Savings Deposit and Growth of Nigeria's Real Gross Domestic Product

Odimgbe Jude Chijekwu (PhD),
Department of Banking and Finance, Madonna University,
Okija Campus, jodimgbe34@gmail.com

Sampson Ikenna Ogoke
Department of Banking and Finance
Kingsley Ozumba Mbadiwe University, Ideato, Imo State.

V.C Ogueze, ACA, PhD.
Director, Nnewi School of Economics, Nnewi, Nigeria
Email: oguezev@gmail.com.
DOI: 10.56201/ijbfr.v10.no8.2024.pg34.62

Abstract
This study examined the effect of saving deposit on the growth of Nigeria economy using time series data from 1994-2019. Data were sourced from Central Banks of Nigeria Statistical Bulletin real gross domestic product was modeled as the function of Private sector savings deposit; State government savings deposit and Local government savings deposit. This study employed the Autoregressive Distributed Lag (ARDL) bounds test approach. Findings of the study established that saving deposit explained 98.08 percent variation in Nigeria real gross domestic product. The Error Correction was found to be 66.02% speed of adjustment per annum the errors of the model corrected each period. The result of long-run ARDL estimation proved that PSSD, SGDD and LGDD showed a positive and significant relationship to Real Gross Domestic Product in Nigeria. Pairwise Granger Causality revealed no evidence of causality between exogenous variables and RGDP. From the findings we conclude that Private Sector Savings Deposit, State Government Savings Deposit and Local Government Savings Deposit yielded positive and significant relationship with RGDP. We recommend that more incentives need to be in place to discourage leakages and high volatility of foreign savings deposit towards improved growth of the local economy.

Keywords: *Saving Deposits, Real Gross Domestic Product, Private Sector Saving Deposit, State Saving Government Deposit, Local Government Saving Deposit*

INTRODUCTION

In the last decade, Nigeria has contended with a number of socio-economic challenges including: drop in Oil Price (the mainstay of the Nigerian economy), Stock Market Crash, Banking Sector Crisis, Political challenges, Militancy in the Niger Delta and Boko Haram insurgencies in the North, Fulani herdsmen/terrorists mayhems in the middle belt and the Eastern part of the country. All these challenges negatively impacted on Nigeria's economy. Real GDP was stable at N20 billion between 1994 and 1996 but stagnated from 1996 to 2001. An appreciable leap was observed from 2002 which continued till 2019. A decade analysis of Central Bank of Nigeria (2012) revealed the highest increase of over 160% from N25, 268 billion in 2001 to N54, 612 billion in 2010. From N54, 612bn in 2010 it rose to N69, 024bn in 2015 and increased to N72,394bn in 2021. This may be attributed to the bank recapitalization exercise, restoration of confidence in the banking industry, sound monetary policies and reforms in both money and capital markets which all positively impacted on the economy and foreign real and portfolio investment inflow to Nigeria.

The impact of money supply on output (income) and employment is of great analytical interest to economists because of the role money supply plays in economic growth of both the emerging and industrialized economies. Over the years, the achievement of macroeconomic objectives in Nigeria has been futile. This might be attributed to lack of proper understanding of the relationship among the micro components of monetary aggregates and economic growth. Several studies have been conducted on the link between money supply and economic growth in Nigeria and the challenges posed to policy makers on monetary management. The results of their studies showed some conflicts. Some hold the opinion that money supply impacted positively on the economy (Onyeiwu, 2012; Chinwuba, Akhor, & Akwaden, 2015) while some studies found a negative relationship between money supply and economic growth (Ihsan, & Anjum, 2013; Gatawa, Abdulgafar, & Olarinde, 2017). The divergence in the results could have been avoided had disaggregated components of money supply been engaged in the analyses. The prevailing high inflation rate has been attributed to low productivity and excessive money supply generated through the public sector deficit policies. Public sector deposits as a disaggregated broad money supply component can constitute a major variable that impact the economy, hence the need to study its impact.

The above challenges are worrisome. Most importantly, past monetary studies in Nigeria were based mainly on aggregate money supply of many past years. The results of those studies have not been very helpful in proffering answers to persisting problems of monetary nature such as double-digit inflation, excess liquidity, and interest and exchange rate volatilities. The problems persist because each component of money supply has its own dynamics and trajectories within the aggregate of money supply. With each component pulling in different direction within the system, it becomes very difficult to stabilize money supply and to design appropriate policy instruments to steer money supply in the direction that will enhance economic growth and positively influence macroeconomic objectives. Until the dynamics and the velocity of each component of money supply are properly understood, it will continue to be difficult to control money supply and those of problems of monetary nature will continue to persist. This study will dissect money supply into its known components and into sectors of origin with the objective of finding better methods of monetary analysis with respect to Real Gross Domestic Product. If the dynamics of each

component of money supply are understood, it will be possible to suppress through monetary policy measures those components that are working adversely against macroeconomic objectives and enhance those influencing the economy positively. This study investigated the extent to which savings deposits have impacted on real gross domestic product between 1994 to 2021.

LITERATURE REVIEW

Savings Deposit

This is a liability of the deposit money banks or what the deposit money banks owe the non-bank savings depositors. It is held at a bank or another deposit financial institution where a saver can deposit sum of money payable on demand. It is an interest bearing account where individuals, groups, organizations save their surpluses for future use. Banks usually calculate and pay interest on savings account monthly on a specified day of the month based on the date of the initial deposit. Banks charge withholding tax on the interest paid to the account holder. Usually a minimum balance is maintained and the account cannot be overdrawn. Savings is another important form of deposit account traditionally evidenced by a passbook but now virtually replaced by electronic banking operation. Banks usually allow a maximum number of withdrawals above which the account will no longer attract interest. It has been a general observation that savings accounts are most popular with low and middle income earners and non-profit making organizations. Financial institutions mobilize savings and channel them to the deficit units as capital needed for economic growth and development.

Real Gross Domestic Product

Real Gross Domestic Product is therefore viewed as inflation-adjusted measure that reflects the real value of goods and services produced in a given period, expressed in base year prices. It is vital to note that the growth of real output (GDP) of a nation is synonymous with the changes that take place in its economy. However, these changes which can be the success of the economy are largely dependent on the efficacy of monetary policy framework, and achieving this success requires some ability to peep into the near future. Consequently, decision makers must make forecasts to help them in decision making. To conduct these forecasts, most central banks take a number of variables into account (Feridun & Adebiyi ,2005). For the purpose of this study, Real Gross Domestic Product constitutes the main aspect of the investigation.

Savings Deposit and Gross Domesstic Product in Nigeria

Savings is a function of disposable income as the higher the income, the higher the average propensity to save. By implication, when income increases, the marginal propensity to consume decreases and marginal propensity to save increases. Keynes (1936) specified eight main motives which induce individuals to save out of their personal income to include:

i. Precaution - to build up a reserve to face unforeseen contingencies
ii. Foresight - to provide reserves for old age, family education, maintenance of dependants etc
iii. Calculation – to earn interest and enjoy capital gains
iv. Improvement – to enjoy higher standard of living in future.

v. Independence – to enjoy power to do things independently.
vi. Enterprise – to have funds to carry out speculative or business projects.
vii. Pride – to bequeath fortune.
viii. Avarice – to satisfy pure miserliness.

Additionally, four motives are responsible for business saving which include::

i. Enterprise – to secure funds to expand business.
ii. Liquidity – to secure liquid funds to meet emergencies, difficulties and depression.
iii. Improvement – to increase the managerial performance of the enterprise.
iv. Financial prudence – to make financial provision to write off assets faster than they actually wear out.

Capital accumulation has been identified as a major determining] factor in the development process in relating the growth rate of an economic output to that of its capital stock Saint-Paul (1992). Capital accumulation results when some proportion of present income is saved and invested in order to augment future output and income. According to Mankiw (2003) if savings rate is high, the economy will have a large capital stock and high level of output. On the other hand, if savings rate is low, the economy will have a small capital stock and a low level of output. This implies that the higher the income per capita, the higher the consumption and savings rates thereby increasing the capital stock.

The Classical Neutrality Theory of Money

An Austrian economist, Friedrich Hayek (1931) was the first to coin the phrase 'neutrality of money'. Later neoclassical and neo-Keynesian economists adopted the phrase and applied it to their general equilibrium frameworks, giving it its current meaning. The theory states that an increase in money supply does not affect economic output.

Money can only be neutral in the short run but not in the long run as it loses its neutrality as fresh (additional) money is injected into the growing and dynamic economy. A situation of money neutrality is said to exist when the economy is in equilibrium without monetary gaps but in non-neutrality when the economy is in disequilibrium. Based on the early exchange economists' understanding of money as a veil in which it only assisted in the determination of the quantity of goods and services to be traded and their corresponding prices but has no long term role to play. However, in the early colonial era, money may have performed a neutral role due to scarcity of foreign coins for trading purposes and for administration and labour payment only. With the rapid expansion of banks into Africa capable of creating bank credit money, it has long lost its classical characteristic of neutrality. With the existence of inflation in global economies from demand and supply gaps, neutrality can be maintained as hardly in any economy of today where the neutrality theory of money is evident.

Fisher's Transactions Equation

According Fisher (1911) several factors determine the general price level in an economy which include the volume of transaction, the stock of money and the velocity of circulation of money.

Fisher's equation of exchange in the transaction form is as follows:
PT=MV
P=MV/T
where P = general price level T = total amount of transaction, M = money stock, and V = transaction velocity of money in circulation.Some economists use Q in place of T as in MV= PQ, where M is defined as the quantity of money, V is the velocity of money (the number of times in a year that a currency goes around to generate a currency worth of income), P represents the price level and Q is the quantity of real goods sold (real output or real GDP). The quantity theory of money is based on the link between the stock of money (M) and the market value of output that it finances (PQ), where p is the price level and q is the output. The Fisher equation establishes the framework for explaining the changes in price level (inflation) if the money supply changes. It explains the relationship between the quantity of money in an economy and the level of prices of goods and services. In the views of Fishers, two cases subsist. In the first case, general price (P) varies proportionately upwards with the increase in the supply of money (MV), with T remaining constant. On the other hand, general price (P) varies inversely proportionately downwards with the increase in the quantity of goods available (T) with MV remaining unchanged. In the first case, the value of money falls as general price rises. In the second case the value of money rises as the general price falls.
The Fisher's equation of exchange was later modified to reflect total transaction of final total output (national income) with the same underlined assumptions. In this version, the concept of income velocity of money was used for transaction velocity of circulation of money. The income velocity of money measures the average number of times a unit of money is used in making payment involving final goods and services. The income version of the quantity theory of money is written as

$$PY = MV$$

$$P = MV/Y$$

Where M = money stock, V = income velocity of money, P = General Price level, and Y = Real National Income. Therefore, given that income velocity (v) and National product (y) are constant, general price level (P) is determined by the quantity of money (M) Fisher, 1911).

Keynesian Monetary Theory

Keynes (1936) in faulted some of the Quantity Theory of Money assumptions and put forward his own ideas in order to make the theory more acceptable. He favoured short run dynamics rather than long run because their assumptions that Y was fixed at full employment and V was fixed do not apply in uncertainty real world with high level of unemployment. Keynes also argued that change in money supply is not the only reason for change in the general price level, but there is other variables which can affect the price level like the employment of production factors. In the case of absence of full employment, the increasing in money supply will lead to increasing total spending, and then increased the total output. When the economy reaches to full employment, the increasing in money supply only leads to higher prices. Thus, the money supply is nonneutral when the economy operated at less than the full employment level, where there is indirect effect of

money supply on economic activity, through the influence of money supply on interest rates, and then investment and output. Keynesian money supply transmission mechanism can be stated as

Ms↑→ R↓→ I↑→AD↑→Y↑→P↑

where Ms = money supply, R = rate of interest I = Investment, AD = aggregate demand, Y = National Income, P = Price level. The above diagram explains that as money supply increases, interest rates fall leading to increase in investments and increase in aggregate demand. This will ultimately lead to increase in output and employment. As output and employment increase, the demand for wage rate follows and general price levels. Keynes' differences with the classicists may be summarized as follows:

i. A reduction in the real wage rate through price increase will restore full employment equilibrium rather than a cut in the money wage rate.
ii. Interest rate does not depend on the levels of savings and investment but rather savings-investment equilibrium can only be restored by investing the surplus savings
iii. While agreeing that interest rate fundamentally determines level of investment, he opined that a host of other quantifiable and unquantifiable factors determine the level of investment.
iv. He added a factor of marginal efficiency of capital (e) as a new dimension to the determination of investment which according to him a rational entrepreneur should compare with his rate of return (r) in investment decisions.

Conclusively, Keynes changed the orientation of economics from micro to macro, its focus from long run to short run and its emphasis from aggregate supply (AS) to aggregate demand (AD). The relevance of this theory is that an economic stability is based on the premise of Aggregate Supply (AS) = Aggregate Demand (AD). This is confirmed in Fisher's Equation of Exchange such that MV = PT. According to Keynesians, demand for money is influenced by the three motives of transactionary, precautionary, and speculative. The disaggregated bank deposit is in line with these motives as propounded by Friedman and Schwartz **(**1963).

Traditional Approach

Under this theory, money supply is defined as a medium of exchange which consists of currency in the hands of the public plus demand deposits in commercial banks (Keith & Peter, 2003). To them what constitute the money stock of any country would be those mediums that facilitate readily the exchange mechanism and command general acceptability. It is also called narrow money (M1). Hence, M1=C+DD, where C is currency outside the bank, DD is demand deposit.

The Chicago School

The Chicago economists led by Professor Milton Friedman adopted a broader definition of money and symbolized as M2 and they define money supply as a temporary store of value. Their argument is that since in the economy, money income and spending flow streams are not completely harmonized in time so as to make transaction, money should be temporarily stored as a general purchasing power (Keith & Peter, 2003). Thus, money not only functions as a medium of exchange, but also as a temporary store of purchasing power. By implication, the total money stock

must not be restricted to M1 but must include any other asset that command liquidity or near to currency. Money stock or M2=M1+Savings deposits + Time deposit.

(iii) Gurley and Shaw Approach

Introducing another dimension to the definition of money and money supply, Professor John G. Gurley and Edwards Shaw defined currency (C) and demand deposits (DD) as claims against financial intermediaries (central bank and commercial banks. According to these economists, there exists a fairly large spectrum of financial assets which are close substitutes for money and symbolized as M3. Therefore, they define. money supply as M2 plus the deposits of all other non-bank financial institutions like savings banks, building societies, loan associations and others expressed as M3 = C + DD + SD + TD + DNBFI (Keith Band and Peter Howells,2003).

Endogenous Growth Model

Some of the short comings of the neo-classical model gave birth to a new growth theory where the essentials determinants of growth are made to be endogenous in the model. Endogenous growth model pioneered by [106] holds that economic growth is primarily the result of endogenous and not external forces. The theory views creation of knowledge as a side product of investment and he takes knowledge as an input in the production functions of firms. His theory sees new knowledge as the ultimate determinant of long-run growth which is determined by investment in research technology.

To Romer, ideas are more important than natural resources. Therefore, ideas are essential for the growth of an economy. Furthermore, the theory considers changes to technology to be endogenous as technological advancement leads to economic improvements. Similarly, the model assumes innovative ideas to be very important part of economic growth. The new model makes the rate of technological change to be endogenous and can be influenced by government actions and policies. The proponents of the endogenous growth are derived by the views that government policy and economic behavior must be able to affect the growth rate in the long run

Empirical Review

Khobai & Dingela (2017) investigated the dynamic impact of broad money (M_2) on economic growth (GDP) in South Africa using time series data from 1980 to 2010. The study employed the auto regression distributed lag (ARDL) bound testing approach, co-integration, and error correction model. Four microeconomic variables namely Gross Domestic Product (GDP), broad money supply, interest rate and inflation rate were used. The findings revealed that there is statistically significant positive relationship between money supply and economic growth both in short run and long run.

Nwoko, Ihemeje and Anumadu (2016) studied the impact of monetary policy on the economic growth of Nigeria covering the period of 1990-2011. Monetary policy variables were represented by money supply, average price, interest rate and labour force while economic growth was proxied by Gross Domestic Product. Multiple regression models were used as the main statistical tool of analysis. Study showed that CBN Monetary Policy measures are effective in regulating both the monetary and real sector aggregates such as employment, prices, level of output and the rate of economic growth.

Chude and Chude (2016) examined the relationship between broad money supply and economic growth in Nigeria from1987 to 2010 using ARDL model. Their findings revealed that money supply and gross domestic product are positively and significantly related.

Iwedi (2016) examined the link between money supply and economic growth in Nigeria. The variables used were money supply and Real Gross Domestic Product. The researcher applied the use of co-integration and VAR model in a simple regression framework. The findings showed that there is positive relationship and there is unidirectional causality from money supply (M_2) to real GDP in Nigeria during the period of the study.

Pitoňáková (2016) studied household bank deposits in Slovakia applying quarterly data Q2 1998 – Q1 2015 using the ARDL methodology. The results showed that real interest rate, elderly dependency ratio, inflation and gross disposable income boost up deposits, while income growth reduces household deposits. Outcomes indicate that elder generation tends to increase financial wealth in form of bank deposits. The study went further that economic agents have different motives to hold financial wealth in form of liquid assets on bank accounts. Households prefer bank deposits as low risky financial instruments. Demand deposits are by corporates used mainly for transaction purposes. Progress in information technologies and their fast implementation into banking industry mainly in the payment and settlement procedure stimulate economic entities to use cashless payment forms.

Iwedi (2016) studied the link between money supply and economic growth in Nigeria by applying co-integration and VAR model in a simple regression framework with annual time series data, 1970 to 2014. The study discovered that Money supply (M2) has a short and long-run positive and significant link on Real Gross Domestic Product in Nigeria.

Aslam (2011) investigated impact of money supply on economic for Sri Lanka over the period 1959-2013, employed multivariate econometrics variable and Ordinary Least Square. He found that money supply has kept positive impact on the economic growth.
Ekesiobi, Ifebi, Ezeanyeji and Agu (2016) investigated the relationship between savings and private capital formation in Nigeria. Using data spanning 1982 through 2014, OLS and ECM were employed as estimation tools. The study result showed that savings had negative and significant effect on gross capital formation and RGDP. The study explained increase in per capita income to increase disposable income, savings and investment.

Ifionu and Akinpelumi (2015) studied the macroeconomic variables and money supply between 1981 to 2013 using Ordinary Least Square and Causality techniques. The study revealed that apart from inflation having an inverse significance with Money supply (M2) and Exchange Rate (EXR), all other variables such as Gross Domestic Product (GDP) were found to have a positive impact on Money Supply.

Chaitipa, Chokethaworna, Chaiboonsrib & Khounkhalaxc 2015) studied the influence of money supply on the economic growth for Authorized Economic Operators (AEO) open region in the period 1995-2013 adopting Authoregressive Distributive Lag (ARDL) model. The study revealed that money supply is positively and significantly associated with economic growth.

Chinwuba, Akhor and Akwaden (2015) explored the impact of money supply on economic growth in Nigeria with a time series data covering a period of 1981-2008 using simple Ordinary Least Square. The result showed that money supply exerts a considerable positive impact on economic growth.

Tuyishime Memba and Mbera (2015) evaluated the effects of deposits mobilization on financial performance in commercial banks in Rwanda. Through a survey method, questionnaire was administered on 27 staff of a bank. Data set was processed employing SPSS computer software with Pearson and Spearman's correlation analysis to test the nature of relationship. The findings indicated that brand name, marketing strategy, high deposits interest rate affects the level of deposits received and profitability of the bank. The study also revealed that the introduction of innovative banking technology has led to the increase in deposits at a low cost as opposed to the usual way of getting deposits through term deposits and made financial services accessible in the unbanked people. This also made the ROA, ROE, net profit to increase due to increases in the loans volume. The statistical correlation revealed that there is a positive relationship between deposits mobilization and financial performance of commercial banks in Rwanda.

Literature Gap

The effect of money supply on economic growth has been well examined, however periods covered by previous studies in Nigeria creates a gap in scope in this area of study. For example, the previous works of Ogunmuyiwa and Ekone (2010) covered the period from 1980 to 2006; covered the period from 1981 to 2008, Amassona, Nwosa & Olaiya, 2011). covered the period between 1986 and 2009. The periods of study as used by the aforementioned researchers can be regarded as not too recent. This is because a lot of activities in terms of adoption of International Financial Reporting Standards (IFRSs), and introduction of new corporate governance codes have occurred that might render previous findings ineffectual. Therefore, this study adds to existing literature in this area by taking into account estimation period from 1994 to 2021. The study therefore tried to fill these identified gaps by employing disaggregated components of saving deposit and impacts on Nigeria's real gross domestic product.

METHODOLOGY

This study adopts *ex-post facto* design to determine the impact of broad money supply on the Nigerian economy. *Ex-post facto* design is a systematic empirical inquiry in which the investigator has no direct control over the values of the variables applied for the study (Kerlinger, 1971). The preference for this design is influenced by the nature of the data to be processed which for this study is time series. Time series secondary dataset covering the period, 1994 to 2019, was obtained from CBN Statistical Bulletin (various issues). The following data were sourced: Currency in circulation, Demand deposit, Savings deposit, Time deposit, and Foreign currency deposit they are the independent variables while the dependent variable is the Real Gross Domestic Product (RGDP).

Model Specification

Functionally the relationship between RGDP and SD is expressed as follows:

RGDP = f(SD)

RGDP = f(PSSD, SGSD, LGSD)

Where PSSD = Private sector savings deposit; SGSD = State government savings deposit; LGSD = Local government savings deposit, The econometric model is presented thus:

$RGDP = c_0 + c_1PSSD + c_2SGSD + c_3LGSD + U_t$

The model in the log linear form can be expressed as:

$LnRGDP = co + c_1lnPSSD + c_2lnSGSD + c_3LGSD + ut$ …… (3)

c_O is the intercept, c_1-c_3 are coefficients of the independent variables and U is the error term representing the unobserved factors which influence the dependent variables. The *a priori* expectations are c_1-c_3>0

Descriptive Statistics

Descriptive statistics are introductory statements which describe, summarize and arrange the time series data in a manner that it could be easily understood at a glance. Quantitative measures such as the mode, mean, median, maximum, minimum, standard deviation, skewness, kurtosis, Jarque Bera statistics and probability, sum and sum square deviation and number of observations are applied in the descriptive statistics. Descriptive statistics summarizes the basic characteristics of the data set applied for the study. It presents the data as it is while inferential statistics go to analyze the data and infer some conclusions. The mean is the average value of the series obtained by adding up the series and dividing it by the number of observations. The median is the middle value (or average of the two middle values) of the series when the values are arranged from the smallest to the largest. The median is a robust measure of the centre of the distribution which is less sensitive to outliers than the mean. Standard deviation is a measure of dispersion or spread in the series. A standard deviation greater than one (1) invalidates the assumption of normality considered crucial for OLS regression analysis. Skewness is a measure of asymmetry of the distribution of the series around its mean. Kurtosis measures the peakiness or flatness of the distribution of the series. If the kurtosis exceeds 3, the distribution is peaked (leptokurtic) relative to the normal but if the kurtosis is less than 3, the distribution is flat (platykurtic) relative to the normal. Data that come from normal distribution should have a skew equal to zero (0) and kurtosis equal to three (3). Jacque-Bera is a test statistic for testing whether the series is normally distributed. The null hypothesis is that the variables are not normally distributed. The decision rule is to reject when p-value is less than 0.05 level of significance.

Stationarity Test

Stationarity test has to be carried out on the data first to determine whether or not the time series data were stationary. Multiple regression analysis with non-stationary data could yield spurious regression results. If a time series data are stationary, it means time series data and the auto covariance at various lags remain constant over time.Thus, test for stationarity is also called test for integration. It is also called unit root test. Stationarity denotes the non-existence of unit root. (Omotor & Gbosi, 2007) various methods are available for testing the stationarity condition of series. The most widely used are: (1) Dickey-Fuller (DF) test; (2) Augmented Dickey-Fuller

(ADF) test; and (3) Philip Perron (PP) test. The ADF test which is very widely used was applied for this study.

Augmented Dickey Fuller (ADF) Test

The ADF technique tests the null variables of the model for non stationarity or for the presence of unit root.

Ho: The time series is non-stationary (i.e there is unit root).

Decision Rule

$t\text{-}ADF_{(absolute\ value)} > t\text{-}ADF_{(critical\ value)}$:Reject H_o (9)

Note that each variable based on its own ADF test value, if the variable was stationary at level, then it was integrated of order zero i.e 1(0). Note that the appropriate degree of freedom was used. If the variables were stationary at level, it means that even in the short run they move together. The unit root problem earlier mentioned can be explained using the model:

$$Y_i = Y_{t-1} + \mu_1 \quad (10)$$

Where Y_t is the variable in question; μ_1 is stochastic error term.

Equation (a) is termed first order regression because we regress the value Y at time "t" on its value at time (t-l). If the coefficient of Yt-l is equal to l, then we have a unit root problem (non-stationary situation). This means that if the regression

$$Y_t = L\ Y_{t-l} + \mu_1 \quad (11)$$

is solved and L (lag time) is found to be equal to l then the variables Y_t has a unit root (random work in time s cxeries econometrics).

If a time series has a unit root, the first difference of such time series are usually stationary. Therefore to solve the problem, take the first difference of the time series. The first difference operation is shown in the following model.

$$\Delta Y_i = (L\text{-}l)\ Y_{t-l} + \mu_t \quad (12)$$

$$\_\_Y_{t-l} + \mu_t \quad (13)$$

(Note: = l-l=0; Where L = l; $\hat{Y}t = Yt - Y_{t-l}$) (14)

Integrated of order 1 or1 (1)

If the original (random walk) series is differenced once and the differenced series becomes stationary, the original series is said to be integrated of order 1(1).

Integrated of Order 2 or 1(2)

If the original series is differenced twice before it becomes stationary (i.e. the first difference of the first difference), then the original series is integrated or order 2 or 1 (2). Therefore if a time

series has to be differenced Q times before becoming stationary it said to be integrated of order Q or 1(q).

We shall test the stationarity of our data using the ADF test.

Regression Analysis

Regression analyses is basically concerned with the study of the dependence of one variable (dependent variable) on one or more other explanatory or independent variables (regressors) with a view to finding out or estimating/predicting the mean or average value of the former in terms of known or repeated values of the latter (Gujarati, 2003). In specific terms, regression analyses explain the variation in an outcome (dependent variable) Y, as it depends on a predictive (independent/explanatory variable) X, it is a correlation-based test. Correlation is one of the most common and useful statistics. It describes the degree of relationship between two variables. The rule of thumb is to use OLS when the result of stationarity test is in the order1 (0) or 1(1), while ARDL should be employed if it is a case of mixed order but not in the order 1(2). This study adopted both OLS and ARDL testing techniques based on the result of the unit root test.

(ii) Autoregressive Distributed Lag (ARDL) Approach

This study employed the Autoregressive Distributed Lag (ARDL) bounds test approach proposed by Pesaran, Shin and Smith (2001) based on unrestricted error correction model. Compared to other co-integration procedures such as (Engle & Granger, 1987) and (Johansen & Juselius, 1990) the bounds test approach appears to have gained popularity in recent times for a number of reasons. First, the endogeneity problems and inability to test hypotheses on the limited coefficients in the long run associated with Engle-Granger method are avoided, that is, it has superior statistical properties on small samples as it is relatively more efficient in small sample data sizes evident in most developing countries. Second, the long run and short run parameters of the model are estimated simultaneously. Third, all the variables are assumed to be endogenous. Fourth, it does not require unit root testing usually employed to determine the order of integration of variables. Lastly, whereas all the other methods require that the variables in a time series regression are integrated of order one, $I(1)$, only that of (Pesaran et al., 2001) could be used regardless of whether the underlying variables are $I(0)$, $I(1)$.

In order to test the existence of long run relationship between Real Gross Domestic Product and money supply variables, a bound test is conducted. Nonetheless, to apply the bounds test, it is important to ensure that the variables under consideration are of mixed order of stationarity and not integrated at an order higher than one. In the presence of $I(2)$ variables, the critical values provided by Pesaran, Shin, and Smith (2001) are no longer valid.

Diagnostic/Reliability Checks

This is an important stage in the analysis of the study because it validates the parameter estimating outcomes achieved by the estimated model such as residual autocorrlation and normality among others. Some of these tests are briefly discussed as follows:

(i) Jarque-Bera Normality Test: The residual normality test was used in the study. It is the multivariate extension of the Jarque-Bera normality test

(ii) Normality test usually combines both skewness and kurtosis of the sample data to see if the combination matches a normal distribution with aa skew equal to zero (0) and kurtosis equal to three (3). If the sample data possesses these two properties, it will be concluded that the data came from normal distribution and therefore valid for linear regression analysis. The normality of data can also be determined from the probability value (p-v), if the computed or the actual p-v <0.05 (that is less than the Alpha significant value of 0.05 or equal to it) then, it is a strong evidence that the Null hypothesis of normality of data was invalid and should be rejected. If p-value >0.05 then the alternative hypothesis then has to be accepted. The p-value rejects or accepts the Null hypothesis of normality of data. The smaller the p-value is from the Alpha significant value of 0.05, the stronger the evidence that Null hypothesis of normality of data should be rejected.

(iii) Breusol Godfrey Serial Correlation LM Test: The Langrange Multiplier (LM) test was used in this study since it is a multivariate test statistic for residual serial correlation up to the specified lag order.

(iv) White heteroskedasticity Test: This test, proposed by Halbert White (1980), is a statistical test used to establish the differing variances of the error term in a time series data set. Heteroskedasticity arises most often with cross-sectional data mainly due to the presence of outlier in the data. Outlier in heteroskedasticity means that there are observations that are either small or large with respect to the other observations in the sample.

(v) Residuals (Cusum and Cusumsq) Stability Tests: CUSUM and CUSUM of Square tests for parameter stability were first introduced into the Statistics and Econometrics literature by Brown, Durbin and Evans in 1975. Cummulative Sum (CUSUM) and Cummulative Sum of Square (CUSUMSQ) are techniques for testing the constancy of regression relationships over time. CUSUM and the CUSUMSQ tests are tests which are applied to assess parameter stability [102].

Co-integration Test (Johansen's test)

It has already been warned that the regression of a non-stationary time series on another non stationary time series may yield a spurious regression. Specifically, co-integration means that despite being individual non stationary, a linear combination of two or more time series can be stationary. Thus co-integration of two (or more) time series suggests that there is a long- run or equilibrium relationship between them (Gujarati, 2003). There is a difference between test for unit root and test for co-integration. The former is performed on univariate (i. e single) time series, while the deals with relationships among a group of variables where (unconditionally) each has a unit root.

T-Test

This is a test of significance of the regression coefficients (Gujarati, 2003). Generally speaking, the test-of-significance is a test of statistical hypothesis. A test of significance is a procedure which uses sample results to verify the truth or falsity of a null hypothesis (Ho). T-Test assumes that Ho: $\beta_1 = 0$ (i.e statistically insignificant). Where β_1 = the coefficient of the model. The T-Test results

indicate the strenghth (significance) of the coefficients of the variables of the model for prediction purposes.

The t-statistic is inversely related to the standard error. The more the standard error tends towards zero, the higher the t-statistic and the more reliable.

Decision Rule

The decision rule for the T-test of significance is:

$T_{calculated} > t_{(critical\ value)}$: Reject Ho (if otherwise accept H_1)

Note: df=n-k where n=No. of observations

K=No. of parameter estimates

ta/2 =t 0.025

F-test:

F-test tests the overall significance of the models. The F-test determines the overall significance of an estimated model. i.e. it test the goodness of fit of the model (Patterson, & Okafor, 2007). Thus, the f-statistic tests how the overall model fits the relationship between the variables. According to Gujarati (2003) the F-statistic tests the overall significance of a multiple regression.

Decision rule:

Given the k- variable regression model:
$Yi = \beta_1 + \beta_2 X_{2i} + \beta_3 x_{3i+\ldots\ldots+} \beta_k x_{ki} + \mu_1$ (15)
To test the hypothesis:
Ho: $\beta_2 = \beta_3 = \ldots = \beta_k = 0$ (16)
(i.e all slope coefficients are simultaneously zero) versus

Hi: not all slope coefficients are simultaneously zero
(Such that if
$F_{cal} > F_{a\ (k-l,\ n-k)}$: Reject Ho (otherwise accept H_1)
Where:
$Fa_{(k-l,\ n-k)}$= critical f value at the level of significance and (k-l) numerator degree of freedom (DF) and (n-k) denominator DF. Alternatively, if the p value of F-cal is sufficiently low, Ho can be rejected.
It should be noted that k is the number of variables (both y and x variables) in the regression. If Ho is accepted it means that the model is not satisfactory or no well specified or not a good fit. On the other hand, if Hi is accepted (i.e. Ho is rejected) it means that the overall significance of the model is good enough. Note that F statistic can be computed thus:

$$F = \frac{ESS/df}{RSS/df} = \frac{ESS/(kl)}{RSS/\ n-k)} \quad 917)$$

Where: ESS=Explained sum of squares; RSS=Residual sum of squares K-l = numerator df; n-k = denominator df; k =No. of variables in the regression.

R^2 (Coefficient of Determination)

R^2 is the multiple coefficient of determination (Gujarati 2003). It is conceptually akin to r^2 (the same coefficient of determination used for only the two-variable model. R^2 is used where the variables –both Y and X – are more than two. R^2 gives the proportion or percentage of the total variation in the dependent variable y that is accounted for by the single explanatory variable x). Similarly, R^2 gives the proportion of the variation in y explained by the variables X_2 X_3 etc jointly. The higher the R^2 values the better. It lies between 0 and l. If it is l, the fitted regression line explains any of the variation in Y. If it is 0, the model does not explain any of the variation in Y. The fit of the model is "better" the closer R^2 is to l. (Note that R is the coefficient of multiple correlations, and it measures the degree of association between Y and all the explanatory variables jointly. It is always taken to be positive, but it is of little importance in practice. The more meaningful quantity is R^2). We shall therefore use the R^2 to determine the extent to which variation in economic growth variable is explained by variations in independent variables.

Causality test

Granger causality test is a statistical hypothesis for determining whether one time series is useful for forecasting another. Although correlation regression analysis deals with dependence of one variable on the other, it does not necessarily imply causation in the real sense. A statistical correlation relationship in itself cannot logically imply causation (Kendall, & Stuart, 1961) and Zellner, 1979). Correlation means there is relationship or pattern between the values of the two variables under study in which they can change together while causation means that one event causes another event to occur.

According to [49], a variable say *y* is said to granger cause another variable say *x* if past and present values of *y* help to predict *x*. The traditional Granger Causality (based on a bi-variate relationship) recognizes the following types:

Unidirectional Causality: This is a case where X granger-causes Y or Y granger-causes X but not the reverse in each case. This means the causality either runs from X to Y (X→Y) or from Y to X (Y→X) but without the reverse occurring in each case.

Feedback (Bilateral) Causality: In this case the causality runs on both sides but on the condition that the coefficients of the set (variables) are statistically and significantly different from zero in both cases, that is, (X↔Y) and (X↔Y).

Independence: This is the case where the coefficients of the set (X and Y) are statistically insignificant in both regressions. In this case, neither X granger-cause Y nor Y granger-cause X. Y and X represents the dependent and independent variables respectively. In order to complement this study, a causality test was conducted to establish the direction of causality between money supply variables and real GDP.

The Error Correction Model (ECM)

This test is conducted to ascertain the short run effect of the explanatory variables on the dependent variable. [36] in the study of the path to economic growth, established that the long-run path of economic growth is paved with instabilities caused by economic shocks. The short run shocks

create error along the growth trajectory, which have to be corrected. The correction of the errors will take some periods (years). ECM is designed to establish the magnitude of the error created by economic shocks and also determine how long it will take to clear the error on the long run growth path to enable the variables converge once more at an equilibrium point for the economy to continue the long run movement. Therefore the purpose of the ECM test is to calculate the speed of the periodic adjustment of the variables of the model in the match towards long run equilibrium and to determine the number of period (year) it would take the model to achieve long run equilibrium.

Over parameterized Error Correction Model (OPECM)

The over parameterized error correction model was constructed after the existence of long-run relationship between the variables has been established. This is to ascertain that there are no overbloated and insignificant variables with wrong signs which could mislead the model interpretation.

The Parsimonious Error Correction Model (PECM)

The Parsimoniuos Error Correction Model was constructed where the over parameterized ECM was found to be unsuitable for calculating ECM coefficients probably because of over bloated and insignificant variables with wrong signs. The Parsimonious model is a refined model capable of producing the right ECM coefficients and rejecting over bloated and significant variables with wrong signs.

Cholesky Variance Decomposition Test

The main objective of variance decomposition is to determine how economic growth reacts to shocks in any of the variables and to establish which of the variables is relatively the most important and how long, on average, it will take for the economic growth to restore its equilibrium following such shock. The F-tests and an examination of causality in a VAR will show which of the variables in the model has statistically significant impact on the future value of each of the variables in the system.

ANALYSIS AND DISCUSSION OF RESULTS

Table1: Data of the Descriptive Statistics

	LNRGDP	LNPSSD	LNSGSD	LNLGSD
Mean	10.62796	6.601155	-0.176320	-1.026391
Median	10.70191	6.803001	-0.372747	-1.158342
Maximum	11.18988	9.207744	2.651127	3.265378
Minimum	9.902437	3.897924	-3.506558	-2.813411

Std. Dev.	0.477069	1.626665	1.397578	1.361387
Skewness	-0.268258	-0.119249	0.011869	1.144366
Kurtosis	1.494538	1.759623	2.732399	4.691166
Jarque-Bera	2.979976	1.861318	0.084203	9.448055
Probability	0.225375	0.394294	0.958772	0.008879
Sum	297.5829	184.8323	-4.936947	-28.73895
Sum Sq. Dev.	6.145063	71.44304	52.73709	50.04111
Observations	28	28	28	28

Source: Author's Eviews10 Output

The descriptive statistics shows that most of the variables exhibited positive mean and positive median which is an indication that the dataset may come from normal distribution. The mean and median of the dataset are near equal confirming the normal distribution of the time series. The maximum value of RGDP in the time series in log form was 11.19units with minimum value of 9.90units. Also, the maximum and minimum values for the other variables were captured. While the skewness captures how variables lean to one side, the kurtosis shows the peakness of distribution. The skewness close to zero and kurtosis also close to 3 except LNLGSD validate the assumption that the dataset came from normal distribution. Jarque-Bera statistic (JB) with most variables showing p.values greater than Alpha value of 0.05 implies a rejection of the Null hypothesis and acceptance of the normal distribution of the time series.

Real Gross Domestic Product

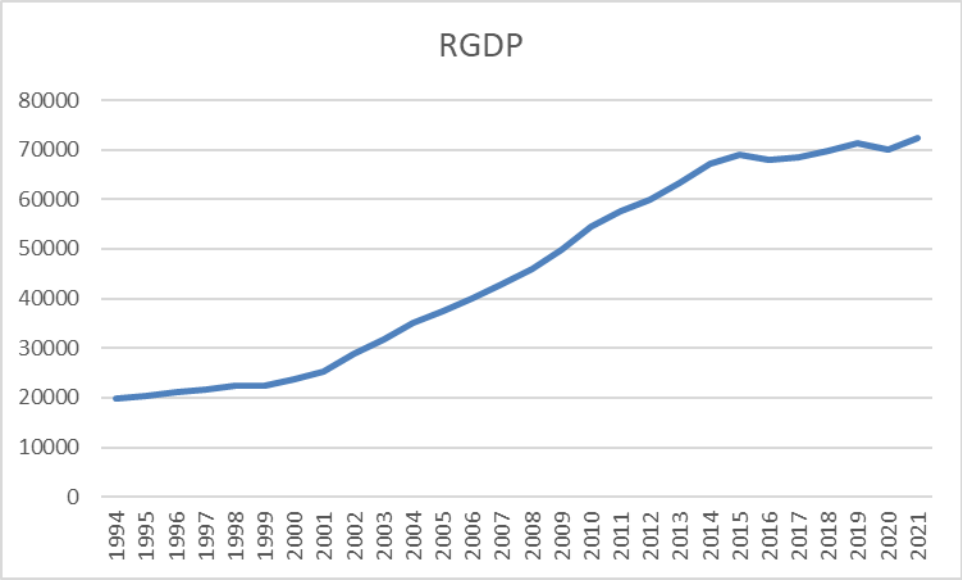

Figure 1: Trends of the Real Gross Domestic Product in N'bn (1994-2021)
Source: E-views10 output

Figure 1 depicts a rising trend of the RGDP. Nigeria's real gross domestic output grew at an average of 5.3 per cent between 1994 to 2002. A steeper growth was observed with the return of democracy era in 1999 despite a dismal performance between 2015 and 2019. The rise in output growth was driven by improved macroeconomic environment, relative stability in the goods and foreign exchange markets and enhanced investor confidence in the economy. RGDP declined by 1.9 per cent beween 2019 and 2020 due to the COVID-19 pandemic with lockdown of economic activities. Thereafter from 2020 it grew from N70,014 billion to N72,394 billion in 2021 ending the period with a growth rate of 3.4 per cent.

Disaggregated Savings Deposit

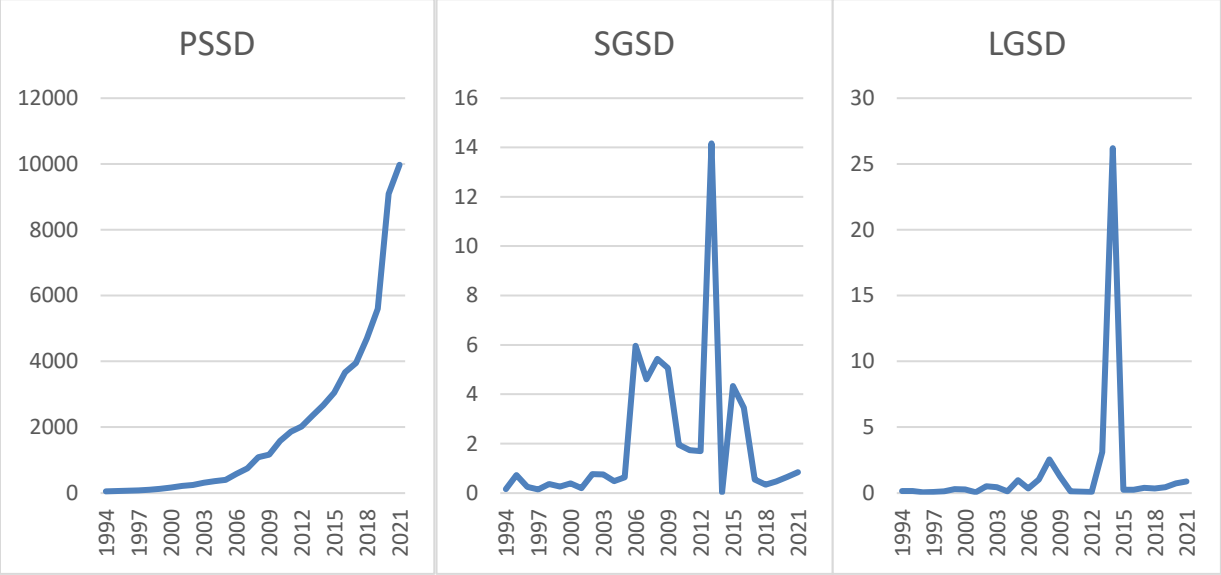

Figure 2: Trends of the Disaggrgated Savings Deposits in N'bn (1994-2021)
Source: E-views10 output

In the period studied, Private Sector Savings Deposit grew vertically and phenomenally throughout the period. From N49.3bn in 1994 it rose unimpeded to N748.25bn in 2007. It took a quantum leap to N1083.84bn in 2008 and rose to N3044.30bn in 2015 closing at the peak of N9974.07bn in 2021. State Government Savings Deposit was characterized by volatilities during the period. Its highest peak was attained in 2006 2013 with N14.17bn. From N0.03bn in 2014, SGSD nosedived to N0.34n in 2018 and closing at N0.84BN IN 2021, Local Government Saving Deposit virtually maintained the same trend as SGSD. It began with a modest position of N0.14bn in 1994 with initial small increases until 2002 when it increased to N0.97bn in 2005, declined to N0.34bn in 2006. Thereafter it almost tripled to N1.01bn in 2007 and with several fluctuations it closed at N0.88bn in 2021. There is a high level of similarity in the pattern of movements for the private sector, state government and local government savings deposits implying some degrees of relationship among the variables.

Analysis of Results

Table 2: Summary of ADF Unit Root Test

Variable		t-statistic	Critical value	Prob.	Order of Integration
LNRGDP	Level	-1.514410	-2.976263	0.5112	1(1)
	1st Diff	-6.018807	-2.986225	0.0000	
LNPSSD	Level	-0.483335	-2.976263	0.8799	1(1)
	1st Diff	-6.025736	-2.981038	0.0000	
LNSGSD	Level	-4.317891	-2.976263	0.0023	1(0)
	1st Diff	-	-	-	
LNLGSD	Level	-3.610032	-2.981038	0.0126	1(0)
	1st Diff	-	-	-	

Source: E-views10 output

As in the above Table 2, while RGDP and PSSD became stationary at 1st difference, SGSD and LGSD were stationarity at level.

Normality and Reliability tests

In order to further ascertain if the data for the study were good enough for analysis, we investigated the dataset for normality. The Jarque-Bera Normality test which requires that for a series to be normally distributed, the histogram should be bell-shaped.

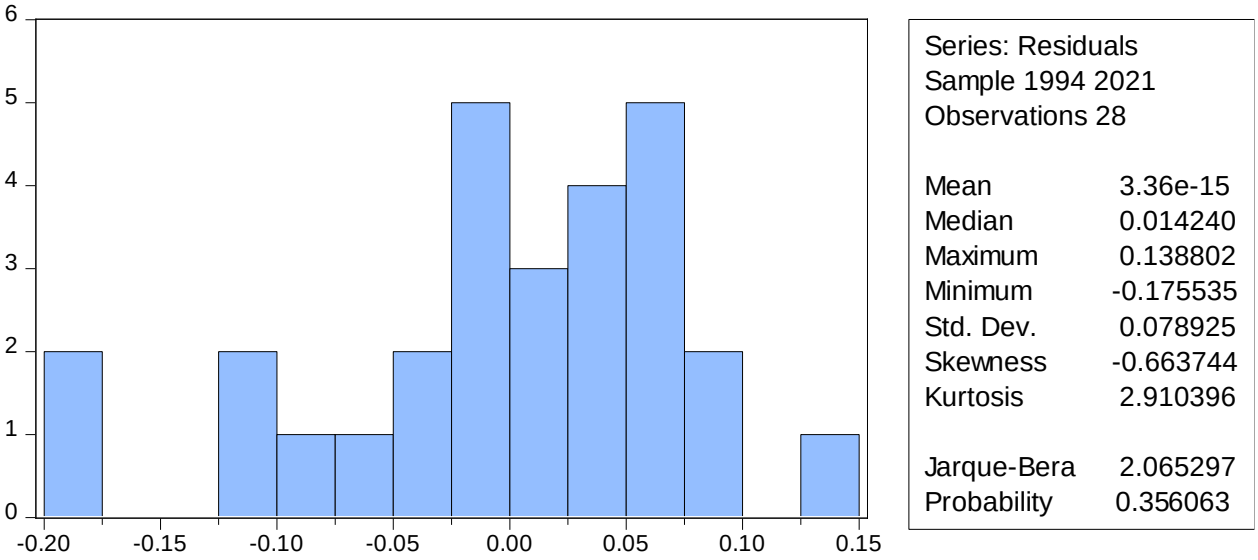

Figure 3: Jarque-Bera Normality Test for Model III

Source: E-views10 output

In Figure 3, the Histogram Normality Test shows absence of bell-shape. However, with skewness of -0.065297 which is close to the expected skewness of 0.000 and kurtosis of 2.910396 which is close to benchmark of 3.0, the dataset can be said to be distributed around the mean to a large extent. Therefore the dataset came from normal distribution and could be applied for regression analysis. Furthermore, the JB statistic and p-value of 2.065297 and 0.356063, respectively, suggest to a tolerable extent that the residuals of the model are normally distributed.

Table3. Serial Correlation, Heteroskedasticity, and Ramsey Reset Tests

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.20935	Prob. F(2,22)	0.4203
Obs*R-squared	0.72949	Prob. Chi-Square(2)	0.4006
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.152982	Prob. F(3,24)	0.7167
Obs*R-squared	9.568309	Prob. Chi-Square(3)	0.3226
Scaled explained SS	0.714829	Prob. Chi-Square(3)	0.0816

Ramsey RESET Test
Equation: UNTITLED
Specification: LNRGDP LNPSSD LNSGSD LNLGSD C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.707236	23	0.4012
F-statistic	0.914656	(1, 23)	0.4012
Likelihood ratio	0.340805	1	0.0676
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	0.018916	1	0.418916
Restricted SSR	0.168189	24	0.707008
Unrestricted SSR	0.149273	23	0.726490

Source: E-views10 output

The Null hypothesis of no serial correlation in Model III is accepted with p-value of 0.4203 as shown in Table 3 and which is greater than the Alpha value of 0.05.The Null hypothesis of heteroskedasticity is also accepted given the p-value of 0.7167 of Table 4.17 which is higher than the 0.05 Alpha value implying absence of heteroskedasticity in Model III.

In the model RESET results as shown in Table 4.17, t = 0.707236 which falls within the threshold of 0 and 1 implying that there is neither under specification or over specified of variables. The Model contains all relevant variables for the study. The acceptance of the Null hypothesis is backed by the p-value of 0.4012 which is greater than the Alpha value of 0.05 implying the acceptance of the Null hypothesis of the absence of non-linear combinations associated with the fitted data (independent variavles) of the model which tended to explain any variation in the dependent (response) variable.

ARDL Co-integration Test and Co-efficient Estimation

The fact that the Unit root tests for Model III portrayed a mixed order of integration, that is, 1(1) and 1(0) disqualified the use of Johansen Co-integration test are the Engle-Granger Co-integration test which are strictly applied on data that integrated individually at 1st order. Autoregressive Distributed Lag (ARDL) Bound Test will be applied for testing Model III because of the mixed order of differencing. Developed by [102] and [103], the ARDL Bound testing and estimation technique is more robust than the commonly employed techniques like Engel-Granger and Johansen Co-integration techniques. Its superiority lies in its flexibility as it can be used with 1(0) or 1(1) variables or both; works well with small sample data; and provides unbiased estimation of

long run relationship and long run parameters. By Distributive Lag (DL) variables lagged values of observed exogenous predictor variables are implied while Autoregressive (AR) variables are lagged values of observed endogenous response variables. The summary of the bound test is shown in Table 4.18

Table 4: ARDL Bound Test Result

F-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	9.532909	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Actual Sample Size	24		Finite Sample: n=35	
		10%	2.618	3.532
		5%	3.164	4.194
		1%	4.428	5.816
			Finite Sample: n=30	
		10%	2.676	3.586
		5%	3.272	4.306
		1%	4.614	5.966

Source: E-views 10 output

As can be seen from the table 4 above, the value of F-statistic of 9.532909 is greater than the upper bound value 3.67 at 5% level of significance and even greater than all the upper bound values at 1% and 10%. This is a clear case of co-integration indicating that a long run relationship exists between the endogenous variable and the exogenous variables. Therefore the RGDP and the Savings deposits variables used in the model have long run equilibrium relationship and impacts on the Nigerian economy.

Autoregressive Distributed Lag (ARDL) Estimation

Having established the stationarity of the variables and a long run relationship between the endogenous and exogenous variables, the study went further to estimate the coefficients in the econometric model and equally test the hypotheses of the study using ARDL estimation technique. Below is the ARDL regression result.

Table 5: ARDL Test Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNRGDP(-1)	-0.325472	0.290921	-1.118765	0.3141
LNRGDP(-2)	0.115007	0.228015	0.504383	0.6354
LNRGDP(-3)	-0.986237	0.233366	-4.226133	0.0083
LNRGDP(-4)	0.136537	0.137854	0.990448	0.3674
LNPSSD	-0.141953	0.033208	-4.274612	0.0079
LNPSSD(-1)	-0.103058	0.043314	-2.379342	0.0632
LNPSSD(-2)	-0.132784	0.063924	-2.077229	0.0924
LNPSSD(-3)	0.310839	0.065782	4.725300	0.0052
LNPSSD(-4)	0.614701	0.121305	5.067423	0.0039
LNSGSD	0.037457	0.006709	5.583008	0.0025
LNSGSD(-1)	0.040500	0.006776	5.977424	0.0019
LNSGSD(-2)	0.042648	0.006346	6.720880	0.0011
LNSGSD(-3)	0.030034	0.006351	4.729313	0.0052
LNLGSD	0.009102	0.003558	2.558562	0.0507
LNLGSD(-1)	0.010571	0.003425	3.086086	0.0273
LNLGSD(-2)	0.000956	0.003312	0.288511	0.7845
LNLGSD(-3)	0.013227	0.004084	3.238660	0.0230
LNLGSD(-4)	-0.003774	0.003317	-1.137892	0.3067
C	18.79046	2.861172	6.567401	0.0012
R-squared	0.999845	Mean dependent var		10.74207
Adjusted R-squared	0.999286	S.D. dependent var		0.414577
S.E. of regression	0.011078	Akaike info criterion		-6.152999
Sum squared resid	0.000614	Schwarz criterion		-5.220373
Log likelihood	92.83599	Hannan-Quinn criter.		-5.905573
F-statistic	1789.276	Durbin-Watson stat		2.107334
Prob(F-statistic)	0.000000			

Source: E-views10 output

Table 5 revealed mixed results, LNPSSD (-3), LNSGSD, LNSD with coefficients 0.310839, 0.037457 and 0.009102 and t-statistic -4.226133, 5.583008 and 2.558562 respectively showed positive and significant effect on RGDP. This implies, for instance, that a 1unit increase in the LNPSSD of the three previous years will result in a 0.03units increase in current year RGDP. Some variables of the model have p-values greater than the Alpha value of 0.05. The Null hypothesis of no significant relationship between these variables and RGDP is accepted. With the lagged model the variations in the baseline explanatory variables explained about 99.98% of the changes in RGDP during the period. The high R^2 makes the reliability of the coefficients for any forecasting questionable.

Long-Run Estimation

The results of the estimated long run coefficients using the ARDL approach is presented in the table 6 below. The model selected by AIC is (4,4,3,4,).

Table 6: ARDL Long Run Form

Levels Equation Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPSSD	0.265874	0.001909	139.3096	0.0000
LNSGSD	0.073120	0.003110	23.50950	0.0000
LNLGSD	0.014602	0.004813	3.033607	0.0290
C	9.120855	0.019834	459.8683	0.0000

EC = LNRGDP - (0.2659*LNPSSD + 0.0731*LNSGSD + 0.0146*LNLGSD + 9.1209)

Source: E-views10 output

The estimated coefficients of the long-run relationship between RGDP, PSSD, SGSD, and LGSD are:

EC = LNRGDP - (0.2659*LNPSSD + 0.0731*LNSGSD + 0.0146*LNLGSD +9.1209)

LNRGDP = 9.1209 + 0.2659LNPSSD + 0.0731LNSGSD + 0.0146LNLGSD

139.3096* 23.50950* 3.033607*

0.001909# 0.003110# 0.004813#

The result of above equation in table 6 above indicates that Private sector savings deposit (PSSD) report a positive and significant relationship to Real Gross Domestic Product in Nigeria. This implies that a unit increase in Private sector savings deposit will lead to an increase of 0.2659 units in Nigeria's national output. Another explanatory variable SGSD with a p-value of 0.0000 which is less than the Alpha value of 0.05 made a mild contribution to the Nigeria's national income. LGSD with a p-value of 0.0290 made the least contribution to RGDP during the period. The next step is to calculate the error correction co-efficient, CointEq(-1) to determine the speed required to restore the deviations of the variables from the long-run equilibrium path to equilibrium path as a result of short run shocks which destabilized on the long-run equilibrium path of the explanatory variables. The Error Correction Model besides determining the adjustment speed for restoring equilibrium contains over bloated variables and creates wrong signs thereby making the coefficients of the Error Correction Model more reliable for long term forecasting. The result of the Error Correction Model (ECM) in Table 7

Table 7: ARDL Error Correction Result

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRGDP(-1))	0.734693	0.081745	8.987597	0.0003
D(LNRGDP(-2))	0.849700	0.115587	7.351151	0.0007
D(LNRGDP(-3))	-0.136537	0.080124	-1.704082	0.1491
D(LNPSSD)	-0.141953	0.017781	-7.983338	0.0005
D(LNPSSD(-1))	-0.792756	0.086718	-9.141811	0.0003
D(LNPSSD(-2))	-0.925540	0.117473	-7.878763	0.0005
D(LNPSSD(-3))	-0.614701	0.081850	-7.510125	0.0007
D(LNSGSD)	0.037457	0.004164	8.995641	0.0003
D(LNSGSD(-1))	-0.072682	0.008652	-8.400267	0.0004
D(LNSGSD(-2))	-0.030034	0.004560	-6.587159	0.0012
D(LNLGSD)	0.009102	0.001458	6.241771	0.0015
D(LNLGSD(-1))	-0.010408	0.001917	-5.428524	0.0029
D(LNLGSD(-2))	-0.009453	0.002162	-4.371195	0.0072
D(LNLGSD(-3))	0.003774	0.001455	2.594309	0.0486
CointEq(-1)*	-0.660165	0.222417	-9.262623	0.0002
R-squared	0.980822	Mean dependent var		0.050030
Adjusted R-squared	0.950989	S.D. dependent var		0.037297
S.E. of regression	0.008257	Akaike info criterion		-6.486332
Sum squared resid	0.000614	Schwarz criterion		-5.750049
Log likelihood	92.83599	Hannan-Quinn criter.		-6.290996
Durbin-Watson stat	2.107334			

Source: E-views10 output

The ECM (-1) result shows the adjustment speed and the time it will take for the variables of the model to adjust and re-converge at an equilibrium point after drifting apart following an initial shock along the short-run equilibrium path. ECM (-1) is correctly signed with a co-efficient of -0.660165 and p-value 0.0002, implying acceptance of a long run relationship between the explanatory variables. The ECM results indicate that at the 66.02% speed of adjustment per annum the errors of the model corrected each period (each year). In other words, the speed implies that in the long run, 66.02 can be corrected after a number of periods (years) determined as follows: 100/66.02 periods (years). From the result, it will take approximately one year six months for the variables to reconverge at a long-term equilibrium position. The adjusted coefficient of determination (Adj R^2) stands at 98.08 percent portraying a good fit.

Table 8: Pairwise Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
LNPSSD does not Granger Cause LNRGDP	26	2.99057	0.0720
LNRGDP does not Granger Cause LNPSSD		0.58820	0.5642
LNSGSD does not Granger Cause LNRGDP	26	1.94131	0.1684
LNRGDP does not Granger Cause LNSGSD		1.65443	0.2152
LNLGSD does not Granger Cause LNRGDP	26	0.25445	0.7777
LNRGDP does not Granger Cause LNLGSD		2.99252	0.0719
LNSGSD does not Granger Cause LNPSSD	26	0.33463	0.7193
LNPSSD does not Granger Cause LNSGSD		0.38518	0.6850
LNLGSD does not Granger Cause LNPSSD	26	0.26415	0.7704
LNPSSD does not Granger Cause LNLGSD		2.75127	0.0869
LNLGSD does not Granger Cause LNSGSD	26	2.33304	0.1216
LNSGSD does not Granger Cause LNLGSD		3.90059	0.0363

Source: E-views10 output

Interpretation of Granger Causality Test Results

1. LNPSDD does not Granger Cause LNRGDP: The p-value of 0.0720 is greater than the Alpha value of 0.05 as stated above is accepted. Therefore LNLGDD does not actually Granger cause LNRGDP. The low F-statistic of 2.99057 confirms the acceptance of the Null hypothesis.

2. LNRGDP does not Granger Cause LNPSSD: The p-value of 0.5642 is greater than the Alpha value of 0.05 The Null hypothesis as stated above is accepted. The low F-statistic of 0 confirms the acceptance of the Null hypothesis.

3. LNSGSD does not Granger Cause LNRGDP: The p-value of 0.1684 is higher than the Alpha value of 0.05. The Null hypothesis as stated above is accepted. The low F-statistic of 1.94131 confirms the acceptance.

4. LNRGDP does not Granger Cause LNSGSD: The p-value of 0.2152 is greater than the Alpha value 0.05. The Null hypothesis of no significant relationship between LNRGDP and LNSGSD is accepted. The low F-statistic of 1.65443 confirms the acceptance.

5. LNLGSD does not Granger Cause LNRGDP: The p-value of 0.7777 is greater than the Alpha value of 0.05 The Null hypothesis as stated above is accepted. The low F-statistic of 0.25445 confirms the acceptance of the Null hypothesis.
6. LNRGDP does not Granger Cause LNLGSD: The p-value of 0.0719 is higher than the Alpha value of 0.05. The Null hypothesis as stated above holds. The low F-statistic of 2.99252 confirms the acceptance of the Null hypothesis.
7. LNSGSD does not Granger Cause LNPSSD: The p-value of 07193 is higher than the Alpha value of 0.05. The Null hypothesis as stated above is accepted. The low F-statistic of 0.33463 confirms the acceptance.
8. LNPSSD does not Granger Cause LNSGSD: The p-value of 0.6850 is greater than the Alpha value 0.05. The Null hypothesis of no significant relationship between LNLPSSD and LNSGSD is accepted. The low F-statistic of 0.38518 confirms the acceptance.
9. LNLGSD does not Granger Cause LNPSSD: The p-value of 0.7704 is greater than the Alpha value of 0.05.The Null hypothesis is here accepted. The low F-statistic 0.26415 confirms the acceptance.
10. LNPSSD does not Granger Cause LNLGSD: The p-value of 0.0869 is higher than the Alpha value.The Null hypothesis as stated above is accepted. The low value F-statistic of 2.75127 confirms the acceptance.
11. LNLGSD does not Granger Cause LNSGSD: The p-value of 0.1216 is greater than the Alpha value of 0.05. The Null hypothesis of LNLGSD does not Granger Cause LNSGSD is accepted. The low F-statistic of 2.33304 confirms it.
12. LNLGSD does not Granger Cause LNLGSD: The p-value of 0.0363 is smaller than the Alpha value of 0.05 as stated above is rejected. Therefore LNLGSD does actually Granger cause LNLGSD. The high F-statistic of 3.90059 confirms the rejection of the Null hypothesis.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study looked at the effect of savings deposits on the growth of Nigeria real gross domestic product. The study has proved that money-output function conforms to Irvin Fisher's Exchange Equation and also incorporates the idea of other well-known theories. Pairwise Granger Causality in corroborating these theories, revealed that all the exogenous factors of money supply act as growth-drivers. The study has further established that a disaggregated M2 provides more reliable monetary movement tool to address economic challenges of monetary nature in Nigeria. From the findings, the study conclude that Private Sector Savings Deposit, State Government Savings Deposit and Local Government Savings Deposit yielded positive and significant relationship with RGDP.

Recommendations

i. More credit facilities should be granted from time deposits to boost employment and output. Result of the study reveals that all the Time deposit components made no significant impact on the economy. This implies that though time deposits recorded a rising trend, it failed to act as a growth-booster due to banks' inability to grant facilities therefrom.
ii. More incentives need to be in place to discourage leakages and high volatility of foreign currency deposit towards improved growth of the local economy. Foreign Currency Deposit shows positive and significant influence on RGDP and as such authorities should encourage repatriation of foreign currency proceeds and diaspora remittance into Nigeria's economy by encouraging exports and inward unrequited transfers.
iii. In monetary management, rather than aggregating M2 components, authorities should strive to disaggregate Broad Money Supply components to determine the individual micro components' impact on the economy and design appropriate policy measures to address any adverse impacts that may arise.
iv. There is need to strengthen the productive base of the country's economy as well as promptly address emerging economic shocks to maintain a targeted growth path towards the desire economic growth and development.

REFERENCES

Amassona, D., Nwosa, P.I. & Olaiya, S.A.(2011). An appraisal of monetary policy and its effect on macroeconomic stabilization in Nigeria, *Journal of Emerging Trends in Economics and Management Sciences (JETEMS),* 2(3), 232-237.

Aslam, A.L.M. (2011). Impact of money supply on sri lankan economy: An econometric analysis. *International Journal of Social and Humanistic Sciences*, 6(7),11-17.

Central Bank of Nigeria (2012). Monetary sector modelling for Nigeria, *CBN Research Department Publication*, ISBN, 978-978-53289-5.0. Website: www.cbn.gov.ng

Chaitipa, P.,Chokethaworna, K.,Chaiboonsrib, C.&Khounkhalaxc, M.(2015). Money supply influencing on economic growth-wide phenomena of AEC open region. *International Conference on Applied Economics,* 2(4), 108-115

Chinwuba, O., Akhor, S. O., & Akwaden,S.T.(2015). Monetary policy innovations and growth rate of output in Nigeria, *International Journal of Economics and Business Management*, 1(4), 1-15.

Chinwuba, O., Akhor, S. O., & Akwaden,S.T.(2015). Monetary policy innovations and growth rate of output in Nigeria, *International Journal of Economics and Business Management*, 1(4), 1-15.

Chude,N.P., & Chude, D.I. (2016). Impact of money supply on Nigerian economic growth, *IIARD International Journal of Banking and Finance Research*, 2(1), 46-50.

Ekesiobi, C., Ifebi, C., Ezeanyeji, A & Agu, A (2016). Analysis of savings and private capital formation in Nigeria, *Research on Humanities and Social Sciences*, 6(12), 104-109

Feridun, M. & Adebiyi, M. A. (2005). Forecasting Inflation in developing economies: The case of Nigeria. *International Journal of Applied Econometrics and Quantitative Studies*, 6(3), 2-4.

Fisher, Irving (1911). *The purchasing power of money*, New York, Macmillian Publishers

Friedman, M. & Schwartz, A. J. **(**1963). *A Monetary History of the United States, 1867–1960.* Princeton, Princeton University Press.
from Nigeria, *International Multidisciplinary Journal*, Ethiopia, 9(4), 288-307.

Gatawa, N.M., Abdulgafar, A. & Olarinde, M.O. (2017). Impact of money supply and inflation on economic growth in Nigeria, *IOSR Journal of Economics and Finance*, 8(3),26-37.

Gujarati, D.N. (2003). *Basic Econometrics*, Fifth Edition, Singapore, Mcgraw- Hill,

Ifionu, E. & Akinpelumi, O. F. (2015). Macroeconomic variables and money supply: Evidence

Ihsan, I.& Anjum, S. (2013). Impact of money supply on GDP of Pakistan, *Global Journal of Management and Business Finance Research*, 13(10), 11-15

Iwedi, M. (2016). Modelling financial intermediation functions of banks: Theory and empirical evidence from Nigeria, *Research Journal of Finance and Accounting, 6(18), 59-74*

Keith, B., & Peter, H.(2003).*Monetary economics, policy and its theoretical basis*, ddis Ababa, Palmgrove-Macmillan.

Kerlinger, F. N. (1971). *Foundations of Behavioural Research*, Illinois, Holt Reinhart and

Keynes, J. M. (1936). *The general theory of employment, interest, and money*, New York, Brace & World Publishers

Keynes, J. M. (1936). *The general theory of employment, interest, and money*, New York, Brace & World Publishers

Khobai H. & Dingela, S, (2017). Dynamic impact of money supply on economic growth in South Africa: An ARDL approach. *Munich Personal RePEc Archive MPRA Paper*.

Mankiw, G. (2003), *Macroeconomics.* New York. Harvard University Press.

Marshal, I. (2016). The link between money supply and economic growth in Nigeria: An econometric investigation. *International Journal of Economics and Business Management* 2(3), 42-51.

Nwoko, N.M., Ihemeje, J.C. & Anumadu,E. (2016). The impact of monetary policy on the economic growth of Nigeria, *African Research Review*, 10(3), 192-206

Ogunmuyiwa, M.S. & Ekone A.F (2010). Money Supply - Economic Growth Nexus in Nigeria, *International Journal of Banking and Finance Research*, 22(3), 199-204.

Omotor, D. G. Y., & Gbosi, A. N. (2007). The dynamics of productivity and unemployment nexus, *The Nigerian Economic Society*

Onyeiwu, C. (2012). Monetary policy and economic growth of Nigeria. *Journal of Economic and Sustainable Development*, 3(7), 62-70.

Pitoňáková, R. (2016). Determinants of Household Bank Deposits: Evidence from Slovakia, Journal of Economics, Business and Management, 4(9), 528-533

Saint-Paul G (1992). Technological Choice, Financial Market and Economic Development, *European Economic Review*. 36(4), 25-31

Tuyishime R., Memba, F & Mbera, Z. (2015). The effects of deposits mobilization on financial performance in commercial banks in Rwanda. *International Journal of Small Business and Entrepreneurship Research, 3(6), 44-71*

Winston Inc.