Foreign Currency Deposits and Economic Growth: Estimated Evidence from Nigeria

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

Ejitagha Stephen Eguonor
Doctoral Student, Department of Banking and Finance,
Madonna University Okija Campus, ejitaghasteve7@gmail.com
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Abstract
This study examined the effect of foreign currency deposits 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 foreign currency deposits. Ordinary Least Squares Regression was employed to reveal potential relationships between causes and effects of the independent variables on the dependent variable. The estimated model found that RGDP (-1) and LNFCD with coefficients of 0.871176, 0.042916 and p-values of 0.0005, 0.0209 respectively have significant effects on Nigeria's real gross domestic product. This result implies that the coefficient for one-period lagged RGDP is 0.871 positive and statistically significant at 5 per cent. This indicates that a unit increase in LNRGDP and LNFCD respectively will contribute 0.871% and 0.0429% increase in current year Real Gross Domestic Product respectively. With the lagged model the only baseline explanatory variables explained about 99.88% of the changes in RGDP during the period studied. The ECM results indicate that 38.55% of the errors of the model are corrected each period (each year). From the findings, the study concludes that foreign currency deposit has significant effect on Nigeria economic growth. We recommend that government should design policies to encourage financially excluded economic agents controlling funds outside the formal financial system with the aim of contributing to economic growth and development and regulatory authorities should encourage aggressive mobilization of foreign currency deposit by financial institutions for lending to investors.

Keywords: *Foreign Currency Deposits, Economic Growth, Nigeria*

Introduction

Economic growth refers to a sustained and positive change in the level of aggregate production of goods and services (Gross Domestic Product) by a country over a given period of time. Gross Domestic Product, also referred to as national income, and represents the total Naira value of all goods and services produced over a specific period usually a year. It measures the size of the economy in monetary terms Anyanwu, Offor, Adesoye, & Ibekwe, 2013). Uwakaeme (2017) defined Gross Domestic Product as the money value of goods and services produced in an

economy during a period of time irrespective of the nationality of the people who produce the goods and services. According to OECD (2014), Gross Domestic Product is an aggregate measure of production equal to the sum of the gross values added of all resident institutional units engaged in production (plus taxes minus any subsidies on products not included in the value of their output). 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.

Foreign currency deposit represents the Naira value of foreign currencies held on behalf of customers for transactions like Confirmed letters of Credit transactions and funds awaiting remittances in respect of letter of credit transactions. Foreign currency deposit can be sourced from export and service transactions, unrequited transfers, and capital inflows. Most individuals prefer to hold reasonable asset balances denominated in foreign currency as a result of inappropriate domestic policies which have given rise to strong inflationary pressures and a weak external position. Such policies are likely to involve growing fiscal deficits, excessive injections of liquidity, growing exchange and trade restrictions, and relatively low rates of interest and overvalued exchange rates. According to (Dodsworth, El-Erian, Hammann, & Yaqub, 1987), the introduction of FCDs in many developing countries has tended to reflect the reaction of governments to significant increases in foreign currency holdings by residents, often at a time of official foreign exchange scarcity.

There exists lack of harmony between monetary and fiscal policies resulting in excessive money supply and inflation with adverse consequences on prices and investment. According to Central Bank of Nigeria (2020) huge public spending by the three tiers of government over the years had adversely affected monetary management resulting in the missing of monetary targets by wide margins and has induced serious pressure on the general price level. According to Central Bank of Nigeria (2012), broad money supply grows faster than the RGDP. When money supply exceeds the level the economy can efficiently absorb, it dislodges the stability of the price system, leading to inflation or higher prices of goods. In Nigeria, this has led to double-digit inflation in most years in the past decade. Furthermore, Nigeria being a cash-based economy, cash outside the banking system held by the informal sector and other economic agents constitute a large quantum not adequately controlled by the monetary authorities thereby contributing to price instability. This study, investigated the extent to which foreign currency deposit impacted on real gross domestic product in Nigeria using time series data.

LITERATURE REVIEW

Foreign Currency Deposits

The portfolio of a bank may be considered in the framework of a mean-variance approach. The bank accepts both local and foreign currency deposits. For tractability of analysis, it may be assumed that there is no reserve requirement for both types of deposits. Further, both lending and deposit interest rates are exogenous (De Nicolo *et al.*, 2003). To focus the analysis on foreign currency deposit it may be further assumed that all local currency deposits are directed to local currency-denominated loans in the domestic market. The prevalence of foreign currency deposits

differs substantially among such countries. Foreign currency deposits are prohibited in a number of countries, but they account for more than half of total deposits in others. As a feature, foreign currency deposits are effective in mobilizing savings, especially under circumstances of high.

The relationship between foreign currency deposits and financial development is examined in this paper. As a consensus grows that financial development contributes to economic growth (Beck *et al.,* 2000). The question of what accounts for differences in financial development among developing countries arises as an important policy issue as well as a subject of research. Related to factors that may account for the differences in financial development among developing countries, studies have focused on the market share of state-owned commercial banks (La Porta *et al., 2002*) and foreign banks (Claessons *et al., 2001*) from the viewpoint of corporate governance. The focus of studies also included inflation (Boyd *et al., 2001*), and regulations on the banking industry (Barth *et al.,* 2004). Apart from De Nicolo *et al* (2003), the impact of foreign currency deposits on banking sector development has seldom been explored in the framework of cross-country data analysis.
Foreign currency deposits have often been discussed in the context of dollarization the phenomenon in which a foreign currency such as the U.S. dollar is used in domestic transactions. In the literature related to dollarization, focus has been placed on its impact on monetary policy (Balino *et al* (1999) and on the stability of the financial sector (Burnside *et al,* 2001). Recently, analyses of the determinants of foreign currency deposits have been made both empirically (Ize & Levy Yeyatin, 2003) and theoretically (Broda & Levy Yeyati, 2006). Studies such as those of De Nicolo *et al* (2003) and Honohan and Shi (2003) have examined the impact of foreign currency deposits on bank lending.

Types of Money Supply
From the monetary survey, Nigerian monetary authorities determine money supply either from the liability side or from the asset side of the monetary system's Balance Sheet. The monetary survey shows the combined assets and liabilities of the banking system (CBN, deposit money banks, investment banks and other relevant institutions). There are two categories of money supply, Narrow money (M1) and Broad money (M2) whereby Narrow money is made up of currencies, (that are paper notes and coins in Circulation) plus demand deposits. It is normally denoted by M1 and regarded as liquid component of money supply. M1 and M2 are derived from the liabilities column of the monetary system's Balance Sheet only. M1 cannot easily be derived from the assets column only. M2 can be derived from the asset column of the Balance Sheet.

Narrow Money (M1) and Broad Money (M2) can be derived from the liability column of the monetary system's Balance Sheet. Only M2 for practical purposes can be easily derived from the Asset column of the monetary system's Balance Sheet. Narrow Money (M1) is not easily derivable from the Asset column of the Balance Sheet without some margin of errors.
M1 and M2 can be written as follows:
M1 = C + DD (derived from the liabilities column of the monetary system's Balance Sheet).
M2 = C + DD + SD + TD + FCD (derived from the liabilities column of the monetary system's Balance Sheet). OR
M2 = C + DD + QM

M2 = NFA + NDA + OAN (derived from the Assets column of the monetary system's Balance Sheet)

Where
C = Currency Outside Bank
DD = Demand Deposit
SD = Savings Deposit
TD = Time Deposit
FCD = Foreign Currency Deposit
QM = Quasi money
QM = SD + TD + FCD
NFA = Net Foreign Assets
NDA = Net Domestic Assets
OAN = Other Assets Net

Net foreign assets constitute the foreign exchange holdings of the CBN and the deposit money banks, after netting out the claims of foreigners. Net domestic assets are made up of net domestic credit and other assets (net) of the banking system. Other Asset Net is made up of residual item equal to the difference between miscellaneous assets and miscellaneous liabilities.
This study relies on the Broad Money Supply (M2) determined from the liabilities column.

Currency outside bank is highly significant in the economic process. In developing countries, C component of broad money supply is normally high. It is an indication of the undeveloped nature of the financial system and the payment system. It is also an indication of a consumption, level, low savings, low investment, low level of employment, and low output level (GDP) and high inflation rate. Demand deposit, on the other hand, is the platform upon which the deposit money banks stand to create bank credit money many folds in excess of the demand deposits available to the banking system. The size of the credit multiplier determines the level of bank credit money the banking system creates from the demand deposit available to the banking system. *Quasi* or near money made up of Savings, time and foreign currency deposits constitute very important components of money supply as they determine the level of investment in the economy. A rise in *quasi* money leads to an increase in the level of investment GDP (income) and employment. In taking money supply decisions, monetary authorities are usually guided by the prevailing economic conditions such as public debt, inflation rate, balance of payment position, output growth, growth of credit to the economy and foreign reserves position. On which of the concepts of money supply to adopt in monetary policy, Onah (2002) opined that broad money is deemed to be most appropriate for inflation-prone economies or economies prone to cyclical disturbances associated with general unemployment, divestment, contracting gross national product and low savings.

Economic Growth

Economic growth represents the expansion of a country's potential GDP or output. For instance, if the social rate of return on investment exceeds the private return, then tax policies that encourage can raise the growth rate and levels of utility. Growth models that incorporate public services, the optimal tax policy lingers on the characteristic of services (Olopade and Olopade, 2010). Economic

growth has provided insight into why state growth at different rates over time; and this influence government in her choice of tax rates and expenditure levels that will influence the growth rates. Gross domestic product represents the market value for all final products a single nation produces within its borders. In terms of macroeconomic growth, gross domestic product needs to increase at a respectable pace each year. In many cases, five to six percent annually is good, stable growth for an annual period. Increases in a nation's gross domestic product allow its citizens to enjoy a stable or better standard of living. A country can also strengthen its economy as constant growth in the national economy can lead to better exports and the ability to increase income naturally in the domestic economy. Most countries measure their gross domestic products over each quarter in an annual period. The gross domestic product in a nation needs continual growth over multiple business cycles in order to have a positive effect on an economy. It is fairly difficult to declare when a business cycle starts and stops, though it can be somewhat easier to determine when the cycle shifts from one stage to the next. Gross domestic product figures that show constant quarterly increases can indicate some level of economic growth.

The Gross Domestic Product (GDP) is the total value of final goods and services produced in the country during a given period. The estimation of the gross domestic product is done in stages, with estimates generated at each stage being dependent on source data available. The different stages generate estimates which are sequentially designated as projected, provisional, revised or final. It is only the final estimates that are not subject to further changes (Ghana statistical service, 2014) gross domestic product measures the monetary value of final goods and services that is, those that are bought by the final user produced in a country in a given period of time (say a quarter or a year). It counts all the output generated within the borders of a country. Gross domestic product is composed of goods and services produced for sale in the market and also include some nonmarket production, such as defense or education services provided by the government (Callen, 2008).

Theoretical Review

The Classical Production Function

This theory states that the amount of output (product) would increase at a diminishing rate when combined doses of labor and capital were applied to given piece of land (Maltus, & West, 1815). The concept of production functions is the basis for certain theories in the functional distribution of the income. The concept of production function, its development and refinement grew out of economics maybe due to the nature of production function which is very useful in estimating, analyzing and planning for economic growth, development and acceleration of increase in the national production from the given resources. The values of the production coefficients serve as the basis for determining the optimum patterns of the output.

Production functions may be broadly defined as the technological relationships between inputs and outputs. The inputs are what the firm buys such as productive resources and outputs are what the firms sell. Production is defined as producing goods which satisfy some human want. Production is a sequence of technical processes requiring either directly or indirectly the mental and physical skill of craftsman and consists of changing the shape, size and properties of materials and finally converting them into more useful items or articles.

Production function expresses a functional relationship between quantities of inputs and outputs. It shows how and to what extent output changes with variations in input during a specified period of time. According Solow and Swan (1956) the production function is the name given to the relationship between rates of input of productive services and the rate of output of product. It is the economists' summary of technical knowledge.

Algebraically, it may be expressed in the form of an equation as

Q = f (L, M, N, K, T)

Where Q stands for the output of a good per unit of time

L stands for labor, M stands for Management (or Organization), N stands for Land (or natural resources), K stands for capital and T stands for given technology, f stands for the functional relational relationship. Economists prefer a two input production function to avoid spurious result. In this study, we shall take three inputs: Land, Labor and Capital. The production function in this situation shall assume the form Q = f (L, L, K).

In the short run, the technical condition of production is so rigid that the various inputs used to produce a given output are in fixed proportions. However, in the short run, it is possible to increase the quantities of one input while keeping the quantities of other inputs constant in order to have more output. This aspect of the production function is known as the Law of variables proportions. The short run production function in the case of three inputs, Land, Labour and Capital with Land and Capital as fixed and Labour as the variable input can be expressed as Q= f (L, L, K) where L and K refer to the fixed inputs.

In the long run, all inputs are variable. Production can be increased by changing one or more inputs. The firm can change its plants or scale of production. In the long run, it is possible for a firm to change all inputs up or down in accordance with its scale. This production function is known as return to scale. The return to scale is constant when output increases in the same proportion as the increase in the quantities of inputs. The returns to scale are increasing when the increase in output is more than the proportional to the increase in inputs. They are decreasing if the increase in output is less than proportional to the increase in inputs. In conclusion, the production function exhibits technological relationships between physical inputs and outputs. The function of management is to sort out the right type of combination of inputs for the quantity of output the firm desires. The management has to know the prices of the inputs and techniques to be used for producing a specified output within a specified period of time.

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.

In further refinement of the Fisherian version of monetary theory, some economists concluded that money can affect monetary or nominal variables like money wages, nominal interest rates, nominal output but not real variables like the level of real output and employment. Friedman and Schwartz **(**1963) in an attempt to distinguish the short run and long run effects of money on output believed that a decrease in money stock in the short run initially reduces the level of output which later have impact on prices without any real effect on output. They went further to say that in the long run, money is neutral while in the short run changes in money stock can and do have significant impact on real output.

Classical school believed that every monetary standard served only as a medium of exchange and had no influence whatsoever on economic aggregates such as income, consumption, savings and employment. They never foresaw gold standard (the preferred payment medium due to its high intrinsic value and easiness of carriage) could cause possible increase in prices capable of distorting macroeconomic variables. They argued that gold mines were drying up while economic output was increasing and as such there were no chances of supplying excess gold which could increase prices and affect economic output. They never envisaged paper currency standard and bank credit system which are inflation-prone capable of raising prices beyond their comprehension. However, Keynes finally countered the Neutrality concept of the classical school. He asserted that money was an integral part of the economic process and influences real economic aggregates. The theory of inflation, an anti-thesis of the neutrality theory of money concept has finally put paid to the relevance of the theory for today's macroeconomic analysis. According to the classical economists, changes in the nominal money supply would leave the equilibrium value of the real variable unchanged.

Fisher's Transactions Equation

According Fisher (1911) several factors determine the general price level in an economy which includes 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 supplies 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, Irving (1911)

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

$Ms\uparrow \rightarrow R\downarrow \rightarrow I\uparrow \rightarrow AD\uparrow \rightarrow Y\uparrow \rightarrow P\uparrow$

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 deposits are in line with these motives as propounded.

Other monetarists led by Friedman (1962) theorized that an increase in money stock has three major effects: liquidity effect, income effect and price expectations/anticipations effect. To them, an increase in money supply initially (immediate observational impact) will lead to a fall in interest rate (that is, the Keynesian liquidity preference effect). Due to this increase in liquidity position, people go into the market to increase demand resulting in the expansion of the economy (income effect). This increase in income will put pressure on goods and services and hence prices will rise. As prices increase (due to expectation effect), people will build up an inflationary psychology (that is, they expect an inflationary effect in future). Suppliers on their own will expand their investment outlet to supply more and this expansionary investment demand will raise price more. Also financial institutions will expect price to rise more and therefore, increase interest rate on their liabilities.

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. 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. 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.

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 & Peter Howells,2003).

Neo-classical Growth Model

This model asserted that an economy's growth rate is dependent on two factors: the level of saving and productivity of capital or the capital per output ratio. Economic growth is the result of three factors – labour, capital, and technology. The Solow-Swan model attempts to explain long-run economic growth by looking at capital accumulation, labour or population growth and increase in productivity commonly referred to as technological progress. The growth theory explains long-run economic growth by looking at productivity, capital accumulation, population growth and technological progress.

Though the main work on neo-classical growth theory model was done by Robert and Trevor in 1956 and was extended and expanded by Solow who adds labour as a factor of production and making capital labour ratios flexible unlike in the Harrod-Dommar model where they are fixed. The Solow growth model shows how an increase in capital and labour force and advancement in technology can influence entire economic growth and development. The model specification is that output is a function of capital and labour that is

$V=f(K, L)$

Where V = output, K = capital and L = Labour.

Some of the assumptions of the models are:

i. All savings in the economy are channeled to investment opportunities and augmentation of physical capital stock (Ibi, Basil, & Ojong, 2019).
ii. Depreciation of capital rate is assumed to be zero.
iii. No technical progress.
iv. Population growth rate assumed to be fixed.

The summary of the Solow growth model shows that an increase in output is dependent on a higher rate of savings via higher stock of capital. The model indicates that a long run increase in labour will reduce the level of output if there is no improvement in technological progress that will enhance the efficiency of labour. The theory therefore concludes that the long run equilibrium growth rate depends on two exogenous variables: the rate of population growth and rate of technological change. He went further to posit that the theory provides little reference to the importance of finance in economic growth other than making reference to savings which does not affect the growth at long run. This theory has bearing to the study because financial development comes in form of technical innovations into the financial system that spurs growth of the system and enhances services to the economy and agricultural sector in particular. Thus the theory posits that financial development leads to agricultural output growth.

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 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

Yeshiwas (2021) researched on the impact of broad money supply on Real GDP of Ethiopia. The data used for this study was a time series, (2002-2017), analyzed using Vector Autoregressive model and causality test to check the short causality between broad money supply and Real GDP growth. The result of both tests revealed that broad money supply has positive significant effect on real GDP and statistically significant.

Ibi et al., (2019) researched on the effect of selected macroeconomic variables on money supply in Nigeria. Cointegration test, Granger causality test and Error correction mechanism (ECM) were employed in the estimation of the relevant equations. The short-run and the long-run estimates

revealed that income (GDP), credit to the private sector (CPS), net foreign asset (NFA), government expenditure (GEXP), consumer price index (CPI), interest rate (IR) and exchange rate (EXCH), all have both short-run have significant effect on money supply. Furthermore, the results of the granger causality test showed that money supply is endogenously determined in Nigeria; thereby supporting the post-Keynesian postulation that money supply is endogenous. This indicates that macroeconomic variables had greater influence in determining the rate of money growth in Nigeria.

Gnawali (2019) examined the effects of money supply on the economic growth of Nepal over the period 1975 to 2016, using co-integration, Vector Error Correction Model (VECM) and Causality test to conclude. The study showed that money supply is positively significant to economic growth and foreign assistant is negatively significant to the economic growth of Nepal and the study suggests to increase the money supply for achieving higher and rapid economic growth.

Ufoeze, Odimgbe, Ezeabasili and Alajekwu (2018) investigated the effect of monetary policy on economic growth in Nigeria. The natural log of the GDP was used as the dependent variables against the explanatory monetary policy variables: monetary policy rate, money supply, exchange rate, lending rate and investment. The time series data is the market-controlled period covering 1986 to 2016. The study adopted an Ordinary Least Squared technique and also conducted the unit root and co-integration tests. The study showed that long run relationship exists among the variables. In addition, the core finding of this study showed that monetary policy rate, interest rate, and investment have insignificant positive effect on economic growth in Nigeria. Money supply however has significant positive effect on growth in Nigeria. Exchange rate has significant negative effect on GDP in Nigeria. Money supply and investment granger cause economic growth, while economic growth causes interest rate in Nigeria.

Adediyan (2018) conducted a research on the determinants of money supply in Nigeria covering 1980 to 2019, adopting the Autoregressive Distributed Lag (ARDL) approach. Data used for the study were collected from the 2019 CBN Annual Statistical Bulletin. The independent variables were reserve ratio, monetary base, liquidity ratio, currency deposit ratio interest rate while the dependent variable was proxied as broad money supply. The study found that financial liberalization is an important factor in determining money supply in Nigeria, in addition to currency ratio, required reserve ratio and high-powered money.

Ominyi and Inalegwu (2017) adopted the Vector Error Correction Model (VECM) in ascertaining the relationship between gross domestic product (GDP) and private savings (SAV) including other relevant exogenous variables in the model. The results showed a positive relationship between GDP and Savings such that a percent change in Savings would result in an 8.29% change in GDP.

Adeniji, Timilehin and Gamaliel (2017) investigated the long and short run relationships between broad money supply and real aggregate output (GDP) in Nigeria from 1981 to 2015. The study employed an unrestricted version of Mixed Data Sampling (U-MIDAS) and Autoregressive Distributed Lag (ARDL) techniques. The results of U-MIDAS test affirmed existence of a long and short-run relationship between yearly real GDP and quarterly broad money supply at different season while the ARDL result affirmed that money supply impacted significantly on real GDP in

the long run only. Furthermore the study revealed disequilibrium correction terms from the two analytical approaches showing evidence that there is a tendency for growth targeting in Nigeria which is one of the major objectives of Nigeria economy though at a slower rate.

Literature Gap

From the empirical studies, some major gaps in literature were observed. A model gap was observed as previous studies concentrated on aggregate broad money supply like Adeniji, at el., 2017; Khobai & Dingela, 2017; Chude & Chude, 2016). In this research, disaggregated broad money supply components are employed. A disaggregation of money supply components into micro components are likely to capture the cyclical factors that drive the economy and their dynamics and paint a better picture of the relationship between money supply and the economy in the long run.

Some of the reviewed studies were carried out in other countries outside Nigeria as seen in (Tuyishime , Memba, & Mbera, 2015; Pitoňáková, 2016); Aslam, 2011). As the countries studied operate under different legal and economic environments, this constitutes a location gap.

There exists conflicts and in some cases inconclusiveness in research findings due to methodogies, estimation tools, variables and other analytical tools used. Some of the studies found positive relationship between money supply and economic growth (Ogunmuyiwa, & Ekone, 2010); Chinwuba, Akhor & Akwaden, 2015); Ifionu, & Akinpelumi, 2015). However, some other studies found negative impact of money supply on economic growth (Suleiman, 2010); Amassona, Nwosa, & Olaiya, 2011; Ehigiamosoe, 2013). Also, some of the reviewed studies used inappropriate estimation tools while some failed to evidently carry out diagnostic tests to ascertain the integrity of the data in line with the Classical Regression Linear Model Assumptions as observed in (Suleiman, 2010, Michael, & Ebibai, 2014; Adefeso, & Mobolaji, 2010).) providing gap in estimation tools. This study focused on foreign currency deposits and Nigeria economic growth.

METHODOLOGY

Research Design

This study adopted *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).

Model Specification

Irving Fisher's Quantity Theory of Money is adopted for this study. According to the theory, MV = PT, where M represents money stock, V as velocity of money, P as price level while T represents volume of transactions. It expresses the relationship existing between money, price and output. While MV represents total spending, PT represents what is purchased. Hence, the model of this

study consists of the dependent variable, RGDP, and the independent variables consisting of broad money supply components. It is therefore hypothesized that real gross domestic product in Nigeria is a function of the independent variables (components of broad money supply).

Functionally the relationship RGDP and FCD is stated as follows:

$$RGDP = f(FCD) \quad (1)$$

Where FCD = Foreign Currency Deposit

The econometric model is presented thus:

$$RGDP = e_0 + e_1FCD + U_t \quad (2)$$

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

$$LnRGDP = eo + e_1 lnFCD + ut \ldots\ldots \quad (3)$$

e_O is the intercept, e_1 is coefficient of the independent variable and U is the error term representing the unobserved factors which influence the dependent variables. The *a-priori* expectations $e_1>0$

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 (4)

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:

$$Y_i = Y_{t-1} + \mu_1 \quad (5)$$

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

$$Y_t = L\ Y_{t-l} + \mu_1 \quad (6)$$

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.

$$\Delta Y_i = (L\text{-}l)\ Y_{t-l} + \mu_t \quad (7)$$

$$\_\_Y_{t-l} + \mu_t \quad (8)$$

(Note: = l-l=0; Where L = l; $\hat{Y}t = Yt - Y_{t-l}$) (9)

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. If Jarque-Bera = 1 or higher (JB>1), the null hypothesis (Ho) of normality of data or normal distribution of data is rejected. If JB =0, the data is concluded to be perfectly and normally distributed around the mean and qualifies for linear regression analysis. The data is assumed to have passed the normality test. 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 (Pesaran & Pesaran, 1997).

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. The important contribution of the concept

of unit root, co-integration, etc. is to force us to find if the regression residual are stationary. Thus, a test for co-integration enables us to avoid spurious regression situation. If there are k regressors in a regression model, there will be k co-integrating parameters. 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 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:

$$Yi = \beta_1 + \beta_2 X_{2i} + \beta_3 x_{3i+\ldots\ldots+} \beta_k x_{ki} + \mu_1 \quad (10)$$

To test the hypothesis:

$$Ho: \beta_2 = \beta_3 = \ldots = \beta_k = 0 \quad (11)$$

(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:

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

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 Gujarati, (2003a) 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 Gujarati, (2003) 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.

Impulse Response

Impulse Response Test was developed by Davis and Hertlein (1987). This test method was traditionally used for the integrity assessment of pile foundations. In this study, the essence of impulse-response test is to determine how economy reacts over time to exogenous impulse which economists usually refer to as shocks and is often modeled in the context of a vector auto regression. In the context of this study, impulse-response test is used to measure the impacts of residuals of the model on real GDP one standard deviation shock.

ANALYSIS AND DISCUSSION OF FINDINGS

Table 1: Data of the Descriptive Statistics

	LNRGDP	LNFCD
Mean	10.62796	5.879374
Median	10.70191	6.495441
Maximum	11.18988	9.052652
Minimum	9.902437	0.530628
Std. Dev.	0.477069	2.616888
Skewness	-0.268258	-0.522385
Kurtosis	1.494538	1.958997
Jarque-Bera	2.979976	2.537768
Probability	0.225375	0.281145
Sum	297.5829	164.6225
Sum Sq. Dev.	6.145063	184.8988
Observations	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 11.19 units with minimum value of 9.90 units. 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 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.

Table 2: Summary of the 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	
LNFD	Level	-1.084205	-3.004861	0.7030	1(0)
	1st Diff	-3.850135	-2.998064	0.0080	

Source: E-views10 output

From Table 2 above, ADF results show that the variables are integrated in mixed order which allows us to use the ARDL.

Normality and Reliability Tests

In order to ascertain further if the data for the study were good enough for analysis, we investigated if the data were normally distributed at the mean. Reliability tests were therefore conducted. The results of the tests are presented in Figure 1.

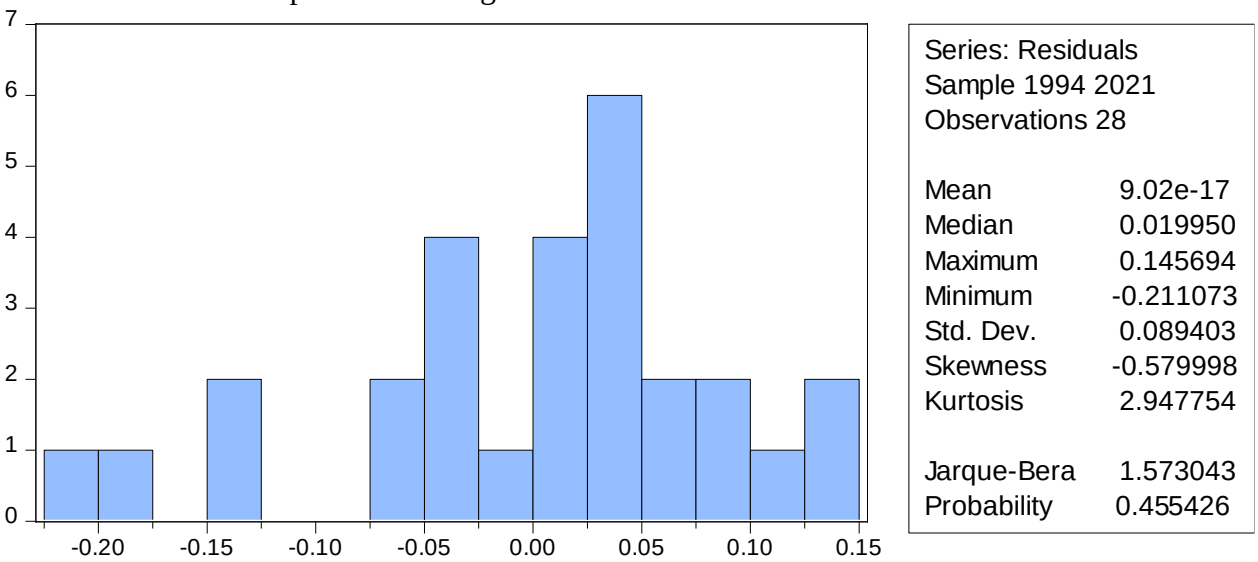

Figure 1: Jarque-Bera Normality Test

Source: E-views10 output

Though the Histogram Normality Test as shown in Table 1 is not bell-shaped, the nearness of the skewness and kurtosis of -0.580 and 2.9 to 1.0 and 3.0 respectively indicates that the residual were to a large extent normally distributed around the mean. Furthermore, the JB statistic and p-value were 1.573 and 0.455 respectively. Because the p-value of 0.455 is greater than 0.05, it is concluded from the skewness and the kurtosis that the residuals of the model are normally distributed around the mean.

Table 3: Serial Correlation and Heteroskedasticity Tests

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.700614	Prob. F(2,3)	0.3208
Obs*R-squared	2.06556	Prob. Chi-Square(2)	0.2001

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.33615	Prob. F(28,5)	0.9998
Obs*R-squared	3.70869	Prob. Chi-Square(28)	0.8813
Scaled explained SS	0.509331	Prob. Chi-Square(28)	0.7915

Source: E-views10 output

The Breusch-Godfrey serial LM Test as well as the Heteroskedasticity tests in Table 3 indicates that the residuals of the model are neither serially correlated nor heteroskedastic, given the Observed R-sqared values and associated p-values of 2.06556(0.2001) and 3.70869(0.8813) respectively.

Table 4: Ramsey Reset Test Results for Model 1

Ramsey RESET Test
Equation: UNTITLED
Specification: LNRGDP LNCOB C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.695004	25	0.5124
F-statistic	0.263049	(1, 25)	0.6124
Likelihood ratio	0.141309	1	0.3075
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	0.048583	1	0.048583
Restricted SSR	0.215808	26	0.008300
Unrestricted SSR	0.167226	25	0.006689

Source: E-views10 output

The result of the Ramsey Reset test presented in Table 4, indicates p-value of 0.5124 for both 't' and the 'F' statistics, which are considered good for the acceptance of the null hypothesis at 5% Alpha value. Thus there are no misspecification errors in model 1.

Table 5: 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	6.119719	10%	3.02	3.51
K	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58
			Finite Sample:	
Actual Sample Size	24		n=35	
		10%	3.223	3.757
		5%	3.957	4.53
		1%	5.763	6.48

	Finite Sample: n=30	
10%	3.303	3.797
5%	4.09	4.663
1%	6.027	6.76

Source: E-views 10 output

Table 5 above shows the value of F-statistic of 6.119719 is greater than the upper bound value 4.16 and the lower bound value of 3.62 at 5% level of significance indicating a case of co-integration and a long run relationship between the endogenous and exogenous variables. Hence, the Foreign Currency Deposit variable used in the model has long run effect on the Nigeria's real output.

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 model using ARDL estimation technique. Below are the ARDL regression results.

Table 6: ARDL Test Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNRGDP(-1)	0.871176	0.199233	4.372654	0.0005
LNRGDP(-2)	-0.037319	0.285941	-0.130514	0.8979
LNRGDP(-3)	-0.219402	0.156601	-1.401028	0.1816
LNFCD	0.042916	0.016633	2.580108	0.0209
LNFCD(-1)	0.026411	0.018227	1.449017	0.1679
LNFCD(-2)	-0.001319	0.017867	-0.073825	0.9421
LNFCD(-3)	0.035688	0.016453	2.169131	0.0466
LNFCD(-4)	-0.028330	0.013267	-2.135395	0.0496
C	3.654030	1.016091	3.596164	0.0026
R-squared	0.998771	Mean dependent var		10.74207
Adjusted R-squared	0.998115	S.D. dependent var		0.414577
S.E. of regression	0.017997	Akaike info criterion		-4.917193
Sum squared resid	0.004859	Schwarz criterion		-4.475423
Log likelihood	68.00632	Hannan-Quinn criter.		-4.799991
F-statistic	1523.697	Durbin-Watson stat		2.127798
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent tests do not account for model selection.

Source: E-views10 output

The result in Table 6 reveal that only RGDP (-1) and LNFCD with coefficients of 0.871176, 0.042916 and p-values of 0.0005, 0.0209 respectively have significant effects on Nigeria's real GDP. This result implies that the coefficient for one-period lagged RGDP is 0.871 positive and statistically significant at 5 per cent. This indicates that a unit increase in LNRGDP and LNFCD

respectively will contribute 0.871% and 0.0429% increase in current year Real Gross Domestic Product respectively. With the lagged model the only baseline explanatory variables explained about 99.88% of the changes in RGDP during the period studied.

Table 7: ARDL Long Run Form

Levels Equation

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFCD	0.195477	0.008289	23.58326	0.0000
C	9.477581	0.084698	111.8987	0.0000

EC = LNRGDP - (0.1955*LNFCD + 9.4776)

Source: E-views10 output

The estimated coefficients of the long-run relationship between RGDP and FCD are:

LNRGDP = 9.4776 + 0.195477LNFCD
23.58326*
0.008289#

*** Represents t-statistic, # represents standard error**

The result of above equation in table 8 above indicates that Foreign Currency Deposit (FCD) has a positive and significant relationship to Real Gross Domestic Product in Nigeria. This implies that a unit increase in Foreign Currency Deposit will lead to an increase of 0.1955 units in Nigeria's RGDP.

The fact that the variables are not stationary at level but rather stationary after differencing and that they are cointegrated or converged at long run indicates that there is an error at short run which need to be corrected. The speed at which the error could be adjusted is obtained using the Error Correction coefficient (ECM-1) of -0.385545.

Table 8: ARDL Error Correction Result

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRGDP(-1))	0.256721	0.146284	1.754951	0.0997
D(LNRGDP(-2))	0.219402	0.137707	1.593249	0.1320
D(LNFCD)	0.042916	0.012409	3.458412	0.0035
D(LNFCD(-1))	-0.006039	0.013856	-0.435808	0.6692
D(LNFCD(-2))	-0.007358	0.013579	-0.541831	0.5959
D(LNFCD(-3))	0.028330	0.009015	3.142719	0.0067
CointEq(-1)*	-0.385545	0.084522	-4.561474	0.0004
R-squared	0.848146	Mean dependent var		0.050030
Adjusted R-squared	0.794551	S.D. dependent var		0.037297
S.E. of regression	0.016906	Akaike info criterion		-5.083860
Sum squared resid	0.004859	Schwarz criterion		-4.740261
Log likelihood	68.00632	Hannan-Quinn criter.		-4.992703
Durbin-Watson stat	2.127798			

Source: E-views10 output

The Short-run dynamics shows the speed or the time (-ECM) it will take for the variables of the model to adjust and re-converge at another equilibrium point along the long-run equilibrium path, after drifting apart following an initial shock at a short-run dynamic equilibrium point. It is correctly signed with co-efficient -0.385545 and p-value 0.0004, indicating presence of convergence. The ECM results indicate that 38.55% of the errors of the model are corrected each period (each year). In other words, the speed implies that in the long run, 38.55 per cent of short run disequilibrium in the economic growth process is corrected within one year. Since annual data is used, the speed (time) must be measured in a fraction of a year or in years. With an adjustment speed of 38.55%, it will take approximately three years five months for the short run disequilibrium to return fully to a long-term equilibrium position, i.e. 100/38.55 or 2years 5months.

Table 9: Pairwise Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
LNFCD does not Granger Cause LNRGDP	26	6.64011	0.0058
LNRGDP does not Granger Cause LNFCD		0.03802	0.9628

Source: E-views10 output

The result of the Granger Causality Test revealed causality relationship between FCD and RGDP with unidirectional causality flowing from FCD to RGDP. The F-statistic of 6.64011 is significant and the p-value of 0.0058 is smaller than the Alpha significant value of 0.05. The Null hypothesis of no causality flow between FCD and RGDP during the period is rejected. This implies that Foreign Currency Deposit was a determinant of real output in Nigeria in the period under study.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The result of long-run estimation indicates that Foreign Currency Deposit (FCD) has a positive and significant relationship to Real Gross Domestic Product in Nigeria. This conforms to *a-priori* expectation and consistent with the study of Edwards (1989) which also captured the short run and long run impact of capital inflows on real exchange rate. The results showed that capital inflows, technological progress and others impacted positively on the Real Exchange Rate. A similar study by Opoku-Afari (2004) in Ghana also confirmed that, indeed capital inflows to Ghanaian economy tend to cause an appreciation of the real exchange rate and the economy. The result of the Granger Causality Test revealed causality relationship between FCD and RGDP with unidirectional causality flowing from FCD to RGDP which confirm FCD as a growth-enabler in Nigeria. From the findings, the study concludes significant effect of foreign currency deposits and Nigeria economic growth.

Recommendations

i. Government should design policies to encourage financially excluded economic agents controlling funds outside the formal financial system with the aim of contributing to economic growth and development. The current move by CBN through Financial Inclusion Strategy initiated in 2012 and recent Naira redesign policy are steps in the right direction which should be supported. Banks while embracing financial technology should further

strengthen financial intermediation through e-channels and agency banking activities towards improved financial deepening.

ii. Regulatory authorities should encourage aggressive mobilization of foreign currency deposit by financial institutions for lending to investors. The positive and significant effect of foreign currency deposit on Nigerian economy shows that foreign currency deposit enhances Nigeria's economy. It also indicates that foreign currency deposit stays long enough in the banking system, enhances money multiplier effect which translates to economic growth.

iii. Government should encourage aggressive mobilization of financial resources by financial institutions which if effectively channeled towards credit creation will increase financial sector contribution to GDP. Government can further assist in increasing foreign currency deposit by reintroducing interest payment on current account by banks.

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