



# **Impact of Budget Deficit Financing on Money Demand in Nigeria**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

The study empirically investigates the impact of budget deficit financing on money demand in Nigeria with an objective of finding the effect of budget deficit financing indicators such as external debt financing, domestic debt as well as debt servicing on money demand. The study is modeled using a framework of Keynesian theory of budget deficit financing and Richadian Equivalent hypothesis. The study adopted an auto redistributive lag model (ARDL) which shows the existence of long run relationship between money demand and indicators of financing budget deficit and ordinary Least Square. The general findings revealed that external source of financing budget deficit, internal source of financing budget deficit as well as debt servicing has a significant effect on money demand in the Nigerian context. Base on this findings, the study recommend that external and internal source of financing deficit should be encouraged for effective demand leading to economic stability reasons and not for political reasons and it should be properly channeled to productive sector of the economy that will enhance economic stability.

*Keywords: Budget deficit financing; money demand.*

## 1. INTRODUCTION

Deficit financing occurs every time the government has budget deficit. However, in order for the economy to grow as planned in a budget, shortfall in income resulting from increased expenditure must be financed by raising fund from other sources available to the government. Deficit financing can be seen as the process of seeking to stimulate a nation's economy by increasing government expenditures outside revenue sources [1]. This means that financing of the deficit can be defined as financing by government or a corporation for revenue shortfalls. Government or corporation may finance the deficit in order to provide economic incentives Onwe [2]. When government expenditure tends to be greater than public income, the government may resort to deficit financing to meet the budget deficit.

Keynes theory posits the idea of deficit financing as a means of spending meant to solve the problem of unemployment and depression in an economy. Modern economists also describe deficit financing for developmental purposes. Keynesian economist's theory however stated that deficit is financed so as to increase economic activity and thereby reduce unemployment in a nation. On the other hand, demand for money is determined by the behavior of economic factors, especially by households and firms. This theory pointed out three motives of holding money namely; transactionary, precautionary and speculative motives Keynes [3]. According to him while the transactionary motive for holding money is associated with economic agents to meet daily contractual obligations, the precautionary motive is solely linked to the need to acquire fund for emergencies and other unforeseen contingencies.

As a stock of value or wealth, money is kept for speculative purposes to benefit from prevailing market opportunities. In other words, bond prices would rise during high interest rate regimes, making it more likely that there will be more hold of bonds than money. Similarly, while there is a low interest rate system, bond prices increase the attractiveness of keeping money from binds. Therefore, the demand for money is inversely related to the interest rate under the speculative request. The money held for transactions and precautionary purposes is primarily an income function, while the demand for speculation on money is a function of both income and interest

rate. The total demand for money can therefore be expressed as a function of income level interest rate. The demand for money is the demand for real money and money is kept to finance transactions and, therefore, real output increases with demand for money.

The government is taking various measures to overcome the budget shortfall. Budget deficit can be funded by new currency printing, local borrowing and external borrowing [4]. The financial deficit process is defined through printing new currency notes by the Central Bank. It increases the supply of money, creates inflationary pressure and reduces interest rate. Another method of financing budget deficit can be through local borrowing, Treasury bill sales, federal short term bonds, defense saving certificates, etc. However, this means of deficit financing increases interest rate and crowds out private investment. Significant shortfalls could also be financed through government borrowing from external resources. External borrowing is a widely used method to finance fiscal deficit in many developing countries because domestic capital markets in most of the developing countries are very small, and domestic borrowing possibilities are also limited, this makes government to borrow from the external source to finance budget deficit [4].

Competing views on the relationship between financing budget deficit and demand for money have been in the middle stages for decades. There are two different views on this relationship. The first propositions are supporters of positive impact of financing budget deficits on money demand advocated by the Neoclassicals and Keynesians. They argued that an expansionary fiscal policy, either by reducing taxes or increasing government expenditure would expand budget deficit [5]; (Laumas, 1989; and Dua, 1993). This increase in budget deficit will have a positive impact on total demand depending on the magnitude of the multiplier. High aggregate demand will in turn increase money demand for transaction purposes. In addition, when the Government decides to finance its budget deficit by issuing bonds rather than taxing, the net value of government bond holders is so high that the consumption pattern of bond holders has changed since its net value has improved. High spending in consumption would increase growth in national income which in turn increases money demand for transaction purposes. The overall budgetary implications of the deficit are increased demand for money,

which in turn increases the interest rate which would ultimately crowd out private investment.

The Ricardian Hypothesis on the other hand, claims that budget deficit have no effect on money demand in the short or long run (See, for example, [6] (Darrat, 1990; and Cheng, 1998). They assume that government spending level remains constant throughout time. As a result, if the government lowers taxes, the budget deficit will rise. However, because government frequently equate their total income from all sources, this tax cut now indicates a future tax increase that is equal in value to the initial tax cut. Invariably, the value of taxes and other income at the present time is determined by current government expenditure. As a result, as long as the current value of government spending remains unchanged, the current value of taxes and other revenues will remain unchanged [6].

### 1.1 Problem Statement

Deficit financing is used by many developing countries to achieve macroeconomic objectives. In conventional settings, deficit financing is viewed as a tactic used to deal with macroeconomic problems like depression and low output [7]. On the other hand, deficit financing looks to be a policy that tends to exacerbate inflationary pressures and drive out private sector investments and therefore worsening unemployment issues [7].

Despite the fact that actual receipts are frequently higher than anticipated forecasts, Nigeria has had massive budget deficits throughout the years [7]. Evidences from deficit financing in Nigeria shows that fiscal operations have been characterized by poor policy implementation, inconsistency of Government macroeconomic policy, low growth of private investments, decline in real sector growth, and fiscal indiscipline in the public sector.

Consequently, Since then, Nigerian governments have implemented a number of national development plans and programs, including the Debt Management Strategy (DMS) and the Debt Management Office (DMO), which were established on October 4, 2000 to centrally coordinate the management of Nigeria's debt for all levels of government, with the goal of increasing productivity and diversifying the domestic economic base through deficit financing. The goal of the successive

development plans has been to achieve high levels of economic development, which would result in an improvement in people's living standards and, as a result, a reduction in poverty through increased domestic output and the creation of employment and thereby the maintenance of a favorable balance of payments position was led to inefficiencies resulting in fundamental challenges.

Keynesian economics, on the other hand, believes there is a link between funding the budget deficit and economic performance. They believe, on the other hand, that funding the budget deficit stimulates domestic output, triggers aggregate demand, raises savings, promotes investment patterns at any given interest rate, and therefore crowds in private investment. Increased unemployment is expected in the economy at this time, and the rate of interest rate sensitivity to investment is quite slow [8]. Given this theoretical postulations, One maybe thinking why empirical evidence and theoretical underpinning justify the fact that financing budget deficit stimulate growth in national income which in turn increases demand for money for transaction purposes, reverse is the case in the Nigeria context because of the previewed high rate of unemployment and inflation in the economy which is contrary to proposed Keynesian policy of fiscal deficit financing.

Secondly, much empirical research focused on the relationship between debt financing and key macroeconomic variables such as growth, consumption and interest rates. By contrast, empirical research on the effects of financing budget deficit on other variables such as money demand and money supply to macroeconomics are few. However, the related empirical research on debt financing and money demand uses debt as single explanatory variable to explain changes in money demand and also did not inculcate debt servicing as part of the strong indication of financing budget deficit. This approach may not give a clear picture on how financing budget deficit can affect money demand in Nigerian economy. More so, given that government finances its deficits through external borrowing and domestic borrowing; these variables including debt servicing were known as the major indicators of budget deficit financing and can give true variations in money demand.

It is for this reason that this research work has attempted to assess the effectiveness of

domestic debt and external debt as a true indicators of financing budget deficit as well as debt servicing on money demand in the Nigeria economy from 1980 to 2019, which covers a period of 39years.

## **2. LITERATURE REVIEW**

### **2.1 Conceptual Literature**

#### **2.1.1 Concept of deficit budget financing**

The problem of deficit financing has gotten a lot of attention from academics because anytime a government has a budget deficit, the first thing that comes to mind for financial professionals is how to finance the deficit so that the negative consequences on the economy are minimized. The term "financing" refers to the government's resources for addressing deficits or utilizing surpluses. When the government has a budget deficit, deficit financing is required [2]. However, in order for the economy to grow as projected in a budget, the government must raise funds from other sources to cover revenue shortfalls caused by excessive spending. Deficit financing can be defined as the practice of raising government expenditures beyond revenue sources in order to stimulate a country's economy [1]. This means that deficit financing can be described as money provided by a company or government to cover a revenue shortfall. In order to offer an economic boost, the government or a firm may engage in deficit financing.

#### **2.1.2 Concept of money demand**

The overall amount of money balances that people want to hold for specific purposes is referred to as demand for money. The desire for liquidity, according to Keynes, stems from three factors: the transactions drive, the precautionary motive, and the speculative motive. The transactions motive is concerned with the need for money or the requirement for money balances for individual and commercial transactions. Individuals keep cash in order to "bridge the gap" between when they receive money and when they spend it. People, in other words, store money or cash balances for transaction purposes because money receipts and payments do not always coincide. People's desire to keep cash levels for unanticipated events is known as the precautionary incentive for holding money. People save a certain amount of money to protect themselves against the risks of unemployment, illness, accidents, and other

unforeseen events. The quantity of money demanded for this reason will be determined by the individual's psyche and the circumstances in which he lives.

People's speculative motive pertains to the desire to keep their assets in liquid form in order to profit from market movements regarding future changes in interest rates (or bond prices). The idea of retaining money for speculative purposes was a groundbreaking Keynesian concept at the time. Money held for the speculative purpose, like money maintained for the precautionary motivation, acts as a store of value. It is, nevertheless, a money bank with a different function. When dealing with bonds whose prices vary, the cash stored under this incentive is utilized to earn speculative gains. If bond prices are predicted to climb, which means the rate of interest is likely to decline, businessmen will buy bonds with the intention of selling them when the price rises. Businessmen will sell bonds to avoid capital losses if bond values are predicted to decline, i.e., the rate of interest is expected to rise.

### **2.2 Basic Theories**

#### **2.2.1 Keynesian theory of financing budget deficit**

According to Keynesian theory, government spending can boost economic growth by raising government consumption through increased employment, profitability, and investment. According to the notion, the government can reverse economic downturns by borrowing money from the private sector and then spending it back into the private sector. According to this theory, active government intervention in the market place through deficit financing is the only way to ensure growth and stability by assuring efficiency in resource allocation, market regulation, economic stabilization, and social dispute resolution. In the short run, total expenditure in the economy has a considerable influence on economic growth through economic stability, according to Keynes. This theory holds that the economy is fundamentally unstable and that achieving economic stability requires active government intervention through expenditure.

Deficit financing, whether through domestic or international borrowing, entails the government absorbing real resources that would otherwise be accessible to the private sector (Okelo et al, 2013). Keynesian philosophy uses government

spending to stimulate the economy, eliminate unemployment, and make households feel wealthy (Usher, 1998). Okpanachi et al. (2007), on the other hand, believe that a budget deficit increases economic activity in the short run by making consumers feel wealthier, hence increasing overall private and public consumption expenditure.

This means that Keynesian theory drives money demand to grow and interest rates to rise, resulting in a decrease in investment. Keynesian economists frequently argue that private sector decisions can sometimes result in inefficient macroeconomic outcomes, necessitating active policy responses from the public sector, particularly monetary and fiscal policy actions by the Central Bank of Nigeria and the federal Ministry of Finance, to stabilize output across the economy.

### 2.2.2 Ricardian equivalence hypothesis

People will save in anticipation of a hypothetical future tax hike, according to the Ricardian Equivalent Hypothesis. It is also assumed that they will not need to use the windfall. It even assumes that for the near future, capital markets, the economy as a whole, and individual incomes will all remain unchanged. Income Life-Cycle Hypothesis — it has it. Consumers want to spread out their purchases over the course of their lives. As a result, if consumers expect future tax increases, they will preserve their current tax cuts in order to pay for future tax increases that they predict will occur.

The preceding seemingly reasonable assumption, according to Ricardian economists, is erroneous. Although a debt-financed tax cut would enhance current disposable income, it would also mean that the government would have to raise taxes at some point in the future to pay off the debt and interest. As a result, the tax decrease would only provide consumers with a temporary boost in income that would be reclaimed later. Consumers who comprehend this will be aware that their permanent, or lifetime, resources have not changed.

As a result, the tax decrease would have no impact on consumer spending, and households would save all of their new disposable income to cover future tax liabilities. There would be no influence on national saving since there would be no effect on consumption. Financing the budget deficit would not have the impact that Keynesian

economists predicted if national saving remained unchanged. Output, employment, foreign debt, and interest rates, in particular, would be unaffected in the short and long run. The tax cut would have little impact on the economy. Many scholars have used the Ricardian equivalence hypothesis to suggest that tax cuts, which tend to diminish both public revenues and savings, are the primary source of funding for budget deficits.

While these tax cuts reduce public savings and raise the budget deficit, they also increase private savings by the same amount. Changes in the composition of public funding, such as debt versus taxes, according to proponents of this viewpoint, have no influence on real interest rates, aggregate demand, or private expenditure. According to the Ricardian Equivalence Hypothesis, a deficit-financed tax cut will reduce public savings while increasing private savings. As a result, the decrease in public savings is fully offset by an increase in private savings, and national income remains unchanged. The main premise is that government debt is similar to future taxes, and future taxes are comparable to current taxes if consumers are sufficiently forward-thinking. As a result, financing the government through debt is the same as funding it through taxes. Assume that government purchases do not change and that the government decides to reduce taxes.

### 2.3 Overview of Nigeria's Public Debt

Nigeria's debt goes back to the pre-independence period. Prior to 1978, Nigeria's debts were primarily long-term loans from multilateral and official sources, such as the World Bank and its key trading partners. The loans were mostly obtained on favorable conditions, thus they did not pose a financial strain on the economy. However, due to a drop in oil prices and earnings, the country raised its first jumbo loan from the foreign capital market in 1977/78, totaling US\$1.0 billion. Various medium to long-term infrastructure projects were financed using the loan [9]. The CBN had formerly handled domestic debt management in Nigeria by issuing government instruments such as Nigerian Treasury Bills (NTBs), Nigerian Treasury Certificates, Federal Government Development Stocks, and Treasury Bonds.

The debt management system in place at the time resulted in inefficiencies, posing serious problems. In order to accomplish efficient debt management methods, the government formed

an autonomous debt management office in light of these multiple challenges. On October 4, 2000, the Debt Management Office (DMO) was established to centrally coordinate the management of Nigeria's debt across all levels of government. While the Federal Government (FG) guarantees the state governments' external borrowing, the FG must analyze and confirm their domestic borrowings based on clear criteria and guidelines that the states can repay using their monthly allocations from the Federation Account Allocation Committee (FAAC) and internally generated revenue (IGR) [9].

The importance of prudential restrictions on governmental debt-to-GDP ratios has been highlighted in recent debates on fiscal reduction. For rich countries, a debt-to-GDP ratio of 60% is frequently cited as a prudential limit, whereas for underdeveloped and emerging economies, a ratio of 30.0 percent was used before 2008 and 40 percent since 2009. [10]. These percentages, however, are not inviolable, as governments are encouraged to use a variety of techniques to accomplish fiscal consolidation [11].

Nigeria's debt stock profile (including domestic and international loan) stood at NGN22.7 trillion in March 2017, according to the DMO. While external debt was USD22.07 billion, domestic debt totaled USD52.21 billion. According to DMO statistics, the quantum of domestic debt has consistently increased from roughly 5.6NGN trillion in 2011 to over 12.5NGN trillion in December 2017, a more than six-fold increase in just six years. Worse, the external debt has steadily increased from USD8.82 billion as of December 31, 2013, to a staggering USD22.07 billion as of March 31, 2018.

According to data from the Debt Management Office, the country's government debt comes from a variety of sources and instruments. Prior to 2016, the Nigerian Treasury Bills, Treasury Bonds, and Federal Government Bonds were the only three vehicles used by the government to borrow internally. The government, on the other hand, launched three new instruments in 2017: the Federal Government of Nigeria (FGN) Savings Bond, FGN Sukuk, and Green Bond. Multilateral, bilateral, commercial, and other loan sources are among the country's external debt sources.

The Debt Management Office (DMO) released the Q3 2020 Total Public Debt Stock, which revealed that the total public debt stock stood at

N32.223 trillion (USD84.574 billion). The Domestic and External Debt Stocks of the Federal Government of Nigeria (FGN), the 36 State Governments, and the Federal Capital Territory make up the Debt Stock (FCT). External debt accounted for 37.82 percent of the Public Debt Stock, while domestic debt accounted for 62.18 percent. In Q3 2020, the Debt Stock rose by N1.214 Trillion or 3.91 percent compared to the Total Public Debt Stock of N31.009 Trillion as of June 30, 2020. Borrowings to enable the FGN, state governments, and the FCT to respond adequately to the COVID-19 Pandemic and address income deficits all resulted in increases in their debt stock.

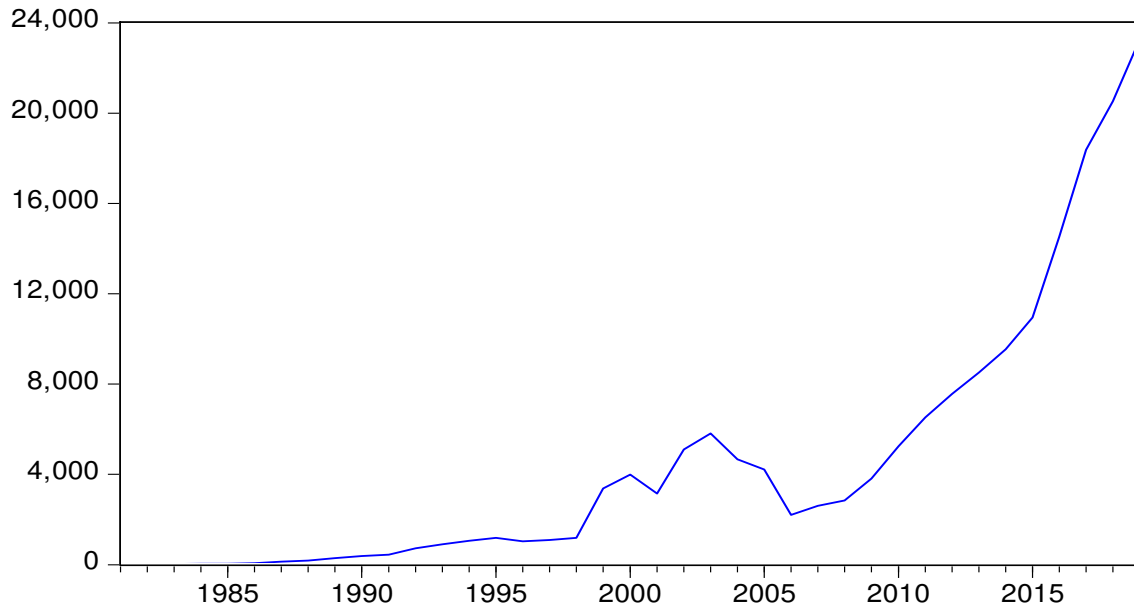
The FGN's issuance of Promissory Notes to settle inherited liabilities has also contributed to the increase in the Public Debt Stock since they were first issued in 2018. While N20.136 billion in Promissory Notes were issued in Q3, 2020, the total outstanding Promissory Notes, which are all included in the Domestic Debt Stock, stood at N971.878 billion as of September 30, 2020.

The figure below shows the trend of Nigerian public debt as dated from 1981 to 2020.

Concerns over the growth of Nigeria's state debt have grown during the last few decades. In 1987, the overall debt of Nigeria increased by 96.9% to N137.58 billion, marking the first large increase in the country's public debt. Nigeria's national debt has continued to climb unabated since then, with the entire public debt standing at N6, 188.03 million in 2004. Total debt, which had previously been dominated by domestic debt, began to shift in 1986, and was now dominated by overseas debt. The domination of external debt, as well as the continuous rise in total debt, persisted until 2005, when the Paris Club awarded the country financial forgiveness.

Between 2004 and 2006, Nigeria's total debt and external debt fell by 59.0 percent and 90.8 percent, respectively, to N2,533.47 billion and N451.5 billion, thanks to debt forgiveness. Domestic debt, on the other hand, continued to grow uninterrupted while external debt shrank, to the point where, by 2011, total debt, driven by domestic debt, had surpassed the 2004 level and stood at N6,519.65 billion. Nigeria's total debt had reached an all-time high by 2012, with domestic debt accounting for 82.2 to 87.2 percent of the total debt between 2006 and 2012 (Ngozi .T. I. Agboegbulem, 2016).

## PUBLICDEBT



**Fig. 1. Trends of public debt in Nigeria**

Source: Author's Compilation, (2020)

According to the DMO's 2018 Fiscal Sustainability Analysis for the Federation (federal, states, and FCT) published in Vanguard on July 26, 2018, the ratio of total public debt to gross domestic product remained below the threshold of 19.8% throughout 2017. They did warn, however, that Nigeria's high debt service to revenue ratio, which worsened in 2016, might trigger a debt crisis if revenue shocks persist. According to the research, the country's total domestic and external borrowing for the 2018 fiscal year should not exceed USD6.25 billion or NGN1,906.37 billion, divided in a 50:50 ratio, in order to stay within the recommended country-specific borrowing limit of 25%. Also in the April 19, 2018 issue of Vanguard, an Assistant Director of the International Monetary Fund (IMF) described the country's debt to revenue ratio, which she put at 64 percent, as "extremely high," stating that Nigeria needs to increase revenue in order to have more space to spend on infrastructure, social safety nets, and other things, rather than having interest eat up the majority of its revenue.

## 2.4 Review of Empirical Literature

In Nigeria, Nwaeke and Korgbeelo [12] looked at the relationship between deficit financing and macroeconomic indicators such economic growth (as measured by real GDP), inflation rate (INFR),

and unemployment rate (UNPR). In their research, they used the ordinary least squares (OLS) approach of multiple regression analysis. Their findings suggest that deficits financed by foreign loans have a negligible negative impact on economic growth in Nigeria, whereas deficits financed through local sources (e.g. DBS and NBP) encourage growth. They suggested, among other things, that Nigeria diversify and widen its revenue source in order to lessen the country's vulnerability to negative oil revenue shocks and avoid deficit budgeting. However, their study centers on ascertaining the impact of deficit financing on some macroeconomic variable such as inflation, unemployment and growth. But money demand posits a positive relationship with budget deficit, on this account, this current research work try to emphasize more on money demand as a dependent variable to deficit financing indicators.

The impact of public sector borrowings on prices, interest rates, and output in Nigeria was studied by Essien, Agboegbulem, Mba, and Onumonu (2016). To investigate the influence of the numerous innovations, they used a Vector Autoregressive framework, the Granger causality test, impulse response, and variance decomposition. They discovered that a shock to the external debt stock raises the prime lending rate, but only after a delay. However, across the

study period, the quantity of external and domestic debt had no substantial impact on the general price level or output. According to their findings, the government's existing strategy of borrowing from the long-term market through the DMO should be maintained. There is also a need to urge lower-tier governments to follow the same approach, as this will assist to reduce the crowding effect of government borrowing on the private sector. However, their study focuses studying debt on macroeconomic variables such as growth, lending rate and inflation rate while focuses on money demand as explained variable and incorporates some analytical technique such as error correction mechanism in ascertaining short run dynamics and long run changes of public sector borrowings and it's financing on money demand in the Nigerian economy.

From 1970 to 2013, Eze and Ogiji [13] explore the impact of deficit financing on economic stability in Nigeria. Regression analysis was used in this investigation. External Source of Deficit Financing (EXF), Non-banking Public Source of Deficit Financing (NBPF), and Exchange Rate have significant and positive implications on the Economic Stability proxy for Gross Domestic Product (GDP), whereas Ways and Means Source of Deficit Financing (WM), Banking System Source of Deficit Financing (BSF), and Interest Rate (INTR) have significant and negative implications. The implication is that government deficit financing via the External Source of Deficit Financing (EXF) and Non-banking Public Source of Deficit Financing (NBPF) will maintain economic stability, whereas government deficit financing via the Banking System Source of Deficit Financing (BSF) and Ways and Means Source of Deficit Financing (WM) will reduce economic growth, resulting in instability in the economy. According to the study, Nigerian deficit finance should be targeted on the productive areas of the economy. This is because deficit financing has only resulted in economic instability, showing that Nigeria's economic stability will require good policies. This study focuses on ascertaining the impact of financing budget deficit for the stability of Nigerian economy using Gross Domestic Product (GDP) as the explained variable while the current study focuses on the money demand.

Momodu and Monogbe [8] investigated the impact of Nigeria's budget deficit on economic performance. Between 1981 and 2015, they used VAR estimation and multiple regression in their research. The outcomes of the preceding

statistical output proved that a budget deficit greatly boosts economic performance. The granger causality test reveals that budget deficits statistically cause economic performance and vice versa, although the results of multiple regression using the ordinary least square method show a significant but negative link between economic performance and budget deficits. According to their findings, policymakers should assure proper use of borrowed funds and conduct sporadic evaluation and oversight of projects into which borrowed funds are routed in order to produce profitable returns that will aid in debt servicing and stimulate economic performance. Their work uses budget deficit as a single variable on the growth of Nigerian economy while this research work looks at different indicators of financing deficit such as external debt financing, domestic debt financing and their impacts on money demand in Nigerian economy.

Ibrahim [14] investigated the Nigerian Budget Deficit-Money Demand Nexus: A Myth or Reality? The ability of an increase in the budget deficit to modify the money market equilibrium is a frequently addressed subject. To determine the short and long-run effects of the budget deficit on money demand, the researchers used cointegration analysis and ECM technique. The results of the cointegration test indicated that the variables in the money demand model have a strong and stable long-term relationship. Furthermore, the ECM model's estimates show that there is a short- and long-term, positive and significant relationship between money demand and the budget deficit, implying that both Keynesian and Neoclassical viewpoints are valid for Nigeria. As a result, the study recommends that greater focus be placed on the productivity and effectiveness of government spending, as this has a beneficial impact on aggregate money demand via a rise in aggregate demand. However, the former focuses on budget deficit and uses budget deficit as a single variable in ascertaining its effectiveness in money demand while the later focuses on financing budget deficit on money demand thereby using external debt financing and local debt financing as indicators to budget deficit.

### **3. THEORETICAL FRAMEWORK AND MODEL SPECIFICATION**

The relationship between money demand and budget deficit financing has been examined using the IS-LM framework within the setting of



Keynesian and Ricardian equivalence models to determine a money demand balance equation. A rise in the budget deficit, whether from increased government spending or tax cuts, or both, will boost aggregate demand, according to the Keynesian model. Budget deficits financed through the issuing of bonds, on the other hand, enhance bondholder wealth, which stimulates spending and, as a result, aggregate demand. The multiplier impact of increased aggregate demand results in increased national income. The demand for money transactions increased as national income increased. As a result, if the budget deficit is financed by issuing government bonds, the resulting expansionary fiscal policy will cause the IS curve to move to the right, according to the Keynesian premise. The LM curve, on the other hand, will shift to the left if the budget deficit rises and has a positive impact on money demand. This policy combination results in a new equilibrium point for the IS and LM schedules, with greater production and interest rates. As a result, the money market shows that real money supply and demand are equal at equilibrium. This gives the equation:

$$M^d = M^s \text{ or } M^d/p = M^s/p \quad (1)$$

The behavior of economic agents, particularly households and businesses, determines the demand for money. The three grounds for money demand, according to Keynes [3], are transactional, precautionary, and speculative motives. While the transactional incentive for retaining money is based on economic actors' desire to meet daily contractual obligations, the precautionary motive is based on the need to keep money on hand in case of emergencies or other unanticipated circumstances, according to him. Money is retained as a store of worth or wealth for speculative purposes in order to take advantage of current market opportunities.

In other words, bond prices would climb during periods of high interest rates, making it more appealing to own bonds rather than cash. Similarly, when interest rates are low, bond prices fall, making it more appealing to store cash rather than bonds. Under speculative demand, money demand is thus negatively connected to the interest rate. Money maintained for transactions and precautionary purposes is generally determined by income, whereas speculative demand is determined by both income and interest rates. As a result, the overall demand for money may be stated as a function of both income and interest rate. Money is in

demand, and genuine money is in demand. Money is held to fund transactions, therefore demand for money rises in tandem with real output. As a result, the actual money demand balance is functionally stated as:

$$M^d = F(\text{int}, \text{gdp}(y)) \quad (2)$$

Where: Y is real income, and INT is the nominal interest rate.

In line with the study of Taofik Ibrahim [14] whose model was given as

$$M^d = M^s f(\text{ir}, y, \text{inf l}, \text{bd}, \text{ge}) \quad (3)$$

Where;  $M^d$  = Dependent Variable and interest rate, GDP, inflation, government expenditure as well as budget deficit are independent variables and  $\mu$  = Error or disturbance term. Equation (3) is augmented to disembody budget deficit to various indicators such as total external debt and total domestic debt as well as debt servicing. External debt which is the amount of budget deficits financed from foreign loans; total domestic debt (i.e budget deficits financed from the domestic banking system which comprises of the Central Bank of Nigeria and the deposit money banks and deficit financed from the non bank public sources which include insurance companies, pension and provident funds, savings and loans associations, leasing companies, unit trust, development finance institutions, discount houses, individual private investors, money and capital markets, etc so as to capture its effect and a disposition on the conventional money demand equation. The functional form of the model is given below as:

$$M^d = M^s = f(\text{EXTD}, \text{TDD}, \text{DS}, \text{RGDP}(Y), \text{INTR}) \quad (4)$$

Equation (4) implies that money demand is a function of nominal interest rate, real GDP at constant price, external debt, total domestic debt and debt servicing. Nominal interest rate and real GDP was added in the model as an existing variables in the conventional money demand equation, though will also serve as a control variables to financing deficit indicators. By building an econometric model of the functional model above, the model is specified thus:

$$M^d = M^s = \beta_0 + \beta_1 \text{EXTD} + \beta_2 \text{TDD} + \beta_3 \text{DS} + \beta_4 \text{RGDP} + \beta_5 \text{INTR} + \mu_1$$

Where;  $M^d$  = Money Demand,  $M^s$  = Money Supply, EXTD = External Debt, TDD = Total

Domestic Debt, DS = Debt Servicing, RGDP = Real Gross Domestic Product, INT = Interest rate,  $\mu$  = Disturbance term/error term,  $\beta_0$  = Constant term,  $\beta_1 \beta_2 \beta_3 \beta_4 \beta_5$  are parameters to be estimated.

### 3.1 Apriori Expectation

Based on theories and empirical studies, we expect the predictor variables such as total external debt, total domestic debt, aggregate debt, debt servicing as well as real GDP to have positive and direct relationship with the dependent variable while interest rate is expected to have a negative relationship with money demand because during regimes of high interest rate, bond prices would rise, making it more attractive to hold bonds than money. Similarly, during a low interest rate regime, bond prices fall making it more attractive to hold money than bonds. Money demand, therefore, is inversely related to the interest rate. Therefore, mathematically states as:

$$\text{EXTD}/M^d > 0, \text{TDD}/M^d > 0, \text{RGDP}/M^d > 0, \text{TD}/M^d > 0, \text{DS}/M^d > 0 \text{ INTR}/M^d < 0.$$

The above signifies a positive and negative relationship and movement of exogenous variables on money demand

## 4. EMPIRICAL RESULTS AND DISCUSSION OF FINDINGS

### 4.1 Unit Root Test

The ADF results comprising of the t- statistics and 5% critical value as originally generated are represented below in the table below.

Decision Rule: Reject  $H_0$  if ADF test value is greater than 5% critical value, otherwise accept. From the above result, the ADF test value of total domestic debt TDD (-4.550500) and debt servicing (3.788769) are greater than 5% critical value of -3.568379 and -3.533083 therefore total domestic debt and debt servicing are stationary at its level. At first difference, the ADF test value of money demand MD (-9.039655), total external debt TEXD (-4.008651), real gross domestic product RGDP (-9.278286) and interest rate INTR (-8.515384) are greater than their critical values of (-3.536601), (-3.536601), (-3.536601) and (-3.533083) at 5% respectively. Therefore, we reject  $H_0$  of MD, TEXD, RGDP and INTR and then conclude that they are stationary at first difference.

### 4.2 ARDL Bound Cointegration Test

Pesaran et al (2001) devised the ARDL technique to estimate the relationship between the variables. The idea behind this method is that it can be used regardless of whether the series are stationary at level value  $I(0)$ , after first difference  $I(1)$ , or a mix of both.

There is no cointegration between the variables, according to the null hypothesis ( $H_0$ ).

The alternative hypothesis ( $H_1$ ) is that the variables are cointegrated.

The result confirms the existence of cointegration between the variables. This is because the F-Statistics value (12.24117) is bigger than any of the significant levels' lower and upper critical bounds. The result is summarized and presented in Table 2.

**Table 1. Unit root (ADF test)**

Variables	ADF Test	5% critical value	Order of integration	Remarks
MD	-9.039655	-3.536601	1 (1)	Stationary
TDD	-4.550500	-3.568379	1 (0)	Stationary
TEXD	-4.008651	-3.536601	1 (1)	Stationary
RGDP	-9.278286	-3.536601	1 (1)	Stationary
DS	3.7788769	-3.533083	1 (0)	Stationary
INTR	-8.515384	-3.533083	1 (1)	Stationary

Source: Researcher's compilation (2021)

**Table 2. ARDL bounds test**

<b>F-Statistics = 12.24117</b>		
<b>Critical Value Bounds</b>		
<b>Significance levels</b>	<b>I(0) Bounds</b>	<b>I(1) Bounds</b>
10%	2.26	3.35
5%	2.68	3.79

Source: Researcher's compilation (2021)

**Table 3. Result of long run model (Ordinary Least Squares)**

<b>Dependent variable: MD</b>				
<b>Variable</b>	<b>Coefficient</b>	<b>Std. error</b>	<b>t-statistics</b>	<b>p-values</b>
TDD	1.913497	1.714087	7.333061	0.0000
EXTD	0.548993	0.166732	-3.292672	0.0024
DS	3.984637	1.714087	2.324641	0.0264
RGDP	0.057034	0.021542	2.647592	0.0123
INTR	-40.57197	38.95873	-1.041409	0.3053
C	-577.6300	737.7054	-0.783009	0.4392
ECT(-1)	-0.973193	0.289011	-3.367323	0.0050
$R^2 = 0.994$	$Adj.R^2 = 0.993$	F-stat= 1112.823	Prob(f-stat)= 0.0000	D.W= 2.25

Source: Researcher's compilation (2021)

Since the bounds test indicated the presence of long run relations among the variables, we then go further to estimate the long run model to ascertain the long run coefficients of the variables of the model.

### 4.3 Evaluation of Estimates

The satisfactory results obtained from the unit root and co integration tests motivated the estimation of an over-parameterized model using 3 lags of each variable in the equation. The ordinary least square (OLS) regression result of this study is presented below.

The result shows that the sign of the coefficient of TDD is positive and is 1.91, which implies that with the influence of all other variables held constant, an increase in the total domestic debt by one percent on the average, will lead to an increase in Money demand by about 1.91 Percent. The sign of the coefficient conforms to economic a priori expectation. More so, the sign of the coefficient of EXTD is positive that is 0.54, this suggest that all things being equal, as EXTD increases by one percent on the average, Money demand will increase by about 0.54 percent. Also, the sign of the coefficient of DS is positive that is

3.98, this suggest that all things being equal, as DS increases by one percent on the average, Money demand will increase by about 3.98 percent.

This indicates that the government's deficit financing, both domestically and internationally, as well as debt servicing, will raise money demand in the Nigerian economy. This claim was based on the notion that financing the deficit would boost domestic output, activate aggregate demand, raise savings, support investment patterns at any given interest rate, and therefore crowd in private investment. As a result, both Keynesian and Neoclassical perspectives on the relationship between money demand and budget deficit finance are applicable to the Nigerian economy.

In addition, the coefficient of changes in real GDP has the right signs and statistically significant. This implies that changes in real GDP in the long run, do impact meaningfully on money demand to bring about a positive/negative change. The coefficient of INTR is -40.57 and it is negative, which suggest that over the period of study, as INTR goes up by 1 percent on the average, Money demand decreases by about 40.57 percent, other factors held constant. However, Bond prices would increase during periods of high interest rates, making bonds

more appealing than cash. Similarly, when interest rates are low, bond prices fall, making it more appealing to store cash rather than bonds. As a result, under speculative demand, money demand is inversely connected to the interest rate. Given the above assertion, this result was in line with the theoretical postulation of interest rate to money demand in the Nigerian economy.

The ECM (-0.971), which implies the rate of adjustment to long-run equilibrium, has the predicted negative sign and is statistically significant at the 5% level. The ECM coefficient implies that 97.1 percent of the previous year's disequilibrium was fed back. This also refers to how quickly MD adjusts from short-run disequilibrium to changes in TDD, EXT D, DS, RGDP, and INTR in order to achieve 97.1 percent long-run equilibrium in a year.

## 5. CONCLUSION AND RECOMMENDATIONS

Having examined the impact of financing budget deficit on money demand in Nigeria using OLS technique to test some explanatory variables, the researcher concludes that a positive relationship exists between indicators of financing budget deficit and money demand in Nigeria. Also, the researcher concludes that there exists an insignificant relationship between interest rate to money demand though with rightful sign. This is due to policy indiscipline, misappropriation as well as corruption and poor policy implementation and monitoring. The positive impact of external debt financing (EXTD) and debt servicing on money demand implies that EXTD and DS in Nigeria are one of the factors affecting money demand.

Hence, external sources of financing deficits should be supported for effective demand leading to economic stability reasons rather than for political reasons, and they should be effectively routed to the productive sector of the economy to enhance economic stability. More so, effective and productive debt servicing should be encouraged so as to offset debt burden at the appropriate time.

The research findings indicate that the Keynesian and Neoclassical theories apply to Nigeria. As a result, the study recommends that greater focus be placed on the productivity and effectiveness of government spending, as this has a beneficial impact on aggregate money demand via a rise in aggregate demand.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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