessis, G. (2008). *An exploration of the determinants of South Africa's personal saving rate- Why do South African households save so little?* Master's thesis, University of Pretoria.
- Duesenberry, J. S., (1949) "Income - Consumption Relations and Their Implications," In Thomas I. P. (2005) *Relative Permanent Income and Consumption: A Synthesis of Keynes, Duesenberry, Friedman, and Modigliani and Brumbergh*. Available online at

http://www.thomaspalley.com/docs/research/Modigliani_RPIJEBO.pdf. Assessed 8/9/2015.

Elbadawi, I. A and Mweha, F. M. (2000). "Can Africa's Saving Collapse Be Reversed?" *The World Bank Economic Review*. Volume 14, Issue 3. P. 415-444.

Engle, R. F. and Granger, C. W. J. (1987). "Cointegration and Error Correction: Representation, Estimation and Testing", *Econometrica*, 55, 251-76.
http://www2.warwick.ac.uk/fac/soc/economics/staff/gboero/personal/hand2_cointeg.pdf

Epaphera, H. U. (2014). *Saving and Investment in a developing economy*. Washington, D.C.: Brookings Institution Press. Fildstein (2011)

Friedman, M. A (1957). Theory of the Consumption Function. in Thomas I. P. (2005) *Relative Permanent Income and Consumption: A Synthesis of Keynes, Duesenberry, Friedman, and Modigliani and Brumbergh*. Available online at http://www.thomaspalley.com/docs/research/Modigliani_RPIJEBO.pdf. Assessed 8/9/2015

Giovannini, T. U. (1985). "Impact of Real Interest Rate on Savings in Less Developed Countries". *South Asia Economic Journal*, Volume 2, Issue 3, P. 22-31.

Gobna, W. O. and Nurudeen, A. (2009). "Long Run Determinants of Savings in Nigeria (1981-2007); Evidence from Time Series Data". *The Nigerian Journal of Economics and Management Studie*, Volume 4, Issue 1, P. 87-106.

Granger, C. W. J. (1986) "Developments in the Study of Cointegrated Economic Variables". *Oxford Bulletin of Economics and Statistics*, Volume 48, Issue 3, P. 213-28.

Gujarati, D. M. (2007). *Basic Econometrics*. Third Edition New York McGraw Hill.

Igbatayo, S. and Agbada, A. O. (2012). "Inflation, Savings and Output in Nigeria: A VAR Approach". *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*, Volume 3, Issue 5, P. 447-453.

Imoughele, L. E. (2014). "An Econometric Analysis of the Determinants of Private Domestic Savings in Nigeria (1981 - 2012)". *International Journal of Humanities and Social Science* Volume 4, Issue 5, P.1-10

- Keynes, J. M. (1936). *The General Theory of Employment, Interest, and Money*. In Thomas I. P. (2005) *Relative Permanent Income and Consumption: A Synthesis of Keynes, Duesenberry, Friedman, and Modigliani and Brumbergh*. Available online at <http://www.thomaspalley.com/docs/research/Modigliani RPIJEBO.pdf>. Assessed on 8/9/2015
- Kibet, L., Mutai, B., Ouma, E., Ouma S. and Owuor, G. (2009). "Determinants of Household Saving: Case Study of smallholder farmers, entrepreneurs and teachers in rural areas of China". *Journal of Development and Agricultural Economics*. Volume 1, Issue 8, P. 137-143.
- Loayza, N., Schmidt-Hebbel, K. and Serven, L. (2000). "Saving in Developing Countries: An Overview". *The World Bank Economic Review*. Volume 14, Issue 3, P. 393-414.
- Malunond, T. A. (2007). *Determinants of Domestic Saving Performance in Egypt: An Empirical Study*. Available at <http://www.bu.edu.eg/portal/uploads/openLearning/Determinants%20of%20Domestic%20Saving%20Performance%20in%20Egypt%20An%20Empirical%20Study%20paper%20en.pdf>. Retrieved on 1/8/2015
- McKinnon, R. I. (1973). *Money and Capital in Economic Development*. Washington DC, The Brookings Institution Press.
- Modigliani, F. (1966). "The Life-Cycle Hypothesis of Savings; The Demand for Wealth, and the Supply of Capital". In Simon-Oke, O. O and Jolaosho, O. M. (2005) *Real Interest Rate and Savings Mobilization in Nigeria*. Available at <http://www.eajournals.org/wp-content/uploads/REAL-INTEREST-RATE-AND-SAVINGS-MOBILIZATION-IN-NIGERIA.pdf> Assessed on 8/9/2015.
- Ndanshau, M. O. A. (2012). *On Interest Rates and other Determinants of Financial Savings: An Empirical Investigation in Tanzania*, Department of Economics Working Paper series, Vol.12, No. 5.
- Nigeria Deposit Insurance Corporation (NDIC) Decree, 1988.
- Nwachukwu, T. (2012). *Determinants of Private Savings in Nigeria*. Unpublished article, Africa Development Bank, Tunis. Tunisia.
- Nwachukwu, T. E. and Egwaikhide, F.O. (2007). *An Error-Correction Model of the Determinants of Private Savings in Nigeria*. A Paper presented at the African Economic Society (AES) Conference, Cape Town, South Africa.

- Obadan M. I. and Odusola, A. F (2001). Savings, Investment and Growth Patterns in Developed and Developing Countries. *National Centre for Economic Management and Administrative (NCEMA) Management, Monograph Series, No. 1.*
- Odhiambo, N. M. (2008). "Interest Rates Reforms, Financial Depth and Savings in Tanzania". *Savings and Development, Volume 32, Issue 2, P.141-158.*
- Ojo, M. (1991). Deregulation in the Banking Industry: a review and appraisal. *CBN Economic and Financial Review.29(1). March 1991.*
- Olayemi, S. O. and Jolaosho, O. M. (2013). "Real Interest Rate and Savings Mobilization in Nigeria". *International Journal of Development and Economic Sustainability, Volume 1, Issue 2, P. 28-40.*
- Olusoji, M. O. (2003). "Determinants of Private Savings in Nigeria: An Error Correction Approach". *NDIC Quarterly. Volume 13. Issue 9 P. 85-96.*
- Orji, A. (2012). "Bank Savings and Bank Credits in Nigeria: Determinants and Impact on Economic Growth". *International Journal of Economics and Financial Issues, Volume 2, Issue 3, P.357-372.*
- Ozcan, K. M., Gunay, A. and Ertac, S (2003). "Determinants of Private Savings Behaviour in Turkey". *Applied Economics, Volume 25, Issue 12, P.1405-1416.*
- Ozioma, O. (2013). *The determinants of savings in Nigeria (1985-2011)* Unpublished. A Research project submitted to the Department of Economics, Caritas University Amorji Enugu State
- Sandri, D., Ashoka, M. and Ohnsorge, F. (2012). "Precautionary Savings in the Great Depression". *IMF Economic Review. Volume 60, Issue 1.*
- Tesha, D. M. (2013), *Determinants Of Private Saving In Tanzania*, MA, University of Nairobi.
- Thirwall A. P. (2011). *The Mobilization of Savings for Growth and Development in Developing Countries*. <http://ideas.respec.org/a/icf/icfjae/voly2002i/p 7-30.html>. Assessed on 8/9/15
- Touny, M. (2008). "Determinants of Domestic Savings Performance in Egypt: An Empirical Study". *Journal of Commercial Studies and Researches, Faculty of Commerce, Benha University, Volume. 1.*

Uche, C.U. (1996). "The Nigerian Failed Bank Decree: A critique". *Journal of International Banking Law*, Volume11, Issue 10, P. 436-441.

Uche, C.U. (2000). "Banking Regulation In the Era Of Structural adjustment: the case of Nigeria". *Journal of Financial Regulation and Compliance*, Volume 8, Issue 2, P.157-165.

Victorious, M. O and Abiola, R. K. (2004). *The impact of Interest Rate Savings Mobilisation in Nigeria (1970 - 2000): A co-integration approach*. Available at <http://www.indiajournalofeconomics.com/january2004.htm#5>. Assessed on 8/9/2015.

Wai, U. T. (1992). *Financial Intermediaries and National Savings in Developing Countries*: New York: Pager Publishers.

World Economic Outlook April 2015.

Appendix 1:Data

Year	Gross National Savings (Nm)	GDP (Nm)	Deposit Interest Rate (%)	Inflation (%)	Financial Deepening Growth Rate (%)
1991	37738.2	312139.7	14.29	22.96	0.32
1992	55116.8	532613.8	16.10	48.80	0.48
1993	85027.9	683869.8	16.66	61.26	0.72
1994	110966.8	899863.2	13.50	76.76	0.88
1995	108490.3	1933212	12.61	51.59	1.13
1996	134503.2	2702719	11.69	14.32	1.26
1997	177648.7	2801973	4.80	10.21	1.42
1998	200065.1	2708430	5.49	11.91	1.69
1999	277667.5	3194015	5.33	0.22	2.24
2000	385190.9	4582127	5.29	14.52	3.15
2001	488045.4	4725086	5.49	16.50	3.69
2002	592s094	6912381	4.15	12.19	3.69
2003	655739.7	8487032	4.11	23.79	4.16
2004	797517.2	11411067	4.19	10.01	4.29
2005	1316957	14572239	3.83	11.60	4.35
2006	1739637	18564595	3.14	8.50	6.76
2007	2693554	20657318	3.24	6.60	9.16
2008	4118173	24296329	3.50	15.10	13.64
2009	5763511	24794239	3.60	12.00	14.93
2010	5954260	33984752	1.50	13.70	42.7
2011	6531913	37409861	1.41	10.30	20.8
2012	8062901	40544099	1.66	12.00	20.9
2013	116105774.4	41,654,328.09	2.53	8.50	21.3
2014	1532596222	44,570,131.053	2.14	8.00	19.3

Sources: CBN annual statistical bulletin, NBS various years, Internet

Appendix 2: Regression Output

Dependent Variable: S_t

Method: Least Squares

Date: 9/23/15 Time: 11:42

Sample(adjusted): 1992 2014

Included observations: 23 after adjusting endpoints

Convergence achieved after 9 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1810264.	1047006.	1.728991	0.1031
Y_t	0.000235	1.84E-06	127.6774	0.0000
DR_t	-177411.1	199189.6	-0.890665	0.3863
FD_t	8498.807	55549.21	0.152996	0.8803
$INFR_t$	14580.64	43034.14	0.338816	0.7392
R-squared	0.889894	Mean dependent var		73432651
Adjusted R-squared	0.789854	S.D. dependent var		3.19E+08
S.E. of regression	3854554.	Akaike info criterion		33.41320
Sum squared resid	2.38E+14	Schwarz criterion		33.75878
Log likelihood	-377.2518	F-statistic		25108.13
Durbin-Watson stat	2.042196	Prob(F-statistic)		0.000000

Appendix 3: ECM Regression Output

Dependent Variable: S_t

Method: Least Squares

Date: 9/23/15 Time: 12:11

Sample(adjusted): 1996 2014

Included observations: 22 after adjusting endpoints

Convergence not achieved after 100 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2127514.	9573037.	0.222240	0.8279
Y_t	0.000241	1.90E-06	126.8855	0.0000
$d((DR_{t-2}))$	521908.4	1208054.	0.432024	0.6734
$d(FD_t)$	36009.84	238125.4	0.151222	0.8823
$dINFR_t$	-167092.0	443709.1	-0.376580	0.7131
ECM_{t-1}	-0.640366	0.160396	-3.992413	0.0004
R-squared	0.739677	Mean dependent var		88873230
Adjusted R-squared	0.719515	S.D. dependent var		3.51E+08
S.E. of regression	7722532.	Akaike info criterion		34.83449
Sum squared resid	7.16E+14	Schwarz criterion		35.18244
Log likelihood	-323.9277	F-statistic		6181.102
Durbin-Watson stat	2.107843	Prob(F-statistic)		0.000000