

## Domestic Savings and Economic Growth in Nigeria (1980-2015)

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**Abstract:** The work investigated the Impact of Domestic Savings on the Economic Growth of Nigeria (1980 and 2013.) it was guided by three major objectives: i.e To determine if there exists any long-run relationship between domestic savings and economic growth in Nigeria; to ascertain if domestic savings can contribute significantly to Nigeria's economic growth; and to determine the causal relationship between domestic savings and economic growth in Nigeria. The study adopted Multiple Regression Analysis based on Ordinary Least Square (OLS) technique using secondary data obtained from Central bank of Nigeria. The study adopted the following variables (RGDP), total domestic saving (TDS), per capita income (PCI) and interest rate (INT) which represented the explanatory variables and sourced mainly from CBN statistical bulletin. A test on unit root was conducted using Augmented Dickey-Fuller test which indicated that all the variables were stationary at first difference of 5% level of significance. The Johansen cointegration test revealed the presence of long run relationship among the variables while the granger causality test showed that both domestic savings and real gross domestic product granger cause each other. ECM was used to ascertain the impact of domestic savings on economic growth of Nigeria and the result show that domestic savings has positive impact on economic growth. The study concluded however that the observed impact can only be made manifest when it is co-joined with other variables; namely per capita income and interest rate. We recommended among others, that the government and the monetary authorities should make policies which would help to boost the savings culture of the people.

**Key words:** Savings • Economic Growth • Unit Roots • Cointegration • Error Correctum

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### INTRODUCTION

Economic growth is a fundamental requisite to economic development. This informs why in Nigeria growth continuous to dominate the main policy thrust of government's development objectives. Essentially, economic growth is associated with policies aimed at transforming and restructuring the real economic sectors. Nevertheless, the lack of sufficient domestic resources, Savings and investment to support and sustained the sectors is a major impediment to economic development in the country because of the gap between savings and investment.

Savings represents that part of income that is not spent on current consumption, but when applied to capital investment, output increases[1]. This output is increased by introducing new innovations in form of technology, which leads to a faster economic growth and development by creating the possibility of investing in a new plant that increases the productivity of the economy.

Savings provides developing countries (including Nigeria) with the much needed capital for investment which improved economic growth. Increase in savings leads to increase in capital formation and production activities that will lead to employment creation and reduce external borrowing of government. Low domestic saving rates may maintain low-growth levels because Harrod Domar model suggested that savings is an important factor for economic growth. Malunond [2] asserts that depending on foreign sources to financed investment makes the country highly sensitive to external shocks.

Therefore, domestic savings will continue to be a priority as a source of investment financing in order to minimize vulnerability to international economic fluctuations. Many empirical study studies have been carried out on the determinants of savings across the world. The reason has been that savings rate of many countries; particularly the less developed countries have been declining. In addition the role of investment (via Savings) in economic growth and development has

induced many researchers to continuously investigate the factors that influence savings[3].

In Nigeria, national savings increase continuously in absolute terms from 1981 to 1994 with a continuous increased value of N6562.60million and N8062901.35million respectively. The value decreased to N108490.3million in 1995 and continuously increased to N8062901.35million in 2012. In terms of the growth rate, national savings has been fluctuating and declining. For example in 1982 the growth rate was 14percent and decreased to 11.28 percent in 1986. As capital formation through savings mobilization, is an important factor in economic growth, countries that are able to accumulate high level of capital, tend to achieve faster rates of economic growth and development[4].

Therefore, to finance adequate investment required for proper economic growth, every economy needs to generate sufficient savings or borrow from abroad. However, borrowing from abroad is not a proper strategy for economic growth and development, as it may not only have adverse effects on the balance of payment as these loans will have to be serviced in the future, but also carries a foreign exchange risk. Thus, domestic savings become necessary for economic growth because, they can provide the domestic resources that are needed to fund the investment effort of a country without flipside.

Consequently, financial intermediation is an important activity that helps to promote a more efficient and dynamic economy, by allowing the fund to be channelled from people who might not otherwise, invest in productive use; to people that will invest in productive ventures. Countries that save more tend to grow faster, provided that their financial system is deep [5]. Increasing saving and ensuring that they are directed to productive investment are central to accelerating economic growth and development Soyibo [6]. Higher saving leads to capital accumulation, which in turn leads to economic growth and development [7]. Hence, the enormous importance of saving in the overall growth and development of the Nigerian economy cannot be over stressed. It is against this background that this research seeks to investigate the impact of domestic savings on the economic growth of Nigeria.

**Statement of the Problem:** The growth rate of Nigerian economy remains a challenging issue. It is because, domestic savings which serves as a tool for capital mobilization towards financing aggregate investment, needed for economic growth, is very low. Infact, low level of savings and high interest rate have been identified and

highly conjectured to contribute to the declining level of investment that will promote growth in Nigeria and other less developed countries (LDCs) in general. Thus, having observed the above impediments the need is felt to research on the impact of private domestic savings on Nigerian economy.

In Nigeria, Olusoji [1] identified financial institutions such as deposit money banks as the main agents of savings mobilization. To effectively mobilize deposits, the deposit money banks should offer relatively high deposit rates while inflation rate should be relatively stable. Unfortunately, the deposit rates offered by banks in Nigeria have been generally low in the last five decades with an average of 9%; while inflation rate has been relatively high with an average of 19% in the last decade. Furthermore, a trend analysis of the ratio of total savings to GDP in Nigeria shows that the saving rate has been fluctuating over time. The savings/GDP ratio was 2% in 1960. It increased to 7.8% and 11.6% in 1970 and 1980, respectively. In 1990 and 2000, it declined to 11.1% and 8.4% respectively. In 2011, the savings/GDP ratio in Nigeria stood at 17.4% (CBN, 2011). Clearly, the relatively poor rates at which domestic savings in Nigeria is growing is a source of worry to policy makers in Nigeria. The strong positive correlation which exists between saving, investment and growth is well established in the literature. The dismal growth record in most African countries, relative to other regions of the world has been of concern to economists. This is because the growth rate registered in most African countries is often not commensurate with the level of investment. In Nigeria for instance, the economy witnessed tremendous growth in the 1970s and early 1980s as a result of the oil boom and this led to the investment boom especially in the public sector. However, with the collapse of the oil market in the 1980s, investment fell, thereby resulting in a fall in economic growth. For instance, during the investment boom, gross investment as a percentage of Gross Domestic Product (GDP) was 16.8 and 31.4 percent in 1974 and 1976 respectively, whereas it declined to 9.5 and 8.9 percent, respectively in 1984 and 1985[8].

It has been argued that saving affects investment, which in turn influences growth in output. The transformation of initial growth into sustained output expansion requires the accumulation of capital and its corresponding financing. An output expansion in turn sets in motion a self-reinforcing process by which the anticipated growth encourages investment, which supports growth, as well as financial development. It is certain that without a significant increase in the level of

investment (public and private), no meaningful growth in output would be achieved. Indeed if private investment remains at the current low level, it will slow down potential growth and reduce long run level of per capita consumption and income, thereby leading to low savings. Recent empirical evidences in Nigeria point to a growing informal sector [9,10,11]. This can seriously hamper the savings mobilization efforts of deposit money banks and other financial institutions in Nigeria due to the fact that most informal sector transactions are conducted in cash to avoid official detection. Unfortunately, none of the existing studies in Nigeria has in any way examined how domestic savings impacts on the economic growth of Nigeria. This study seeks to address this research gap. Conclusively, this research work therefore evaluates that impact of domestic savings on the economic growth of Nigeria.

**Research Questions:** To serve as study guide, we provide the following lead questions for which this study seeks to provide the answers:

- To what extent does long-run relationship exist between the domestic savings and economic growth in Nigeria?
- Does domestic saving have any significant impact on the economic growth of Nigeria?
- What degree of causality exists between domestic savings and economic growth of Nigeria?

**Objectives of the Study:** The general objective of this study is to examine the impact of domestic savings on Nigeria's economic growth. The specific objective includes

1. To determine if there exists any long-run relationship between domestic savings and economic growth in Nigeria.
2. To ascertain if domestic savings can contribute significantly to Nigeria's economic growth.
3. To determine the causal relationship between domestic savings and economic growth in Nigeria.

**Research Hypotheses:** The working hypotheses of the study are stated as follows:

- H<sub>0</sub>: Domestic savings does not significantly impact on the economic growth of Nigeria.
- H<sub>0</sub>: There is no long-run relationship existing between domestic savings and economic growth of Nigeria.

H<sub>0</sub>: There is no causal relationship between domestic savings and economic growth of Nigeria

**Significance of the Study:** This research work will be beneficial to all and sundry in the following ways;

- To afford the opportunity for society government as well as school administrators, to access the viability of private domestic savings in Nigeria.
- To act as a source of information on various factors that can determine domestic savings.
- To also guide policy makers towards policy initiation.
- To also help students and researchers to do further work related to this research project.

**Scope of the Study:** This study covers the impact of private domestic saving savings on Nigerian's economy within the period of 1981-2013. This period is chosen based on the available data, which would help us to determine the effectiveness of private domestic savings before and after SAP.

**Limitations of the Study:** No research works especially one on a serious academic fact finding that does not encounter a certain level of stumbling blocks and stress. Hence, it is an arduous work. Therefore, research work to fruition and acceptable academic work, encounter seemingly intractable and insurmountable constraints such as time, financial and data.

**Theoretical Literature:** This section of the work will reviews various theories that will effectively explain the concept of domestic savings and how it is related to economic growth in Nigeria. Most importantly, the theories of economic growth is analysed based on the Life cycle theory as propounded by Gujarati [12]. The neoclassical growth theory of Solow and Swam (1880). The behavioural economic theories were developed by a group of economists in France known as the behaviourist in the early 1950's. The standard saving model was made popular by Jhingan [13] as well as the certainty-equivalence model which was also propounded by Hidehiko (1973). The liquidity constraints theory as developed by Kaldor [14], again the equivalence hypothesis of Ricardian Fame in the early nineteenth century. In addition, the endogenous and exogenous growth theory as propounded by Keynes [15] and Koutsoylannis [16] respectively. All these theories will be x-rayed in the course of this section.

**Life Cycle Theory:** The life cycle theory was developed by Volgar and Werner [17]. In the life cycle theory, is based on the ability for workers to save for their retirement age. The model is built around the consumption/saving behaviour of a representative agent who is assumed to maximize the present value of life time utility, subject to a budget constraint. The budget constraint is equal to the current net worth plus the present value of expected labour income over the remaining working life of the agent under the simplifying assumption of perfect capital markets and perfect foresight of the agent about the “true” income generation process, the model predicts that consumption in a particular period depends on expectation about lifetime income (not on the income in that period, as postulated by the Keynesian model). As income tends to fluctuate systematically over the course of a persons life, saving behaviour is crucially determined by one’s stage in the life cycle. Individuals smoothen consumption over their life times and are consequently, net savers during their working years and dis-savers during retirement.

When the model is extended to the national level, the major determinants of the saving rate (over time in a given country or across countries) are the rate of growth of per capita income and the age structure of the population with respect to the rate of growth of per capita income GY, the simplest version of the life-cycle theory predicts that an increase in the latter will unambiguously increase the aggregate saving rate, because it increase the lifetime resource (and saving) of younger-age groups relative to older-age groups. However when wealth is introduced in the LCM as an additional explanatory variable, the model yield ambiguous conclusion about the relationship between saving and growth for example, young people may have low current income but high life time wealth and may therefore borrow to finance current consumption. If they borrow enough, then at sufficiently high rates of economic growth their life time wealth will be high enough relative to that of their elders so that further increase in the rate of growth will decrease the aggregate saving rate whether higher growth increase or reduce the saving rate depends on whether the age profile of saving is negatively correlated with age.

The second issue relates to the role inflation in determining saving. In the standard life-cycle model the only impact of inflation on saving is through its role in determining real returns to saving (the real interest rate) this postulation is based on the implicit assumptions of inflation neutrality (the absence of money illusion) in

saving behaviour and the absence of the real balance effect of inflation. There are, however, good reasons for doubling the validity of these assumptions first, inflations brings about uncertainty in future income streams and can thus lead to higher saving on precautionary grounds. This may be particularly true for households in developing countries whose income prospects are much more uncertain than their counterparts in developed countries. Second, inflation could influence saving through its impact on real wealth. If consumers attempt to maintain a target level of wealth or liquid assets relative to income, saving will rise with inflation. For these considerations, we include the inflation rate (INF) as an additional explanatory variable.

**Neoclassical Growth Theory of Solow:** In the traditional neoclassical growth models developed by Smith [18] and Macklinon [19], in the late 1950s, they showed that the output of an economy grows in response to larger inputs of capital and labour (all physical inputs). Non-economic variables such as human capital or human health variables have no function in these models. Furthermore, the economy under such a model conforms to the law of diminishing returns to scale. With these assumptions, the neoclassical growth models afford some implications to the economy; particularly, as the capital stock increases, growth of the economy slows down and to keep the economy growing, it must capitalize from incessant infusions of technological progress. It is well known that this type of mechanism in the neoclassical growth model is neither inherent nor does it strive to explain much.

In economic lexicon, this simply means that the technological progress is “exogenous” to the system. Yet the reality is quite contrary to that, particularly for the developed economies, where the economies kept growing. This implies that it is not only technology which is the main driving force accountable for maintaining such high growth performance in these economies, but other factors which are outside the realm of neoclassical growth model.

In the mid-1980s, a new paradigm was developed in order to address some issues, Mwega [20] developed a model which is now commonly known as “endogenous growth models” by broadening the concept of capital to include human capital, the new endogenous growth model argues that the law of diminishing returns to scale phenomenon may not be true as is the case for developed economies. In simple terms, what this means is that if the firm which invests in capital also employs educated and skilled workers who are also healthy, then not only will

the labour be productive but it will also be able to use the capital and technology more efficiently. This will lead to Hicks neutral? shift in the production function and thus there can be increasing rather than decreasing returns to investments.

In summary the conventional “neoclassical” growth theory as modelled by Nkash [21] holds the view that economic growth is a result of the accumulation of physical capital and an expansion of the labour productivity. The exogeneity factor that increases productiveness has been questioned in the literature [22,23,24,25,26]. To them, what increases the productivity is not an exogenous factor, but an endogenous one, which is assumed to be related to the knowledge and behaviour of the people responsible for the accumulation of physical capital, thus human capital becomes part of the growth process.

**Behavioural Economic Theory:** These set of economic growth theory were developed by set of economist in France known as the behaviourist in the early 1950's. The emerging behavioural theory of saving attempts to explain people actually behave with regard to financial matters. Unlike neoclassical economic theory, these model do not assume that people are rational and all-knowing. As the title of an article by Valcon [27] suggests, behavioural attempts to explain (and make assumptions that are consistent with) the behaviour of Homo sapiens not Homo economics, behavioural theorist also assume that financial planning has significant non financial costs.

Behavioural theorist have identified a number of common human characteristics that shape financial behaviour, including lack of self-control (people tend to place too much weight on current consumption relative to future consumption); limited cognitive abilities (people do not always learn from their mistakes and people tend to become overwhelmed by many choice); inertia (people tend to continue doing what they are currently doing), the tendency to intercept default option as advice and the tendency to use mental accounting techniques. Often according to behavioural theory, this tendency leads individuals to behave in ways that are inconsistent with their own priorities or inconsistent with maximizing long-term consumption. For example, the lack of self-control often causes people to over-spend and under-save, even when they are saving for a specific, much-desired goal. Also, limited intellectual capabilities and inertia lead people to postpone making financial decisions.

**Standard Saving Model:** The standard saving model was made popular by Abel and Oliver (1982) in their work “An intertemporal model of saving and investment”. Within this they discuss various specific cases that have been important. They also discuss models that imply behaviour that may be inconsistent with the standard model. The principal innovation in the theory in the past decade has been to allow for the precautionary motive. Although this was discussed in earlier paper it is only recently that we have come to realize that intuition derived from models without precautionary motive can be a seriously misleading; even if the amount of uncertainty is small. Thus it is often claimed, for example, that the life-cycle model implies that the path of consumption over the life cycle should be independent of the path of income. This is a prediction of what we term the certainty-equivalence model (ECQ) but it is by no means an implication of more general models that allow for a precautionary motive. The move to a more general model that allows explicitly for a precautionary motive brings with it both benefits and costs. But the principal benefit is that we can accommodate a much wider range of behaviour in the precautionary model. One of the costs is simply the converse of this we have far less sharp predictions from it more general model. The other principal cost is in tractability: we cannot typically derive closed form expressions for savings and consumption function and we cannot reproduce many of the manipulations that more possible on the ECQ model.

**The Certainty-Equivalence Model:** This model became popular in the year 1992 by Hidehiko Ishihara a professor in the faculty of economics Senshu University India. The usual model for discussing the inter-temporal allocation of money and time is the life cycle model. This takes its inspiration from Viliic [28] and Williams [29] but in its modern view for it is a good deal more general than either of the two variants these authors present. The central tenet of marginal utility of expenditure (MUC) constant over time. We refer to this as the standard saving model. A formal derivation is given below but the entirely plausible informal argument is that rational forward looking agents will not want expenditure to worth more (in discounted utility terms) in one period than in any other. This principle governs both short run (business cycle/high frequency) allocation and long run (life cycle/low frequency) allocation. This agent seek to equalize the marginal utility of money from one period to the next and between now and the distant future it is the simultaneous

consideration of the short run and the long run that gives the standard saving model its power and also puts it at most risk of being rejected by the data.

It is important to emphasize that the modern view that agents seek to equalize the MUE over time is consistent with the existence of imperfections in the capital market and with habits or satiation. Thus liquidity constraints may cause the MUE to fall over time (as consumption grows over time) in an expected way. This is consistent with the standard saving model: agents would prefer to have more consumption in the early periods that capital market imperfections prevent this. Indeed the most general model that allows for capital market imperfections and non-additive preferences over time does not seem to impose any restrictions on the time path of consumption and asset prices. The certainty-equivalence model (CEQ model) assumption for the CEQ model-agents have inter-temporally additive utility function with a constant discount factor and face perfect capital markets. Either there is perfect certainty or agents maximize expected utility: form rational expectations and have quadratic utility function.

The implication of these assumptions for consumption and saving have been thoroughly investigated over the past forty years and were well understood by the mid-1980s. Very broadly, the implication for consumption are [32] (for a very clear account). The shape of the life time path of consumption is independent of the shape of the expected path of income; the marginal propensities to consume out of current and future expected income are much the same; the marginal propensity to consume out of future income is independent of the riskiness of this income; the elderly should run down assets; anticipated changes in income have no effect on consumption and consumption changes are or orthogonal to past information of course, most of these implications are highly interrelated and all are ultimately derived from the proposition that agents seek to keep the MUE constant and the latter is linear in consumption for quadratic utility function.

**Liquidity Constraints and Habit:** The Liquidity constraint and habit theory as propounded by Carroll in the year 1992. Of all the assumptions of the liquidity constraint and habit theory, the one that has been most questioned is the existence of perfect capital markets [30,31]. It is palpably the case that borrowing rate typically exceeds lending rates and that people often ask for credit and are refused. To allow us to capture the essence of the effects of liquidity

constraints we shall adopt a few simplifying assumptions. First we shall assume that interest rates are constant and are known when consumption in time  $t$  is chosen. Second we shall assume that there are two rates. One for borrowing ( $=r_b$ ) and one for lending ( $=r_l$ ).

**The Ricardian Equivalence Hypothesis:** The Ricardian equivalence hypothesis was developed by David Ricardo within the early nineteenth century and states that it does not matter whether government finances its expenditure through taxes or borrowing. Therefore, only the time path of government expenditure. Expenditure affects the economy and not time path of taxes that finances such expenditure. The hypothesis combines the inter-temporal budget constraints of the consumer and government and derives permanent income as net of the discounted value of government spending [32]. The implication is that under certain assumptions, a permanent increase in saving will be completely offset by a corresponding fall in private savings, thus leaving national saving unchanged. The Ricardian equivalence is predicted on the assumption that saving behavior does not experience any uncertainty and that capital markets are perfect.

**Endogenous Growth Theory:** The endogenous growth theory was made popular by Harrod-Domar within the mid-1980's. The AK model which is the simplest endogenous model gives a constant saving-rate of endogenous growth. It assumes a constant, exogenous saving rate. It models technological progress with a single parameter ( $A$ ). It uses the assumption that the production function does not exhibit diminishing returns to scale to lead to endogenous growth. Various rationales for this assumption have been given such as positive spillovers from capital investment to the economy as a whole or improvements in technology leading to further improvements (i.e. learning-by-doing).

However, the endogenous growth theory is further supported with models in which agents optimally determine the consumption and saving, optimizing the resource allocation to research and development leading to technological progress. Wesley [30] and significant contribution by Zandema [32] and Urewa and Wesley [30] incorporated imperfect markets and R&D to the growth model.

**The AK Model:** The model works on the property of absence of diminishing returns to capital. The simplest form of production function with diminishing return is:

$$Y = AK$$

Where

A, is a positive constant that reflects the level of technology.

K is Capital (broad sense to include human capital)

Output per capital and the average and marginal product are constant. This is Cobb-Douglas function where Y represents the total production in an economy. A represents multifactor productivity (Often generalized as technology), K is capital and L is labour.

An important relation in the marco-production function:

$$Y = AK L$$

Which is the marco- production function divided by L to give total production per capital y and the capital intensity 'K.

Savings function

$$I = sY$$

This function depicts savings, I as a portion s of the total production Y.

Change in capital

$$K = Sy - Kd$$

The d is depreciation

Change in workforce

$$L_{t+1} = L_t (1 + n)$$

'n' is the rate of growth. E.g.  $n=0.02$  would mean  $L_{t+1} = 1.02L_t$  or a 2% rise in  $L_t$ .

Several theories have offered valuable insight on why developing countries attract international capital flows, Solow (1956) cited in Zhang and Markusen (1999) saw the crucial driving force of economic growth in accumulation of stock of capital. He believes that growth develops on the basis of investment and that the more capital is available and invested in an economy, the higher its recorded growth rate.

**The Exogenous Growth Theory:** The exogenous growth theory also known as the Solow Model, was developed by Solow (1956) and has been the major theoretical tool

for economic growth until the 1980s. The theory holds the belief that economic growth arises due to influences outside the economy or company of interest. Exogenous growth assumes that economic prosperity is primarily determined by external rather than internal factors, According to this belief, given a fixed amount of labour and static technology, economic growth will cease at some point, as ongoing production reaches a state of equilibrium based on internal demand factors.

The concept of exogenous growth grew out of the neoclassical growth model and the works contributed by Solow (1956). The exogenous growth model factors in production, diminishing returns of capital and technological variable to determine economic growth

**Empirical Literature:** The soundness of any theory whether economic or otherwise, is tested by its behaviour when subjected to empirical analysis. Several attempts have been made to empirically investigate the determinant and impact of private domestic savings on the economy. These studies include;

Valcon [27] examined the determinants of private saving in Nigeria during the period 1970-2007 using the ECM procedure. The results of the analysis show that the saving rate rises with both the growth rate of disposable income and the real interest rate on bank deposits; while public saving seems not to crowd out private saving, suggesting that government policies aimed at improving the fiscal balance have the potential of bringing about a substantial increase in the national saving rate. Also, the degree of financial depth has a negative but insignificant impact on saving behaviour in Nigeria.

Viliicit [28] used two-stage least squares method of simultaneous equation modelling to examine the factors that determine household saving of rural agro-based firm workers in the south-south region of Nigeria. The results indicate that income, tax, job experience, education, family size and membership of a social group influence saving attitude of workers.

Williams [29] used data for the period 1969 – 1989 to examine financial system regulation, deregulation and savings mobilization in Nigeria by adopting an ex-post analysis of the Nigerian banking system. The results indicate that ex-post real interest rate is a significant determinant of both savings and real stock of money demand in Nigeria.

Babatunde, Fakayode, Olorunsanya and Gentry (2007) examined the determinants of saving among cooperative farmers in Ondo State, South-western Nigeria.

They obtained data from 150 cooperative farmers using structured questionnaires. The results of their study indicate that household size, years of cooperative membership, interest rate on loan, gender and the amount of money borrowed are the significant determinants of savings among the cooperative farmers.

Wesley [30] examined the determinants of private saving in Nigeria by comparing the estimation results of the ECM model with those of partial-adjustment, growth rate and static models. They found that real interest rate on bank deposits has a significant negative impact while external terms of trade, inflation rate and external debt service ratio have positive impact on private saving. They also found that savings rate rises with the level of disposable income; and that the ECM performed better than the other models.

Xander [31] investigated the relationship between inflation, savings and output in Nigeria, employing Vector Auto regression (VAR) approach. The results indicate that inflation tends to reduce Output while savings actually stimulates output in Nigeria.

Zendema [32] employed descriptive statistics in carrying out a qualitative analysis of the relationship between domestic savings and economic growth in Nigeria, using annual secondary data obtained from World Data Indicator (WDI), World Bank publication and Statistical Bulletin of the Central Bank of Nigeria for the period of 1970 to 2006. The study concluded that the problem with Nigeria's economy is not that of mobilizing domestic savings but that of intermediation; and thus recommended that government should adopt policy enhancing intermediation between savings and investment in the economy by providing regulating and coordinating role to ensure effective intermediation between savings and growth in the economy.

Nkah [21] employed the Toda and Yamamoto (1995) and Dolado and Lutkepohl (1996) methodology to investigate the direction of causal relationship between saving and economic growth in Nigeria during the 1970 and 2006 period. The causality test results showed the existence of a unidirectional causality between savings and economic growth and the complementary role of FDI in growth.

Smith [18] examined the impact of foreign aid inflow on domestic savings in Nigeria using an OLS methodology. The results indicate that both the short run and steady state foreign aid inflow to Nigeria have positive effect on domestic savings.

Macklinon [19] used an ARDL estimation technique to examine the impact of financial liberalization on Nigeria's domestic savings, 1970-2009. The study concluded that interest on deposit induced by liberalization was not the major determinant of savings.

Mwega [20] examined the relationship between per capita saving and per capita GDP for India during the 1950-2004 period. The authors employed the Toda and Yamamoto tests of Granger causality and discovered that there is no causal relationship between per capita GDP and per capita household saving/per capita corporate saving. On the contrary, the results show the existence of a bi-directional causal relationship between per capita household saving and per capita corporate saving.

Nkah [21] used the bivariate vector auto-regressive (VAR) or vector error correction (VEC) models to analyze the relationship between saving and GDP for a group of countries that include Sweden, UK and USA. The results of the Granger non-causality test indicated that the direction of causal relationship between saving and output differ across the countries.

In his paper, Nordhans [22] examined the relationship between domestic savings and economic growth by taking into consideration the income levels of the different countries studied. He grouped the countries into various categories, namely low income countries (LICs), low middle income countries (LMCs), upper middle income countries (UMCs) and high income countries (HMCs). The author's results support the claim that causality runs from economic growth rate to growth rate of savings. The author submitted that the income level of a country plays an important role in determining the causal relationship between savings and economic growth. In addition, the author reported that empirical results were mixed in the LICs, while causality runs from growth rate to savings rate for most of LMCs. Finally, whereas in the HICs (except Singapore), causality runs from economic growth rate to growth rate of savings, a feedback causal relation was more prevalent in the UMCs.

In the work done by Onwukwe [23] the regression results support the Carroll-Weil hypothesis that it is not savings that causes economic growth, but instead, it is growth that causes savings in India.

Umoh [24] investigated the saving-growth nexus by taking into account the impact of foreign capital in complementing domestic saving and the beneficial effects of FDI on domestic investment and income. The Granger non-causality test revealed that higher saving precedes economic growth.



Urewa [24] investigated the causal relationship between savings and output in Pakistan by using quarterly data for the period of 1973 to 2003. The authors employed both co-integration and the vector error correction techniques and discovered that bi-directional long run relationship exists between savings and output level. Moreover, the results showed that there is a unidirectional long run causality from public savings to output (GNP and GDP) and private savings to gross national product (GNP). Furthermore, the long run results favour the capital fundamentalist's point of view that savings precede the level of output in case of Pakistan. In addition, the results showed that unidirectional short run causality runs from gross national product (GNP) to national and domestic savings; and from gross domestic product (GDP) to public savings. Besides, short run causality was shown to run from national savings to gross domestic product (GDP). Finally, the overall short run results favour Keynesian point of view that savings depend upon level of output.

Veronica [26] investigated the causality between gross domestic product (GDP) and saving for a sample consisting Asian economies. The author discovered that, in most economies causality runs from GDP to saving. In Mexico,

Valcon [27] employed econometric techniques to validate or invalidate the claim that higher saving rate leads to high growth rate. The empirical results did not support the view that higher saving rate causes higher economic growth. The authors concluded that causality runs from economic growth to saving.

Villicit [28] examined the causal relationship between savings and growth rate of real output for a group that consists eighteen Latin American and Newly Industrialized countries between 1960 and 1991. The author found that higher growth rate of real output causes higher growth rate of savings.

Williams [29] analyzed the causal relationship between the growth of domestic savings and economic growth for a sample that consist seven African economies (Congo, Cote d'Ivoire, Ghana, Kenya, Nigeria, South Africa and Zambia). The econometric results illustrated that economic growth Granger-causes the growth rate of domestic savings for all the countries except Congo where reverse causality was found. In addition, the authors discovered a feedback causal relation for Cote d'Ivoire and South Africa.

Wesley [30] used the Hendry Model with a two-step method to model a saving function for Kenya. The author observed that a 1 percentage increase in GDP growth rate causes a 0.5 percentage increase in private saving.

Xander [31] attempted to ascertain the determinant of savings using the ordinary least square technique of economic research and he found out that-real interest rate was an important determinant of savings in Kenya.

Zendema [32] examined the functional relationships between financial savings and macroeconomic variables in Ghana using trend analysis and ECM methodology. The study found that level of investment, deposit rate and level of income has significant positive impact on savings.

Xander [31] in another study, used time series data for country specific analysis and cross-sectional technique, to provide for evidence for 75 countries, with the majority on developing countries with emerging market economics. Using simple correlation coefficients between the ratio of private credit to GDP and GDP growth for individual countries, their results show a lack of robustness.

Williams [29] used plant-level data from the Mexican manufacturing sector. They found that-cash flow is significantly correlated with investment before and after financial liberalization, particularly for smaller firms.

**Limitations of Previous Studies:** Conclusively, there is no doubt that-there exists a plethora of research works done on the aspect of domestic savings and financial sector. However, none of the literature reviewed, critically and conclusively unravelled the impact of private domestic savings on Nigerian economy. Therefore, having reviewed both the theoretical and empirical literature of different authors in the same or related research work, certain areas that need amendment have been noted.

Attention will be given to constraints hamstringing and limiting the extent, scope and volume of the previous work. For instance, the inadequacy of relevant statistical data, adumbrated in some of the consulted literature, will be overcome either through proxy variable, or through assembling splinters of data into a body of whole. Again, the writer is poised to incorporate in her works, appropriate explanatory variables where such variables have not been included in the previous works, perhaps, as a convenience or a matter of prevailing circumstances. Moreover, this paper employs both granger causality and co-integration techniques to analyze the relationship between saving and economic growth in Nigeria.

**Concept of Savings:** According to Olusoji [1], savings represent that part of income not spent on current consumption, but when applied to capital investment, output increases.

Therefore, savings can simply be defined as the act of abstaining from present or current consumption of wealth. It is also seen as the allocation of resources between present and future consumption Williams [29]. According to Keynes (1936), the total income of an individual is partly spent and partly saved. Thus, savings is income not spend on goods and services for current consumption. It represents the difference between income and consumption. Reason being that, income is either consumed or saved. That is according to John Maynard Keynes (1936), savings is defined as the excess of income over expenditure on consumption. This means that, savings is that part of disposable income of the period, which has not passed into consumption. He equally maintained that on the aggregate, the excess of income over consumption (savings) cannot differ from addition to capital equipment (that is Gross Fixed Capital Formation or Gross Domestic Investment). Therefore, savings is a mere residual and the decision to invest between them, determine the volume of national income accumulation in a period. In the Keynesian view, rising would result in higher savings rates. As a matter of fact, savings is regarded as being complementary to the consumption function, when the autonomous consumption expenditure is separated[24].

Olusoji [1] equally opined that institutions in the financial sector like deposit money banks (DMBs) or commercial banks, mobilized savings deposits on which they pay certain interest. To effectively mobilize savings in an economy, the deposit rate must be relatively high and inflation rate stabilize to ensure a high positive real interest rate, which motivates investors to save from their disposable income. To Nkah [21], savings is seen as the amount of income per time that is not consumed by economic units. Accordingly, Samuelson and Nordhans [22] said that savings is income minus consumption following from the above, savings can be made by individuals (personal or private saving).or by corporate organisations such as firms (corporate savings or retained savings). Personal savings is that part of disposable income that is not consumed, while corporate saving is that part of firms profit that i not distributed as dividends to shareholders. Therefore, for a country, the total supply of available savings is simply the sum of domestic savings and foreign savings.

**Determinants of Savings:** The classical Economists did the first theoretical explanation of the determinants of savings and its importance. Smith (1776) recognized the

importance of savings when he observed that capital is increased by parsimony and diminished 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 is the equilibrating force between savings and investments and the decision to save or invest, depends solely on the rate of interest. Thus, at any particular level of income, the amount saved will increase with any rise in the rate of interest.

According to Keynes [15], the major determinant of both country's level of consumption and savings, is that country's national income. He therefore opined that the higher the income, the high the level of consumption and savings. He equally maintained that-even at the individual level, a person's income directly determines to a large extent his consumption and savings. This bloke (Keynes, 1936), recognized this when he found a positive relationship between consumption and person's disposable income. i.e.

$$C = F(Y_d) \text{ and } S = Y - C$$

Where

C = Consumption

$Y_d$  = disposable income

Y = consumer's level of income.

However, according to Macklinon [19], savings is not determined by income as postulated by Keynes (1936), but, it is determined by real interest rate. In his analysis, he viewed low interest rate as a cause of low savings, which means that firm business enterprises, are discouraged to invest funds through the formal banking system. He equally admitted that real interest rate is seen as a strengthening factor to both market institution and the level of savings.

Similarly, Kaldor [14]; using business cycle paradigm, corroborated with Keynes postulation that-income is a major determinant of savings. He stated that savings is sensitive to changes in income, both at relatively low and high levels. To him, in recession, economic agents emasculate their normal standard of living. However, in the early stages of recovery, economic agents increase their savings sharply to rest the previous level. Again, Duesenbery [9] in his past and relative income hypothesis, postulated that savings is determined by previous savings rate. He elaborated on this by adding that- there are adjustment lags in savings behaviour as

the full reaction of savers to changes in the environment does not happen at once, but occurs over time due to habit, persistence, inertia, custom etc. But economic agents react slowly to changes in income, in mal decision [20].

In the view of Balassa [5], low interest rate is detrimental to increased saving mobilization, which can, be utilized for investment. To him, if the real rate of return of holding money is low, a significant proportion of the physical capital of the economy will be embodied in inventories of finished and semi-finished goods. He equally argued that financial liberalization brings forth a shift, from fewer productivity investment, intermediated by the financial sector. It can equally discourage savings, especially if the saver targets a given level of future income [28].

The existence of some inequality may spur savings among middle class, because of the desire for prestige and status. Redistribution of income tends to reduce the share of the rich in the national income, both through fairer distribution of the benefits of economic expansion and also through progressive taxation. As a result, the rich will have smaller income out of which they could save. All things being equal, this will reduce the amount of investment and economy's rate of expansion.

**The Trend of Domestic Savings in Nigeria:** The proportion of G D P committed to savings continued to rise from 12% in 1970 to 28% in 1974. It then started to fluctuate until 1980. Hence the proportion started falling from about 31% in 1980 to about 12% in 1986, after which it started increasing continuously up to 29% in 1990. Thereafter it started falling ridiculously to about 18% in 1995. Since then it has been fluctuating at increasing rate to about 42% in 2000 and 39% in 2005 and thereafter in 2006. The relative increase in this proportion in the early 70's up to 1980 can be attributed to the expansionary policy of the government through increase in wages of the workers in the early 70's. This effect lasted till late 70's specifically 1980 when Nigeria experienced another downturn in the economy. The reduction in this proportion from 1980 to 1986 was as a result of economic crisis experienced then when the prices of crude oil fell in the world market. In 1986, Nigeria government took a bold step at combating the effect of this crisis by introducing Structural Adjustment Program (SAP) of 1986. Domestic savings reacted instantly to this policy and picked up from about 12% in 1986 to about 29% in 1990, 35% in 1996 and 42% in the year 2000.

**Factors Influencing Saving in Nigeria:** Analysts have identified two broad ways of looking at factors that influence savings. First, there are analyses stressing micro – level determinants. These relate to the attribute of the household or individual such factors as the age composition of the household (demographic processes), customs and religious norms which influence ability to save, people's perception of wealth and hence willingness or motivation, to save. Secondly, there are analyses stressing macro – economic or structure relation. Here the level of financial markets development nature and level of economic growth, price stability, interest rate, fiscal relations condition in the external sector which links the economy to the World market, etc are cited. The life-cycle hypothesis is the principal theoretical underpinning that has guided the study of savings behaviour over the years. Each of the determinants of saving is articulated in the context of the life-cycle hypothesis. The following are then some factors that affect domestic savings in Nigeria.

**Growth:** The life cycle model of hypothesis predicts that an increase in the rate of growth of income per capital will lead to an increase in the aggregate saving rate. This is because it increases the lifetime resources and saving of the younger population relative to that of the older one [29,30,31,32]. However, controversy is still raging as to its structural interpretation, since some see it as evidence that saving drives growth through the savings. Investment links and others as evidence that it is growth that drives savings.

A panel instrumental variable method was explored by Loayza, Schmidt – Hebbel and Seven (2000) to estimate the impact of income growth on savings. Besides they observed that increase in saving rate do not always come before increases in growth. Lastly, they found that when additional controls were put in place, current income growth has a negative impact on lagged saving rates.

**Income:** The principle assumption of the life cycle hypothesis is that an individual who seeks to maximize the present value of life time utility subject to the budget constraint must first prepare his scale of preference then maximize his utility based on his ranking. The budget constraint is equal to the current net worth plus the present value of expected income from work over the remaining working life of the individual. The theory predicts that consumption in each period depends on expectations about lifetime income. Given that income fluctuates over the course of an agent's life, one stage in the life cycle is an important determinant of saving behaviour.

Empirical evidence shows that the level of real per capital income has a positive impact on saving rates and that this is usually greater. In low income countries as against richer ones. Zendema [32] found that in developing countries a doubling of income per capital is estimated to rise long – run private saving by 10% points of disposable income. Xander [31] and Zendema [32] have argued that income inequality is an important determinant of saving.

**Interest Rate:** A high interest rate increases the current prices of consumption viz – visa the future price, thus leading to an increase in saving. This is the substitution effect if on the other hand the household is a net lender, an increase in interest rate will increase lifetime. This is the income effect. Thus, saving will have a positive relationship with interest rate only when the subsisting effect surpasses the income effect.

Some authors Viliicit [28] and Wesley, [30] argued that the relationship between real interest rate and saving is positive for a developing economy such as Nigeria especially, in an environment where self-financing and bank loans make up. The bulk of investment fund, accumulation of financial saving is determined merely by the desire to invest than the desire to live on interest income.

**Inflation and Macroeconomic Uncertainty:** The impact of inflation on saving in the life-cycle model is through its role in determining the real interest rate. This is based on the assumption of the absence of real balance effect of inflation and the non-existence of money illusion in people's saving behaviour. Xander [31] affirm that inflation may not always be neutral because in the first place, the inflation rate is more difficult to predict in the long run than in the short run. Besides, inflation brings about uncertainty in future income streams, thus resulting in higher savings on precautionary grounds. Lastly, they posit that inflation could influence saving through its impact on real wealth. Conceptually, inflation means increase in the average price of goods and services [22]. The percentage change in the overall level of price which varies overtime and across countries is what is meant by the rate of inflation. Inflation rate measures the percentage change in the average level of price when the inflation rate is above zero, prices are rising.

When it is below zero, prices are falling [23,24] assets that there is a good deal of controversy growth and development. Some economic focusing on the demand for long – term loan able funds have argued that investment is stimulated when inflation is

accelerating because the real costs of interest and principal payment are lowered, it's nominal interest rates are controlled real interest might even become negative. Inflation it is said causes domestic financial assets (demand as well as time deposits) to be converted to consumption goods, relatively unproductive investment goods such as housing and foreign financial assets. If fixed as is common under what Shaw calls "shallow finance," the domestic currency will become overvalued if the domestic inflation rate exceeds the rise in international price. This makes export less competitive and imports more attractive and led the country towards a balance of payment crisis.

**Financial Development:** Until recently, financial development was assumed to enhance the saving rate. It consists of elimination of credits ceilings, interest rate liberalization, easing of entry for foreign financial institutions, enhanced prudential guidelines and supervision and the development of capital market. Valcon [27] found that financial development has led the private sector to increase the durable goods component to their assets. The effect of financial development on savings rate can be separated into a direct short run impact, which is generally positive. However, whether increased financial development itself significantly increase overall propensity to save depending on the extent of substitution between saving and other item in the household asset portfolio. Consequently the expected signs of this relationship in the private saving function are ambiguous [29].

**Urbanization:** Urbanization is a requisite for any financial development of a country. It create the opportunities for the populace to develop the habit of saving, some degree of their need for future purposes and mainly for those that are suited or can find themselves in large cities such as Lagos, Port - Harcourt, Abuja, Kano Onitsha etc and is due to the closeness of these financial institution to individuals thereby minimizing the consumption stream of people in order to inculcate the sense of domestic saving habit.

**Research Design and Methodology:** This study examines the impact of domestic debt on the economic growth of Nigeria for the periods 1980-2013. The methodology of this study is essentially econometric analysis which will be used to estimate and analyze the influence of the explanatory variables; Total Domestic savings (TDS), Per Capita Income (PCI) and Interest Rate (INT) on Real Gross Domestic Product (GDP) at constant price.

For this study, ex post facto research design is adopted. This is because the study attempts to explore cause and affect relationships where causes already exist and cannot be manipulated. Ex-post facto research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulated. Inferences about relations among variables are made, without direct intervention, from commitment variables of independent and dependent variables.

This research work embraces the use of secondary time series data in examining the macroeconomic effect of the activities of domestic savings on the Economic Growth of Nigeria.

**Model Specification:** To empirically analyze the impact of domestic savings on the economic growth of Nigeria within the period under review, this study adopts the model of Urewa (1990)[25] applying Gross domestic products at constant prices as the explained variable, while the explanatory variables are; Total Domestic savings (TDS), Per Capita Income (PCI) and Interest Rate (INT).

The functional notations of our model is as indicated below:

$$\text{RGDP} = F(\text{TDS}, \text{PCI}, \text{INT}) \quad (1)$$

The linear regression equation derived from the functional relationship above is:

$$\text{RGDP}_t = b_0 + b_1 \text{TDS}_t + b_2 \text{PCI}_t + b_3 \text{INT}_t + U_t \quad (2)$$

Where:

RGDP<sub>t</sub> = Real Gross domestic product at constant price

TDS<sub>t</sub> = Total Domestic Savings

PCI = Per Capita Income

INT = Real Interest Rate

U<sub>t</sub> = Stochastic variable or error term

b<sub>0</sub> = constant term

b<sub>1</sub>- b<sub>3</sub> = parameters to be estimated

**Estimation Procedure:** The specified multiple regression models will be estimated using the Ordinary Least Squares (OLS) Technique. The following econometric and statistical diagnostic tests will be performed in order to ascertain the validity of the regression results:

**Unit Root Test:** This study will employ quantitative tools of data analysis and interpretations will be based on standard econometric principles. First, a unit root test will be conducted to determine the time series properties of data collected on the variables. This is with a view to establishing whether there is a presence of unit root in the series because when time series data is characterized by a unit root or in other words is non-stationary, regression analysis conducted in a conventional way, yields spurious regression results. Augmented Dickey fuller (ADF) was employed for this study.

To determine whether there is unit root or not in the series involved, Augmented Dickey fuller (ADF) test statistics shall be compared with the critical values at 5% level of significance. A situation whereby the (ADF) test statistics is greater than the critical values with consideration on the absolute values, the data at the tested order will be said to be stationary. Augmented Dickey-Fuller test relies on rejecting a null hypothesis of unit root in favour of the alternative hypotheses of stationarity.

The general form of Augmented Dickey Fuller ADF test is estimated by the following regression.

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha \Delta y_t + \varepsilon_t \quad (3)$$

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha_1 \Delta y_t + \Delta_t + \varepsilon_t \quad (4)$$

Where:

Y is a time series, t is a linear time trend,  $\Delta$  is the first difference operator, such that  $\Delta y_{t-1} = y_t - y_{t-1}$ ,  $\alpha_0$  is a constant, n is the optimum number of lags in the dependent variable and  $\varepsilon_t$  is the random error term.

**Co-Integration Test:** Additionally, according to Engle-Granger (1987) when variables were found to be I(1), stationarity of residual (obtained from a static regression) implies co-integration, meaning that a long run equilibrium condition exists between the dependent and the independent variables. The residual series is included in the regression as an error correcting mechanism. Long run regression results are obtained by traditional Ordinary Least Squares (OLS) technique. Therefore to observe the nature of co-integration we employ the Johansen model as follows:

To determine the number of co-integration vectors, [31,32] suggested two statistic test, the first one is the trace test ( $\lambda$  trace). It tests the null hypothesis that the

number of distinct co integrating vector is less than or equal to  $q$  against a general unrestricted alternatives  $q = r$ . The test is calculated as follows:

$$\lambda \text{ trace } (r) = -T \sum \ln (1 - \lambda_r) \quad (5)$$

Where

$T$  is the number of usable observations and the  $\lambda_{1,s}$  are the estimated eigenvalue from the matrix. The Second statistical test is the maximum eigenvalue test ( $\lambda_{\max}$ ) that is calculated according to the following formula

$$\lambda_{\max} (r, r + 1) = -T \ln (1 - \lambda_{r+1}) \quad (6)$$

The test concerns a test of the null hypothesis that there is  $r$  of co-integrating vectors against the alternative that  $r + 1$  co-integrating vector.

**Error Correction Mechanisms (ECM):** The purpose of the vector error correction model is to indicate the speed of adjustment from the short-run equilibrium to the long-run equilibrium state. If co-integration is accepted, it suggests that the model is best specified in the first difference of its variables with one period lag of the residual {ECM (-1)} as an additional regressor. Hence, the ECM strategy provides an answer to the problem of spurious correlations. If FDI and GDP variables are co-integrated the corresponding error correction representation must be included in the system so that one can avoid mis-specification and omission of the important constraints. It follows that the greater the co-efficient of the parameter, the higher the speed of adjustment of the model from short-run to long-run equilibrium.

The ECM (p) form is written as

$$\Delta y_t = \delta + \rho y_{t-1} + \Sigma \Phi_i^* \Delta y_{t-1} + \varepsilon_t \quad (7)$$

Where  $\Delta$  is the differencing operator, such that  $\Delta y_{t-1} = y_t - y_{t-1}$ .

**Data Sources:** Data used for this study were secondary data. They are annual time series data on Real gross domestic product, Total Domestic savings, Per Capita Income and Real Interest Rate for the period between 1980 and 2012. All data used for the impact of domestic savings is sourced from Central Bank (CBN) statistical bulletin for various years.

**Result Presentation:** The attempt to study the impact of domestic saving on Nigeria's economic growth led the researcher to collect data related to the study in question. Data collected were first subjected to series of advanced econometric tests including unit root test using Augmented Dicey-Fuller test, Johansen cointegration and finally error correction mechanism (ECM) was employed to estimate the relationship existing among the variables specified. The results and their discussions are presented below:

**Unit Root Test:** The use of time series data for estimating the parameters of economic relationship among variables is predicated upon some assumptions one of which is that such a data series is stationary. In this context, testing for stationarity or otherwise of the employed data sets becomes of essence in this analysis. The Augmented Dickey-Fuller (ADF) was employed to test for the existence of unit roots in the data using trend and intercept. The test results are presented in below:

Table 1: Augmented Dickey Fuller Unit Root Test Results

Trend and Intercept @ level				
ADF				
Series	Test Statistic	5% critical values	Order	Remarks
RGDP	-0.611785	-3.552973	-	Not Stationary
TDS	1.965373	-3.552973	-	Not Stationary
PCI	-0.362596	-3.552973	-	Not Stationary
INT	-2.101772	-3.557759	-	Not Stationary

Sources: Researchers' compilation from E-view (version 7.0)

Table 2: Augmented Dickey Fuller Unit Root Test Results

Trend and Intercept @ 1 <sup>st</sup> difference				
ADF				
Series	Test Statistic	5% critical values	Order	Remarks
RGDP	-18.56787	-3.557759	1(1)	Stationary
TDS	-3.750530	-3.557759	1(1)	Stationary
PCI	-6.762564	-3.557759	1(1)	Stationary
INT	-9.104734	-3.557759	1(1)	Stationary

Sources: Researchers' compilation from E-view (version 7.0)

Table 1 and 2 above shows the summary of unit root test results. The result shows that none of the variables; RGDP, TDS, PCI and INT was stationary at levels using Augmented Dicey Fuller test. This is because their critical values were greater than ADF test statistics in absolute value at 5 percent level of significance. However, all the variables considered

became stationary after first difference since their ADF test statistics were greater than their critical values in absolute value. The results show that the series are integrated of the same order; I (1) with the application of both ADF test. Therefore, the variables are fit to be used for the analytical purpose for which they were gathered.

**Co-Integration Test:** It has been argued that although the individual series may not be stationary, a linear combination of the series will produce a cointegrated series. The linear combination of series integrated of the same order are said to be co-integrated. The level of their integrations indicates the number of time series have to be differenced before their stationary is induced. For this purpose, the Johansen co-integration test was adopted. The model with lag 1 was chosen with the linear deterministic test assumption and the result summary is shown in table 3 below:

Table 3: Johansen co-integration test for the series; RGDP, TDS, PCI and INT

Hypothesized	Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.748585	69.10239	47.85613	0.0002
At most 1	0.363408	24.92160	29.79707	0.1643
At most 2	0.221782	10.46957	15.49471	0.2463
At most 3	0.073578	2.445627	3.841466	0.1179

Sources: Researchers' compilation from E-view (version 7.0)

Under the Johansen Co-integration test, Co-integration is said to exist if the values of computed Eigen values are significantly different from zero or if the trace statistics is greater than the critical value at 5 percent level of significance. The results of the co-integration in table 3 above indicated one co-integrated equation. This is because trace statistics is greater than the critical value at 5 percent level of significance in only of the hypothesized equations. Similarly, the computed Eigen value is significantly different from zero in one of the hypothesized equations. Hence, one of the hypothesized equations satisfies this condition and therefore the null hypothesis of no co-integration among the variables is rejected in at least one equation.

The test result shows the existence of a long-run equilibrium relationship among the variables. The normalized co-integrating equation given by the long-run relationship is:

$$RGDP = 0.007712TDS - 3.065215PCI - 6.067004INT$$

Worthy of note is the sign borne by the coefficient estimate of TDS. The long run relationship given by this equation depicts that in the long run, increased domestic savings will bring about increased gross domestic product.

**Error Correction Model (ECM):** Having satisfied the condition for long run equilibrium relationship as was revealed by the Johansen co-integration which indicated one cointegrating equations, the next step is to construct an error correction model (ECM) so as to estimate the short run relationship that exists among the specified variables and equally the speed of adjustment having lost information about long run relationship through differencing. The ECM result is presented in table 4 below:

Table 4: Error Correction Model (ECM)

Dependent Variable: D(RGDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	15.80573	3.326823	4.750999	0.0001
D(TDS)	0.007741	0.005800	1.334588	0.1928
D(PCI)	1.065771	0.256277	4.158673	0.0003
D(INT)	2.691858	0.646291	4.165088	0.0003
ECM(-1)	-0.999045	0.072051	-13.86577	0.0000
R-squared	0.882062	Mean dependent var		27.83636
Adjusted R-squared	0.865213	S.D. dependent var		39.93443
F-statistic	52.35305	Durbin-Watson stat		1.406395
Prob(F-statistic)	0.000000			

Sources: Researchers' compilation from E-view (version 7.0)

Table 4 above shows the ECM result obtained when real gross domestic product (RGDP) is regressed against total domestic savings (TDS), per capita income (PCI) and interest rate (INT). The coefficient of the constant term is positive implying that when the independent variables employed are kept constant, Real Gross Domestic Product (RGDP) will stand at 15.8 billion units. The coefficient of TDS is 0.00774. This implies that a one billion increase in TDS will bring about a 0.7 percent increase in RGDP, an indication that RGDP has a positive relationship with TDS for the period under review. However, the estimated coefficient is not statistically significant at 5 percent level of significance since its p-value of 0.19 is greater than 0.05. The coefficient of PCI is 1.06. This entails that increased per capita income will result to a 1.06 billion increase in RGDP. With a p-value of

0.0003, which is less than 0.05 the estimated coefficient is statistically significant. The coefficient of INT is 2.69 indicating that RGDP increases by 2.7 billion as a result of a one percent increase in interest rate. The estimated coefficient is significant since its p-value of 0.0003 is less than 0.05.

The above result indicates that the coefficient of determination ( $R^2$ ) is 0.882 which indicates that the explanatory variables explain about 88.2% of the total variations in real gross domestic product within the period under consideration.

Furthermore, the co-integrating coefficient (ECM (-1)) equals -0.999. This shows that the speed of adjustment between the short-run and long-run equilibrium is approximately 99 percent annually. This means that the system corrects its previous period disequilibrium at a speed of 99% annually. With a negative sign and a statistically significant ECM (-1) as shown by the probability value of 0.00, it is obvious that the model has a significant speed of adjustment. Hence, this ECM (-1) upholds the Granger Representative Theorem (GRT) which holds that a negative and statistically significant error correction coefficient is a necessary condition for the variables to be co-integrated. The statistical significance of the co-integrating equation satisfies one condition and the negative sign satisfies the other condition.

**Durbin-watson Test:** The Durbin -Watson statistics at  $n=34$ ,  $k=3$  indicates that  
Lower D-W ( $d_L$ ) = 1.27  
Upper D-W ( $d_U$ ) = 1.65  
Where D-W calculated = 1.41

Since the calculated D-W statistics is less than the upper D-W tabulated value, we reject the null hypothesis and conclude that there is presence of first order autocorrelation.

## Testing of Research Hypotheses

### Hypothesis One:

- $H_0$ : There is no long-run relationship existing between domestic savings and economic growth in Nigeria  
 $H_1$ : There is long-run relationship existing between domestic savings and economic growth in

**Nigeria:** The co-integration test was employed to investigate the extent to which long-run equilibrium

relationship exists between domestic savings (TDS) and economic growth in Nigeria. The Johansen co-integration test result presented earlier indicated one co-integrating equation. The test result shows the existence of a long-run equilibrium relationship among the variables employed for the regression analysis. Therefore, the null hypothesis of no long run relationship is rejected while the alternate hypothesis is accepted. Therefore, the test result shows the existence of a long-run equilibrium relationship among the variables.

### Hypothesis Two:

- $H_0$ : Domestic savings does not significantly impact economic growth in Nigeria.  
 $H_1$ : Domestic savings has significant impact economic growth in Nigeria.

This hypothesis will be tested with the aid of the ECM result. From the result it was observed that domestic savings has a positive sign which implies that increase in savings will increase RGDP. In spite of the fact that the estimated coefficient is not significant at 5 percent level of significance, there is a significant joint influence as was indicated by the p-value of the F-statistics. This implies that when combined with other variables, it has a significant impact hence we reject the null hypothesis and conclude that domestic savings has a significant impact on Nigeria's economic growth.

### Hypothesis Three:

- $H_0$ : There is no causal relationship between domestic savings and economic growth in Nigeria  
 $H_1$ : There is causal relationship between domestic savings and economic growth in Nigeria

This hypothesis was tested with the aid of Granger Causality test to examine if there is causal relationship between domestic investment (TDS) and economic growth in Nigeria between the periods of 1980 to 2013 and the result is presented below:

Table 5: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
TDS does not Granger Cause RGDP	33	10.9146	0.0025
RGDP does not Granger Cause TDS		6.31265	0.0176

Sources: Researchers' compilation from E-view (version 7.0)



From table 5 above, the null hypothesis that TDS does not granger cause RGDP is rejected since the P-values of its F-statistics (0.0025) is less than 0.05 and the null hypothesis that RGDP does not granger cause TDS is equally rejected since the p-value of its F-statistics (0.0176) is equally less than 0.05. This indicates that there is bi-directional casualty. Hence both TDS and RGDP granger causes each other. Therefore, the null hypothesis of no significant causal relationship is rejected.

**Implications of the Study:** From the empirical result, it was observed that the coefficient of domestic savings (TDS) is positive. This conforms to expectation and entails that increase in savings will bring about a corresponding increase in growth. Long run growth theories imply that economic growth is positively influenced by investment, meaning that a higher level of investment may lead to higher economic growth. However, the level of investment is influenced by many factors, most importantly as confirmed in the neoclassical growth theories, saving. When saving increases, more funds for capital investment will be available, leading to higher investment. Findings from our research equally support this. The present study equally finds causality to run from both sides of domestic savings and economic growth. This implies that economic growth Granger cause saving and savings equally granger cause economic growth implying a bi-directional causality between the two. The author therefore found enough evidence to show that causalty runs from saving to growth and vice versa.

**Summary of Findings:** The study investigated the impact of domestic savings on Nigeria's economic growth between the period 1980 and 2013 employing various techniques of econometric analysis. The study was guided by the following objectives:

- To determine if there exists any long-run relationship between domestic savings and economic growth in Nigeria;
- To ascertain if domestic savings can contribute significantly to Nigeria's economic growth; and
- To determine the causal relationship between domestic savings and economic growth in Nigeria.

Having estimated and analyzed the nature of the empirical result in the preceding chapters using Augmented Dicks-fuller (ADF) test, Johansen Co-integration, Granger Causality test and error correction model, the summary of findings is presented below:

- The result of the unit root test conducted on the variables using Augmented Dicey Fuller (ADF) test shows that the variables are stationary at first differencing, meaning that they are integrated of order one, I(1).
- The Johansen cointegration result shows that the variables are co integrated with one cointegrating equation. Hence, there exists a long-run equilibrium relationship between domestic savings and Nigeria's economic growth.
- The empirical results for causality indicated that RGDP granger causes savings and savings equally granger cause RGDP. Hence, there exist significant causal relationship between domestic savings and economic growth in Nigeria within the sample period of observation.
- To ascertain the impact of domestic savings on economic growth of Nigeria, the study made use of error correction mechanism (ECM). The results from the ECM estimation show that, real gross domestic product (RGDP) which was a proxy for economic growth has positive relationship with domestic. However, despite the fact that the coefficient estimate of domestic savings (TDS) is not individually significant, the F-statistics revealed that when joined with other variables, it exerts significant impact on gross domestic savings.

## CONCLUSION

This research work examined the impact of domestic savings on Nigeria's economic growth between 1980 and 2013 using time series data on real gross domestic product (RGDP), used as a proxy for economic growth; total domestic savings (TDS), per capita income (PCI) and interest rate (INT) which represented the explanatory variables. Broadly, the results show that total domestic savings has a long-run equilibrium relationship with economic growth within the period under study. The study equally found that though savings has the potential of impacting positively on Nigeria's economy as was testified by the positive relationship between TDS and RGDP given by the ECM estimates; this observed impact can only be made manifest when it is co-joined with other variables; namely per capita income and interest rate.

**Recommendations:** In the light of the research findings enumerated above, the following recommendations are made.

- The government and the monetary authorities should make policies which would help to boost the saving culture of the people. This could be done by increasing the deposit rate which would lure the people to deposit their money in banks thereby increasing the supply of loanable funds. This would lead to a fall in interest rate and eventually rise in investment.
- Since savings encourage investment and income lead to savings, there is need for programmes or policies by government that will facilitate increased income level of under developed citizen order to ensure sufficient saving that bring about high rate of investment which will eventually lead to economic growth and development.
- The monetary authorities should also embark on routine efforts at bridging the widened gap between lending and savings rates to foster a moderate rise in nominal rates and stabilize inflationary pressure. This encourages savings and generates needed loanable funds for investment in Nigeria.

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