

THE DETERMINANTS OF DOMESTIC PRIVATE SAVINGS IN NIGERIA

ABSTRACT

This study examined the determinants of private domestic savings in Nigeria (1980- 2015). Employing ex-post facto research design using Nigeria's data obtained from CBN and IMF-IFS online. The econometric analytic tools used are: Co integration Test, vector error correction model, Granger Causality Test and The objectives of the study include to: (i) ascertain if interest rate significantly determines the level of domestic private savings in Nigeria. (ii) investigate the extents to which income can impact on domestic private savings in Nigeria (iii) determine the degree of causal relationship existing between income and domestic private savings in Nigeria. The result indicates that (i) interest rate significantly determines the level of domestic private savings in Nigeria within the period. Thus, it is estimated from the result that 1% increase in the real interest rate, will bring about 4.8% increases in domestic private savings. (ii) income was found to have significant impact on domestic private savings in Nigeria within the period under study. The result reveals that 1% increase in income (LGDP) on the average will bring about decrease in domestic private savings (DPS) by 2.1 %.(iii)The granger causality test shows that there is significant causal relationship existing between income and domestic private savings in Nigeria within the period under study. The statistics for the causality between income and domestic private savings are found to be 11.83 as F-statistic value with its corresponding P-value as 0.1694. This implies that there is one-way causation which runs from income to savings. Hence, income causes savings to change significantly. Based on the findings the study makes the following recommendations;(i) The policy maker should initiate policies that will lead to reduction in cost of borrowing (real interest rate) so as to boost investment projects which will promote domestic private savings in Nigeria.(ii)Government should make a plan to increase salaries of the workers which will in turn raise income levels of the households. Also,efforts should be made to stimulate micro and medium scale business so as to boost income level of the private sector.(iii)The cost of living should be reduced with the provision of necessities of life such as food, stable power, good health facilities, good housing and clothing at low cost. Then, people will be able to accumulate enough and have surplus as savings for investment. (iv) Government should give attention to the determinants discussed especially on income and interest rate since they are among the major factors affecting domestic private savings which ultimately lead to economic growth of Nigeria.

INTRODUCTION

1.1 Background to the Study

Anyanwu and Oaikhenan (1995) defined savings as the amount of income per time period that is not consumed by economic units. For the households, 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. It is pertinent to point out that savings is flow variable,

being measured overtime. According to Adelakun (2015), savings and investment has been accentuated by Economists as a precondition for the growth and development of countries. There has been increasing awareness that the faster the rate of investment, the greater the rate of capital formation, which ultimately promote growth and development (Thilwal, 1979). Savings are normally considered in economics as disposable income minus personal consumption expenditure. In other words, it is regarded as income that is not consumed by immediately buying goods and services. For the purpose of this study, it must be emphasized that "savings" refer to deposits in financial institutions. Thus, the studies focuses on financial saving of households held by banks, micro finance institutions, Esusu groups and other saving avenues.

The above definition is clear that savings are closely related to investment. Savings can therefore be vital to increasing the amount of capital available. Meanwhile increased savings are necessary but not a sufficient condition for investment. Of course Savings are strategic variable in the theory of economic growth hence its role as a determinant of economic growth has been emphasized by classical economists like Adam Smith and David Ricardo. In many developing economies particularly Africa, savings and investments are necessary engines for capital formation hence economic growth.

For funding investment required for economic growth, the economy needs to generate sufficient savings or it should borrow abroad. However, borrowing from abroad can have adverse effects on the balance of payments as these loans will have to be serviced in the future and it also carries a foreign exchange risk. So, sufficient private domestic savings are necessary for economic growth because it also forms part of the most important issues in development economics, and for developing countries, on how to stimulate investment, and how to bring about an increase in the level of savings to fund increased investment. In fact, the crucial role of domestic savings mobilization to the sustenance and reinforcement of the saving-investment-growth chain in developing countries has preoccupied development economists for decades (Lewis, 1970). Given this, the main thrust of this study is to empirically investigate the determinants of savings and investment in the Nigerian economy. This study becomes crucial in the light of the need to provide necessary insight on how to foster rapid growth and development of the economy.

Historically, there is an obvious gap between the income level and savings rate in the economy due to the inability of the economic agents to benefit from accrued revenue from oil resulting in low investment and declining rate of capital formation in Nigeria. The role of savings in the promotion of economic growth and development in both developing and developed economies today had been noted by economists. Savings are very important in order to generate fund for investment (Ogbokor and Samahiya, 2014).

Nigeria is among the developing countries that need fast and sustainable increase in investment growth; however, her private domestic saving rate was on the lowest for the past several decades. The savings level in Nigeria particularly in rural areas is very low and its patterns and determinants are not empirically identified. In rural areas in Nigeria, savings is mainly made out of the income from agricultural produces, the flow of the income is irregular and seasonal which reduces the ability to save or poorly respond to the incentives which promote savings.

Despite the above awareness, the situation in Nigeria is such that the savings ratio is so low. This situation has affected productivity growth in Nigeria. Iyoha (1998) and Nnanna (2003)

maintained that the negative growth in real GDP in the mid 1980s could be attributed to a host of factors of which decline in investment and savings are major ones. Also savings and investment culture in Nigeria is very poor relative to most economies of the world. Nnanna (2003) indicated that private domestic savings which averaged 15.7 percent of GDP during the period 1986-1989 declined significantly to 6.0 per cent between 1990-1994 while in 1996 and 1999, this ratio stood at 13.2 per cent and 14.5 percent respectively.

Discussion of the trend of domestic private savings and income (GDP) in Nigeria using 5years interval shows that domestic private savings in 1980 was 0.06% of the GDP and in1985-1989 it increased to 0.4%, and in 1990-1994 domestic private savings decreased to 0.3%, from1995-1999 it increased to 1.6%, during the period 2000-2004 domestic private savings increased to 7.6%, in 2005-2009 it also decline to 7.2%, during the period 2010-2014 domestic private savings increased to 32.7%. Income (GDP per capita) was 17279330405700 in 1980- 1984 and during the period of 1985-1989 it increased to 1745248348600 and in 1990-1994 it also increased to 20236715708300, from 1995-1999 it moved up to 22472938336300, while from 2000-2004 it increased to 37851134166500. In 2005-2009 the income increased to 51436836336000, the income (GDP per capita) also in 2010-2014 was 67977459000000.

This paper therefore investigates determinants of domestic private savings in Nigeria for the period of 1980-2015. The variables for the study are as follow; Gross domestic savings, income (GDP), interest rate and credit to private sector % of GDP (proxy for financial development) and household consumption.

2.1 Theoretical Review

Classical Theory

The Classical Economists was the first group of economists that offered theoretical explanation on the determinants of savings and its significance. Smith (1776) observed the importance of savings when he stated that, "Capital is increased by parsimony and reduced by prodigality and misconduct". Prior to 1936; the classical economists propounded their theory on the savings and asserted that a negative relationship existed between savings and interest rate. There exist negatively sloped supply curve of capital, implying that supply of capital increases in response to a decline of interest rate. Many have found this explanation rather unconvincing.

According to Adam Smith, the rate of investment which is an important determinant of economic growth is determined by the rate of savings in an economy. He did not believe in the possibility of any sort of leakage occurring between savings and investment, even though the activities are performed by different sets of people. In his system, savings and investment have been identified with each other and both are determined by the consideration of private profit. However he also notes that, the ability to save is constricted by income. In other words, when no profit can be made from investment, entrepreneurs lose their interest in investment activity and the economy reaches the Stationary state. He was of the view that savings is equal to investment, Smith (1776)

Malthus (1951) held different view from that of Smith when he explained savings to bring about a reduction in effective demand by reducing the ability of people to consume, in turn bringing a decline in profits and investments. This is compared to Smith's view which postulated that savings always equals investment; hence, any act of savings would lead to an increase in wealth

of the economy. According to Malthus, the capitalist wages is very poor and so, the total amount of the capitalist savings is not invested and savings can only produce income to the extent being invested. He argues that abstinence to consume on the part of the capitalist only contributes to growth if the savings are then invested. This means that if consumption is not controlled, growth will be retarded. He stated further that when the opportunities for profitable investment are exhausted, savings cannot be converted into investment. At this point abstinence on the part of the capitalist only reduces the amount of effective demand in the economy, thereby reducing the possibility of growth.

Keynesian Theory

Keynes (1936) defined savings as the surplus of income over expenditure on consumption; this implies that savings are part of disposable income that has not been voted for consumption. He maintained that on the aggregate, the surplus of income over consumption (otherwise called savings) is not different from additional capital equipment (i.e. Gross fixed capital formation or gross domestic investment). Savings are therefore a mere residual, the decision to consume and the decision to invest between them determines the volume of national income accumulated in a period.

In the Keynesian view, increase in income would result in higher savings rates, thereby making savings 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. Keynes stated that, varying levels of income cannot be sustained in an economy unless the amounts of savings at these levels of income are offset by an equivalent amount of investment. Therefore, Keynesian theory draws the equilibrium relations between income, savings and investment. Savings are also the difference between income and planned consumption, i.e.

$$S = Y - C$$

Saving function is derived from the consumption function. Planned saving is a function of aggregate income, i.e.

$$S = f(Y)$$

Keynes' savings function has the following characteristics: Savings are stable function of income, varies directly with income and the rate of increase in savings are less than the rates of increase in income. This means that at very low levels of income as well as at zero income, since consumption is positive, savings must be negative. As income increases, dissaving vanishes and savings becomes positive. In Keynes' terminology, this feature suggests that the value of the marginal propensity to save (MPS) is positive but less than one, stated linearly as;

$$S = Y - C = Y - (a + bY); \text{ [where } C = a + bY]$$

$$\text{Or } S = -a + (1 - b) Y \text{ [} 0 < (1 - b) < 1]$$

Permanent Income Hypothesis

Friedman (1957) in his Permanent Income Hypothesis (PIH) attempts to elucidate proportional and non proportional relationship between consumption and disposable income. In his view, he attributed the causes of proportional relationship between consumption and disposable income on changes of wealth rather than measured income. He classified actual income and consumption into permanent and temporary components. According to him, the effect of a change is permanent or temporal, if such change affects consumption. His theory described how agents spread consumption over their lifetimes. The hypothesis supposed that a person's consumption at a point in time is determined not just by their current income but also by their expected income in future years, ie, their "permanent income". In its simplest form, the hypothesis states that changes in permanent income, rather than changes in temporal income are what drive the changes in a consumer's consumption patterns.

Friedman further explained income to consists of a permanent (anticipated and planned) and a transitory (windfall gain/unexpected) component. In the permanent income hypothesis model, the key determinant of consumption is an individual's lifetime income, not his current income. A consumer's permanent income is determined by their assets; physical (shares, bonds, property) and human (education and experience), these influences the consumer's ability to earn income. Workers save if they expect that their long-term average income, i.e. their permanent income, will be less than their current income. It is true that permanent income theory is concentrated mainly on long-run dynamics and relations, while Keynes focused primarily on short-run considerations. The emergence of the permanent income hypothesis (PIH) raised serious debates and different views tried either to verify or to falsify the theory of Friedman. In the later case, arguments were directed mainly towards stressing that the relation between consumption and disposable income still follows (more or less) the mechanism supposed by Keynes.

Financial Liberalization Theory

MacKinnon (1973) and Shaw (1973) explained that savings are not determined by income as postulated by Keynes (1936) and Kaldor (1940) but by real interest rate. They viewed low interest as a course of low saving which means that firms or business enterprises are discouraged to invest funds through the formal banking system. High real interest rate is seen as strengthening the market institution and increasing the level of savings. The authors argued that financial liberalization brings forth a shift from lower productivity investment to higher productivity investment intermediated by the financial sector. It can equally discourage savings, especially if the saver targets a given level of future income Dornbush, (1990).

The Financial Liberalization hypothesis as developed by Mckinnon and Shaw (1973) sees the role of government intervention in the financial markets as a major constraint to savings mobilization, investment, and growth. Government's role in controlling interest rates and directing credit to priority sectors of the economy in developing countries inhibits savings mobilization and impedes the holding of financial assets, capital formation, and economic growth. Indirectly, ceiling on deposit interest rates discourages financial savings, which leads to excess liquidity outside the banking system. According to Mckinnon and Shaw (1973), persistent government intervention and involvement in the financial system through the regulatory and supervisory network, particularly in controlling interest rates and the allocation of credit, tends to distort financial markets. Government intervention, thus adversely affect savings and investment decision of market participants and lead to fragmentation of financial mediation. The ultimate

result is a financial repressed economy. The central idea of Mckinnon and Shaw (1973) is that financial markets should be liberalized and allocation of credit determined by the free market. In this case, the real interest rate will adjust to its equilibrium levels and low yielding projects will be eliminated. This will lead to increase in overall efficiency of investment, savings and total real supply of credit would increase. This in turn induces a higher volume of investment which will then lead to economic growth. The main critique of the financial liberalization theory emanates from the imperfect information Paradigm. This school of thought disagrees with the proposition of these scholars and examines the problem of financial development in the context of information asymmetry and costly information that results in credit rationing. As observed by Stiglitz and Weiss (1981), asymmetric information leads to two serious problems, viz; adverse selection and moral hazard. The implication is that the information asymmetries of higher interest rates which actually follow financial reforms and financial liberalization policies in particular worsen risk taking throughout the economy and hence threatens the stability of the financial system, which can easily lead to financial crises while the Feedback theory suggests a two-way causality between economic growth and financial development.

Life Cycle Income Hypothesis

Ando and Modigliani (1963) propounded theories on life –cycle saving which agreed with Friedman’s line of argument. They postulated the Life-Cycle Income Hypothesis (LIH) in which an individual maximizes present value of labour income over the remaining working life. Hence, the determinants of savings are current income, expected labour income and non-wealth. The life-cycle hypothesis suggests that individuals plan their consumption and savings behaviour over their life-cycle. They intend to level out their consumption in the best possible manner over their entire lifetimes, by accumulating when they earn and dis-saving when they are retired. The assumption is that all individuals choose to maintain stable lifestyles. This mean that people usually don't save up a lot in one period to spend furiously in the next period, but keep their consumption levels approximately the same in every period. The first period should be ignored otherwise housing depreciates below its marginal rate of substitution.

2.2 Empirical Review

Ogbokor and Samahiya (2014) empirically investigated the determinants of savings in Namibia through the use of co-integration and error correction mechanisms for the period running from 1991 to 2012. The study made use of quarterly and annual time series data sets. The paper relied heavily on unit root tests, co-integration and error correction procedures as ways of investigating the characteristics of the variables and the long-run relationship between savings and its determinants. The results of the co-integration tests suggest that there is a long-run relationship between savings and the explanatory variables used in the study. The results suggest that inflation and income have positive impact on savings, while population growth rate has negative effects on savings. They also explained that the deposit rate and financial deepening have no significant effect on savings. In addition, the results reinforced the work of Iipumbu et al (1999) and opined that the need to achieve a higher rate of savings in Namibia by improving upon income levels cannot be overstretched.

Teshome, Kassa, Emana and Haji (2013) examined determinants of rural household Savings in the East Hararghe Zone, Oromia Regional State of Ethiopia using survey data generated from 700 sample households. The results of this study showed that 79.2% of the entire sample households had savings during the survey time. From the probit model used for analysis, nine (9) variables, namely household head education level, livestock holdings, access to credit service, income, investment, training participation, contact with extension contacts, forms of savings and saving motives were found to have significant influence on the amount of households savings. The results of the study showed that rural households do save irrespective of their low income, which they save mainly in an informal savings institutions showing that there are high need for provision of formal financial savings institution for easily accessibility.

Kudaisi (2013) investigated the determinants of domestic savings in West Africa from 1980-2006. The theoretical foundation for the study was anchored on Hall hypothesis of consumption. The Hall hypothesis states that consumption is a function of lifetime "permanent income", rather than income in each period independently. The model assumes that capital markets are perfect and interest rate varies over time across countries and consumers have rational expectations regarding the income generating process. The result showed that the sizes of effect of the dependency ratio and interest rate on domestic savings were negative and insignificant, growth of GDP though positive but statistically insignificant, only the government budget surplus and inflation rate are found to be statistically significant. The development of West Africa financial market has a positive effect on savings, and finally, the real interest rate, and terms of trade have insignificant impact on the level of saving in West Africa.

Ayalew (2013) studied the determinants of domestic savings in Ethiopia using time series annual data form 1970/71-2010/11. In the study, he made effort to identify the long run and short run determinants of domestic savings in Ethiopia using an ARDL bounds testing Approach and Error correction model (ECM) to capture both short run and long run relationships. The Estimated results revealed that growth rate of income (gPCI), budget deficit ratio (BDR) and inflation rate (INF) were statistically significant short run and long run determinants of domestic savings in Ethiopia. But, depositing interest rate (IR), current account deficit ratio (CADR) and financial depth (DFD) were found to be statistically insignificant determinants in the long run. However, in the short run, DFD and IR found to have statistically significant meaning in explaining domestic savings in Ethiopia. The speed of adjustment has value 0.63768 with negative sign, which showed the convergence of savings model towards long run equilibrium. The overall findings of the study underlined the importance of raising the level of income in a sustainable manner, minimizing the adverse impacts of budget deficit and inflation rate and creating competitive environment in the financial sector.

Samantaraya and Patra, (2014) examined the role of various determinants of household savings in India with the latest available data. It employed ARDL approach for this purpose due to its suitability for estimating an equation with a mix of stationary and nonstationary variables of order (1) and address potential endogeneity problems. The estimated results revealed that GDP, dependency ratio, interest rate, and inflation have statistically significant influence on household savings in India, both in the long run and short run. As regards policy implications, we suggest that ensuring price stability and avoiding any disruption to the growth process will be useful for augmenting savings and sustaining the savings-growth spiral in India.

Sebhatu (2012) analyzed the determinants of savings behaviour of cooperative members in Tigray region of Ethiopia. The data for the study was obtained from randomly selected 120 rural household savers from eight financial cooperatives. The empirical analysis, using multiple regression model shows that gender, household income, amount of loan borrowed and year of cooperative membership significantly raise household savings. Therefore, these factors have to be considered in designing strategies aimed at improving the savings pattern of cooperative members.

Adelakun (2015) observed the relationship between savings, investment and economic growth. The outcome of the work was the determination of which of the inputs of production contributes more to economic growth in Nigeria. The study made use of time series data spanning twenty-nine years using error correction model. The result showed a positive relationship between savings, investment and economic growth in Nigeria. Of the determinants of savings considered in the study, inflation rate contributes negatively to savings, while interest rates positively affect savings. All these confirm economic theory. The striking feature of the study however is the confirmation of the impact of labour on economic growth, which according to the study far outweighs the contribution of capital. Jibrina, Danjuma and Blessing (2014) investigated private domestic savings by commercial banks and economic growth in Nigeria. They reviewed theories on the determinants of private domestic savings and the impact of savings on economic growth, they also examined the determinants of private domestic savings in Nigeria during the period covering 1986 – 2010. The broad objective is to identify instruments to be used by commercial banks to mobilize savings and to also examine the impact of that private domestic savings on economic growth of Nigeria. They made an important contribution to the literature by evaluating the magnitude and direction of the effects of money supply, interest rate, inflation rate, exchange rate and per capita income on private domestic savings. They went further to examine the impact of private domestic savings and commercial banks credit to private sector on economic growth of Nigeria. The framework for analysis involved the estimation of a private domestic savings function and economic growth function derived from the Life Cycle Hypothesis. The study employed classical least squares method with the aid of Error-Correction modeling procedure, co-integration, granger causality and stationarity test which minimize the possibility of estimating spurious relations, while at the same time retaining long-run information in the work; as well as the nature of causality between independent variables and dependent variables of the two functions specified in this research work. The results of the analysis showed that the money supply and per capita income are strong determinants of private domestic savings for the period under study and private domestic savings and commercial banks credit to private sector turnout to be the leading factors that propel economic growth in Nigeria according to this research results. It was also revealed that, unethical banking practices by Nigerian commercial banks have rendered interest rate impotent to drive savings mobilization.

Chipote and Tsegaye (2014) studied the determinants of household savings in South Africa over the period 1990-2011. Based on the life cycle hypothesis upon which the study is based as well as empirical literature, they paid attention to the effects of age dependency ratio, the level of household income, inflation and real interest rate on household savings. The study employed the Augmented Dickey-Fuller and Phillips Perron unit root tests to test for stationarity in the time series. The Johansen cointegration and the Error Correction Mechanism are employed to identify the long-run and short-run dynamics among the variables. The results of the study reveal that

contrary to a theoretical expectation, the level of income and household savings are negatively related, implying that South African households do not only save but increasingly rely on debt to finance their spending. On the other hand age dependency ratio, inflation and real interest rate have positive long run relationships with household savings rate. The study recommends that the government should embark on counter-cyclical fiscal policy to avoid the development of excessive current account deficits during periods of more rapid economic growth, rising investment and falling savings. Aleemi, Ahmed and Tariq (2015) studied the determinants of savings: empirical evidence from Pakistan. They analyzed the impact and relationship between national savings rates and some selected determinants of savings namely inflation, real interest rate, real GDP growth rate and Government current expenditure, by using annual data for the period of 1980-2010. The variables in their model are based on well-established economic theory and long standing relationship. Supplemented in a dynamic regression model with the ARMA specification and well specified model; it was found that inflation, interest rate and government expenditures are negatively affecting the national savings rate during the length of this study for the economy of Pakistan.

Nwachukwu (2010) investigate the determinants of Private Savings in Nigeria and reviewed savings behaviour and policy options to increase domestic savings. He made an important contribution to the literature by evaluating the magnitude and direction of the effects of the following key policy and non-policy variables on private savings, Income growth, interest rate, fiscal policy, and financial development. The framework for analysis involves the estimation of a savings rate function derived from the Life Cycle Hypothesis while taking into cognizance the structural characteristics of a developing economy. The study employs the Error-Correction modeling procedure which minimizes the possibility of estimating spurious relations, while at the same time retaining long-run information. The results of the analysis showed that the savings rates rise with both the growth rate of disposable income and the real interest rate on bank deposits. Public savings seem not to crowd out private savings; suggesting that government policies aimed at improving the fiscal balance has the potential of bringing about a substantial increase in the national savings rates. Finally, the degree of financial depth has a negative but insignificant impact on savings behaviour in Nigeria.

Akpan, Udoh and Aya (2011) examined factors that affect household savings of rural agro-based firm workers in the South-south region of Nigeria. He used two-stage least squares method of simultaneous equation model for the analysis. Cross-sectional data were collected from 250 randomly selected workers of five agro-based firms in the study areas. The results of the analysis revealed that income, tax, job experience, education, family size and membership of a social group influence savings attitude of workers. To promote household savings among agro-based workers in Nigeria, policies aim at periodic increase in worker's salary and reduction in tax rate in line with the changing pattern of macro-economic variables in the country were advocated. Others include policies that will promote birth control, increase public awareness on the on-going family planning programmed in the country, and encourage social group formation among workers as well as those aim at reduction in agricultural production constraints.

3. DATA AND METHOD OF ANALYSIS

3.1 Data

The data used for this study are the time series covering 1980 – 2015 period and are obtained from the statistical Bulletin of Central Bank of Nigeria (CBN), annual reports and Statement of Account of various issues and online service from – data.worldbank.org/indicators.

3.2 Model Specifications

This study is anchored on Keynesian Theory who postulates savings as the surplus of income over expenditure on consumption; this implies that savings are part of disposable income that has not been voted for consumption.

He maintained that on the aggregate, the surplus of income over consumption (otherwise called savings) is not different from additional capital equipment (i.e. Gross fixed capital formation or gross domestic investment). Savings are therefore a mere residual, the decision to consume and the decision to invest between them determines the volume of national income accumulated in a period. (Keynes, 1936)

He stated that, increase in income would result in higher savings rates, thereby making savings 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. Keynes stated that, varying levels of income cannot be sustained in an economy unless the amounts of savings at these levels of income are offset by an equivalent amount of investment. Therefore, Keynesian theory draws the equilibrium relations between income, savings and investment. Savings are also the difference between income and planned consumption, i.e.

$$S = Y - C \quad 1$$

$$C = a + by \quad 2$$

$$S = Y - a - by \quad 3$$

Thus, in order to provide solution to the research question raised in the study, the specification of the Keynesian savings function will incorporate variables such as domestic private savings (constant LUC), GDP per capita (constant LUC), and Household Consumption, Domestic Credit to Private Sector (% GDP) and Real interest rate%. Therefore the modified form of the model can be specified as

$$DPS = f(GDPPC, HHC, INTR, DCPS) \quad 4$$

and equation 4 can be stated linearly as

$$DPS = B_0 + B_1 \ln GDP + B_2 \ln HHC + B_3 \ln INTR + B_4 \ln DCPS + u_t \quad 5$$

Where, DPS=Domestic Private Savings (constant LUC)), GDP = GDP per capita (constant LCU), HHC = Household consumption, INTR= Real Interest Rate %, DCPS = Domestic Credit to Private Sector (% GDP) B_1 - B_4 = Coefficients of the parameters, B_0 = Constant Term and U_t = Error Term

4.1 Presentation of Result

Unit Root Test

The Augmented Dickey-Fuller (ADF) and Philip peron statistic was employed to test for the existence of unit roots in the data using trend and intercept. The test results are presented below:

Table 1: Augmented Dickey Fuller Unit Root Test
Trend and Intercept (Series at Level)

Series	ADF Test Statistic	5% Critical values	10% critical values	Remarks
DPS	-1.770258	-3.544284	-3.204699	Stationary
LGDPPC	-2.906263	-3.544284	-3.204699	Not Stationary
LHHC	-2.710796	-3.544284	-3.204699	Not Stationary
RINTR	-6.321555	-3.544284	-3.204699	Stationary
DCPS	-2.728355	-3.544284	-3.204699	Not Stationary

Sources: Researcher's compilation from E-views 7

Table 2: Augmented Dickey Fuller Unit Root Test
Trend and Intercept (Series at 1st Difference)

Series	ADF Test Statistic	5% Critical values	10% critical values	Remarks
DPS	-9.734730	-3.548490	-3.207094	Stationary
LGDPPC	-5.054229	-3.548490	-3.207094	Stationary
LHHC	-8.720845	-3.548490	-3.207094	Stationary
RINTR	-9.383139	-3.548490	-3.207094	Stationary
DCPS	-5.238271	-3.548490	-3.207094	Stationary

Sources: Researcher's compilation from E-views 7

Table 3: Phillips Perron Unit Root Test
Trend and Intercept (Series at Level)

Series	PP Test Statistic	5% Critical values	10% critical values	Remarks
DPS	-1.636948	-3.544284	-3.204699	Stationary
LGDPPC	-2.863238	-3.544284	-3.204699	Not Stationary
LHHC	-2.726156	-3.544284	-3.204699	Not Stationary
RINTR	-6.749944	-3.544284	-3.204699	Stationary
DCPS	-2.442382	-3.544284	-3.204699	Not Stationary

Sources: Researcher's compilation from E-views 7

Table 4: Phillips Perron Unit Root Test
Trend and Intercept (Series at 1st Difference)

Series	PP Statistic	Test Critical values	5% critical values	10% critical values	Remarks
DPS	-20.68910	-3.548490	-3.207094	-3.207094	Stationary
LGDPPC	-5.032599	-3.548490	-3.207094	-3.207094	Stationary
LHHC	-8.629303	-3.548490	-3.207094	-3.207094	Stationary
RINTR	-35.19423	-3.548490	-3.207094	-3.207094	Stationary
DCPS	-9.156031	-3.548490	-3.207094	-3.207094	Stationary

Sources: Researcher's compilation from E-views 7

Co-integration Test

Johansen co-integration test was used to test for the presence of co-integration between the series of the same order of integration. Johansen co-integration test for the series; DPS and the explanatory variables; LGDPPC, LHHC, RINTR and DCPS are summarized under table 5. Based on the lag length criteria, the model with lag 1 was chosen with the linear deterministic test assumption.

Table 5: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.689779	88.71453	69.81889	0.0008
At most 1 *	0.531857	48.91849	47.85613	0.0396
At most 2	0.376793	23.11310	29.79707	0.2405
At most 3	0.183821	7.035305	15.49471	0.5735
At most 4	0.003791	0.129154	3.841466	0.7193

Trace test indicates 2 co-integrating eqn(s) at the 0.05 level

In Johansen's Method, the trace statistic determines whether co-integrated variables exist. As observed under unrestricted co-integration rank test, the trace statistic indicated two co-integrating equation.

Vector Error Correction Model

The essence of this estimation procedure is to ascertain the speed of adjustment since the deviation from the long run equilibrium is corrected through the short run adjustments. Having established that there is co-integration equation among the variables, the study validates the reason to estimate the vector error correction model (VECM). The result for the VECM is stated in table below:

Table 6: VECM SYSTEM EQUATION

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.609062	0.142201	-4.283098	0.0002
C(2)	-0.477874	0.169133	-2.825435	0.0088
C(3)	-2.09E+13	8.12E+12	-2.575593	0.0158
C(4)	2.63E+12	3.51E+12	0.747587	0.4612
C(5)	-3.02E+11	9.33E+10	-3.235386	0.0032
C(6)	4.78E+10	2.17E+10	2.202429	0.0364
C(7)	1.51E+12	4.65E+11	3.243242	0.0031

R-Squared = 0.601615, F-Statistics = 6.795598, Prob(F-Statistic) = 0.000179, DW = 1.89

Source: Compiled from Eviews 7

The presence of long run equilibrium relationship among the variables as found from the Johansen co integration led to the application of VECM. With this approach, both the long run equilibrium and short run dynamic relationships associated with variables under study is established.

Table 7: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
LGDPPC does not Granger Cause DPS	35	11.8315	0.0016
DPS does not Granger Cause LGDPPC		1.97639	0.1694
LHHC does not Granger Cause DPS	35	10.2130	0.0031
DPS does not Granger Cause LHHC		3.59346	0.0671
RINTR does not Granger Cause DPS	35	0.74311	0.3951
DPS does not Granger Cause RINTR		2.72206	0.1088
DCPS does not Granger Cause DPS	35	4.16836	0.0495
DPS does not Granger Cause DCPS		0.09141	0.7643

As seen in 'table 7, the statistics for the causality between LGDPPC and DPS is found to be 11.832 as F-statistic value with its corresponding P-value as 0.0016. However, DPS and LGDPPC are found to be 1.976 as F-statistic value with its corresponding P-value as 0.1694. More so, for LHHC=>DPS is 10.213 while its P-value is [0.0031] while DPS and LHHC is found to be 3.594 as F-statistic value with its corresponding P-value as 0.0671. The causality

for DCPS=>DPS is 4.16836 while its P-value is [4.168] while DPS and DCPS are found to be 0.09141 as F-statistic value with its corresponding P-value as 0.7643.

4.2 DISCUSSIONS OF FINDINGS

This section presents the analysis and discussion of the findings. It describes the basic information derived from the analysis of each variable in the model estimated and its associated statistical output. More so, effort is made to develop story out the data employed, thereby drawing out the links between the results of the analysis, existing theory and research.

Unit Root Test

Observing the variables; DPS, LGDPPC, HHC, RINTR and DCPS, all series are not stationary at level. However, the series became stationary at first difference that is 1(1). The results showed that the time series are integrated of the same order; I(1), with the application of both ADF and PP tests.

Co-integration Test

The Johansen co-integration test indicated that there are two co-integrated equations. The trace statistics of Johansen's co-integration showed that co-integrated variables exist. As observed from the first and second trace statistics, its value is greater than 5% critical value (i.e. [88.71453 > 69.81889] and [48.91849 > 47.85613] while other trace statistics are less than the 5% critical values such as [23.113 < 29.79707], [7.035 < 15.49] and [0.129 < 3.84]. The first and second trace statistics are significantly greater than 0.05 critical value. In other words; the null hypothesis of no co-integration among the variables is rejected since at least one equation at 5% level is significant. The test result shows the existence of a long-run equilibrium relationship among the variables.

Vector Error Correction Model

The Error correction term met the required conditions. The significance of rule of ECM holds that negative and statistical significant error correction coefficients are necessary conditions for any disequilibrium to be corrected. In light of this, the coefficient of ECM(-1) is -0.609. The negative sign of the coefficient satisfied one condition while the fact that its P-value [0.0002] is less than 5% [0.05] level of significance satisfied the second condition of statistical significance. The coefficient indicated that the speed of adjustment between the short run dynamics and the long run equilibrium is 60.9%. Thus, ECM will adequately act to correct any deviations of the short run dynamics to its long-run equilibrium by 60.9% annually.

The computed coefficient of multiple determination (R^2) value of 0.601615 indicated that 60.2% of the total variation in domestic private savings (DPS) is accounted for, by the explanatory variables: gross domestic product (LGDPPC), household consumption (LHHC), real interest rate (RINTR), and domestic credit to private sector (DCPS) while 39.8% of the changes in domestic private savings (DPS) is attributable to the influence of other factors not included in the regression equation.

4.3 Implication of the Results

It was found that interest rate significantly determines the level of domestic private savings in Nigeria within the period. Thus, it is estimated from the result that 1% increase in the real interest rate (RINTR), will bring about 4.8% increases in domestic private savings (DPS). The sign borne by the parameter estimate of real interest rate (RINTR) did not meet the apriori expectation. However, as cost of borrowing increases, it will discourage increase in output which will have negative effect on savings level. However, increase in income was found to be negatively related with domestic private savings (DPS). The reason for the negation in theoretical point of view could be attributed to rising cost of borrowing (interest rate) which will reduce the propensity to save. This will have a transmission mechanism effect on income. Thus, rise in interest rate will cause decrease in domestic private savings and decrease in domestic private savings will cause decrease in income.

More so, income was found to have significant impact on domestic private savings in Nigeria within the period under study. The result reveals that 1% increase in income (LGDPPC) on the average will bring about decrease in domestic private saving by 2.1%. It is recalled that Keynes opined that there positive relationship between consumption expenditure and income. Therefore, any increase in income will cause increase in the consumption expenditure thereby leading to decrease in domestic private savings level. The granger causality test shows that there is significant causal relationship existing between income and domestic private savings in Nigeria within the period under study. The statistics for the causality between LGDPPC and DPS is found to be 11.83 as F-statistic value with its corresponding P-value as 0.1694. This implies that there is one-way causation which runs from income to domestic private savings. Hence, income causes domestic private savings to change significantly.

5.1 SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSIO

Summary of Findings

This research work investigates determinants of private domestic savings in Nigeria for the period of 1980-2015. In the model specified, domestic private savings (DPS) is a function of gross domestic product (LGDPPC), household consumption (LHHC), real interest rate (RINTR) and domestic credit to private sector (DCPS). With the aid of statistical and econometric techniques employed, the following results were found:

1. Interest rate determines the level of domestic private savings in Nigeria within the period under study.
2. Income has significant impact on domestic private savings in Nigeria within the period under study.
3. There is causal relationship existing between income and domestic private savings in Nigeria within the period under study.

5.2 Recommendations

Based on our findings, the policy implications are in three directions.

1. In order to sustain the use of interest rate to determining domestic private savings, the cost of borrowing (real interest rate) should be reduced so as to boost investment projects which will promote domestic private savings in Nigeria.

2. Government should make a plan to increase salaries of the workers which will in turn raise income levels of the households. Also the cost of living should be reduced with the provision of necessities of life such as food, stable power, good health facilities, good housing and clothing at low cost. Then, people will be able to accumulate enough and have surplus as savings for investment.

3. Since income was found to cause significant change on domestic private savings, proper and prompt attention should be given to the determinants discussed especially on income and interest rate since they are among the major factors affecting domestic private savings which ultimately lead to economic growth of Nigeria.

5.3 Conclusion

The study employed ex-post facto research design using Nigeria's data obtained from IMF-IFS ONLINE 2013 and CBN statistical bulletin of various issues. The empirical results were on Augmented Dickey Fuller test and Philip Perron. In the second step, Johansen cointegration test was conducted. The presence of long run equilibrium found led to the use of Error Correction Mechanism (ECM).

On the basis of empirical results, interest rate determines the level of domestic private savings in Nigeria within the period under study. Income has significant impact on domestic private savings in Nigeria within the period under study and there is causal relationship existing between income and savings in Nigeria within the period under study.

REFERENCES

- Abiola, A. & Egbuwalo, M.O. (2010). Savings, investment, productivity and economic growth in Nigeria. *Journal of Research in National Development* 8 (2).
- Adelakun, O. J. (2015). An investigation of the determinants of savings and investment in Nigeria, *International Economics and Business* 1 (21).
- Akpan, S. B. Udoh, E. J. & Aya A. E. (2011). Analysis of savings determinants among agro-based firm workers in Nigeria: a simultaneous equation approach. *Research on Humanities and Social Sciences* 1(3), 1.
- Aleemi, A. R. Ahmed, S. & Tariq, M. (2015). Determinants of savings: empirical evidence from Pakistan. *International Journal of Management Sciences and Business Research*, 4, 63.
- Ando A. & Modigliani F. (1963). The life cycle hypothesis of savings: aggregate implications and economic growth.
- Anyanwu, J. C. and Oaikenan, H. E. (1995). *Modern macroeconomics, theory and applications* Nigeria, Benin city: Joane educational publishers ltd.

- 592 Ayalew, H. A. (2013). Determinants of domestic saving in Ethiopia: An autoregressive,
593 Journal of Economics and International Finance: 5(6) 248-257.
- 594 BigBen , C. O. (2010), Trade balance effect of exchange rate devaluation in Benin Republic.
595 International journal of social science: 2(5), 138-151.
- 596 BOLAJI, A. A. & Olukayode, E. M. (2015). Determinants of financial savings in Nigeria: an
597 empirical analysis of monetary policy stability. Developing Country Studies: 5 (13), 37.
- 598 Central Bank of Nigeria (2002). Annual report and statement of account. Various issues.
599 Central bank of Nigeria, Abuja.
- 600 Chipote, P. & Tsegaye, A. (2014). Determinants of household savings in South Africa:
601 an econometric approach. *Mediterranean Journal of Social Sciences*
602 *MCSEER Publishing, Rome-Italy:5(15),183.*
- 603 Engle, R. F.& Granger, C. W .J. (1987). Co-integration and error correction: representation,
604 estimation and testing.”Econometric 55: 251–276.
- 605 *Friedman, M. (1957). Permanent income hypothesis (PDF). A theory of the consumption*
606 *function. Princeton University Press. ISBN 0-691-04182-2.*
- 607 Fry, M. J. (1980). Saving, investment, growth and the cost of financial repression. World
608 Development: 8 (4), 317-327.
- 609 Gina, A. N. C. Rainier, D. M. & David, A. (2012). Determinants of saving among low-
610 income individuals in rural Uganda: evidence from assets Africa, Home >Journal >
611 Social Science and humanities>AASoci> : 2(4).
- 612 Gujarati D.N. (2003). Basic econometrics. 4th ed. Boston: McGraw-Hill.
- 613 Gujarati, D .N. (2004). Basic econometrics. New Delhi: Tata McGraw-Hill.
- 614 Gujarati, D. N. (2005). Basic econometrics 4th. Ed. (Tata McGraw- Hill Edition) New Delhi:
615 Tata McGraw-Hill publishing company ltd.
- 616 Ilyas, M., Sabir, H. M. , Shehzadi, A. & Shoukat, N. (2014). Inter-relationship among
617 economic growth, savings and inflation in Pakistan. Journal of Finance and Economics,
618 2(4),125-130.
- 619 Iyoha, M. A. (1998). Rekindling investment for economic development in Nigeria: the
620 macroeconomic issues: in Rekindling Investment for Economic Development in Nigeria.
621 Ike, P.C.& Umuedafe, D.E. (2013). Determinants of savings and capital formation among
622 rural farmers in Isoko north local government area of Delta State, Nigeria. Asian
623 Economic and Financial Review 3 (10).
624
- 625 Jibrin,M. S. Danjumab, I.Blessing, S. E. (2014). Private domestic savings mobilization by

- commercial banks and economic growth in Nigeria. *Beykent University Journal of Social Sciences* – 7(1), 1307-5063.
- Kaldor, N. (1940). A model of the trade cycle. *Economic Journal*, 50:78 – 92.
- Keynes, J.M (1936), *General theory of employment, invest and money*. London: MacMillan Company Ltd.
- Kennedy, K. A. & Dowling, B. R. (1970). *Determinants of personal savings in Ireland – econometric inquiry'*, *Economic and Social Research Institute, Economic and Social Review*, 2 (1), 19-51.
- Kudaisi, B. V. (2013), Savings and its determinants in West Africa countries. *Journal of Economics and Sustainable Development*. (Online): 4(18).
- Lewis, A. (1970). *The theory of economic growth*. New York: Harper and Row.
- MacKinnon, J. G. (1991). Critical values for cointegration tests.” Chapter 13 in *Long-Run Economic Relationships: Readings in Cointegration*, edited by R. Engle and C. Granger. Oxford: Oxford University Press.
- Mackinnon, R.I (1973). *Money and banking in economic development*. Washington D.C: The Brooking Institute.
- Malthus, Robert. T. (1951). *Principles of political economics*. New York. 317.
- Nnanna, O. J. (2003). Promoting savings and investment culture for national development: *Central Bank of Nigeria Economic and Financial Review*, 4(3), September.
- Nnanna, O. J. (2003). The role of central bank of Nigeria in enterprise financing. *Central Bank of Nigeria Bullion*, 27(1), 19-28.
- Nwachukwu, T. (2010). Determinants of private saving in Nigeria. *Journal of Monetary and Economic Integration*: 11 (2), 84.
- Nwachukwu, T. E & Egwaikhide, F. O. (2007). An error-correction model of the determinants of private saving in Nigeria. A Paper presented at the African Economic Society (AES) Conference, Cape Town, South Africa, and July 2007.
- Ogbokor, C.A. and Samahiya, O. M. (2014), A time series analysis of the determinants of savings in Namibia. *Journal of economics and Sustainable Development*: 5(8), 52.
- Olayemi, S. O. O. & Michael, J. O. (2013). Real interest rate and savings mobilization in Nigeria. *European Centre for Research Training and Development UK* (www.e-journals.org) 28
- Orji, A. (2012) Bank savings and bank credits in Nigeria: determinants and impact on economic growth. *Journal of economic and financial issues* 2(3):357-372.
- Preecha Swasdpeera, P. & Pandey, I. M. (2012). Determinants of personal saving: a study of

662 salaried individuals in Thailand. Article provided by inderscience enterprises limited in
663 its journal Afro –Asian J .of finance and accounting.

664 Raut, L. K. & Virmani, A. (1990). Determinants of consumption and savings behavior in
665 developing countries. Oxford journals social science World Bank economic review: 3(3),
666 379 -393.

667 Samantaraya, A. & Patra, S. K. (2014). Research Article determinants of household savings
668 in India: an empirical analysis using ARDL. Economics Research International, July
669 2014 Article 8.

670 Sebhatu, K. T. (2012). Determinants of saving behaviour of cooperative members survey
671 evidence from Tigray region, Ethiopia. Journal of Research in Economics and
672 International Finance (JREIF): 1(5), 150-158.

673 Smith A. (1776). An enquiry into the nature and causes of the wealth of nations university
674 of glasgows

675 Shaw, E.S (1973) Financial deepening in economic development” New York: Oxford
676 University press.

677 Teshome, G. Kassa, B. Emanas, B.and Haji, J.(2013). Determinants of rural household
678 savings in Ethiopia: Journal of Economics and Sustainable Development: 4(.3), 66.

679 World Bank (2007). World development indicator 2007 on CD-ROM World Bank
680 Washington DC.