

Effects of Budget Deficit Financing on the Economy of Nigeria

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Abstract

The study investigated the effects of deficit financing on the Nigerian economy using data that covered 41 years (1981 to 2021). Real gross domestic product (RGDP) was the dependent variable, while government budget deficit financing disaggregated into different sources of budget deficit financing represented the explanatory variables. The ordinary least squares (OLS) regression method was used for the tests and analyses. Results established that both non-bank public sources of deficit financing and banking system sources of deficit financing had positive and significant effects on growth. However, non-bank public deficit financing positively led the Nigerian economy and was followed by banking system deficit financing. Both ways and means and external deficit financing sources were negative and insignificant in influencing the Nigerian economy. Ways and means were third while external deficit financing was fourth in descending order of influence on RGDP growth. The study further applied the Augmented Dickey-Fuller (ADF) approach to unit root tests and observed that the variables were integrated at both levels and first difference, leading to the application of the Autoregressive Distributed lag (ARDL) approach to data estimation. The ARDL bounds tests showed that the model specified for the study followed a long-run path and that a long-run relationship existed between the dependent variable and the explanatory variables. The estimation of the long-run and error correction estimation indicated that the independent variables had a time-varying effect on the real gross domestic product of Nigeria. That ARDL estimation of the error correction mechanism also showed that RGDP adjusted rapidly to short-run discrepancies in the long run. Finally, the error correction mechanism showed that external sources of budget deficit financing, non-banking system public deficit financing, ways and means source of deficit financing, gross capital formation, real interest rate and exchange rate, all had robust effects on growth, though with varying directions of influence. Based on the foregoing, the study has recommended deficit financing, more especially non-bank public deficit financing and banking system deficit financing as better options for attaining the much desired rapid and sustainable economic growth of Nigeria as they have been proven to be non-inflationary in practice compared to ways and means and external source of deficit financing over the years.

Keywords: Deficit financing, economic growth, ways and means, non-bank public deficit financing, capital formation.

Introduction

Budgetary issues in developing countries differ from those in industrialized countries. Usually, developing countries have other goals from those of industrial countries. In that they focused on building infrastructure, creating an industrial base, and encouraging new businesses. Their population are younger and less skilled, and they have limited access to capital. Fiscal policies in developing countries have been facing unique challenges. As such their budgets have been smaller in size, personal incomes are lower, and tax collection are often erratic. Therefore, most of their employment opportunities are created outside the formal economy thereby making transactions difficult to tax. Financial markets in developing countries have often been inefficient, making it hard for governments to finance their deficits through other means like ways and means etc. With lower government revenues, most developing countries had lower public expenditures than industrial countries (Abubakar, 2021). Nonetheless, they could still raise funds from the capital market to compliment revenues from their budgets.

Developing countries in Asia and the western hemisphere have been spending the least and those in Africa, the Middle East, and the Eastern Europe the most. Yet, the majority of developing countries run deficits, with the occasional exception of the middle-income countries. Fortunately for their fiscal prospects, the developing countries hardly spent as much on social welfare programs (pensions, health care and unemployment insurance) as industrial countries would do. Younger population put less spending pressure on governments, and in many countries, there was joint family system and elderly members are taken care of by their own families. Large and persistent fiscal deficits pushe up interest, reduced investments and created a burden of indebtedness that was difficult for the governments and taxpayers to bear. Deficit also interfered with the effective functioning of markets at home and abroad. Most importantly, they compromised the living standards of current and future generations (Week, 2000).

In Nigeria budget deficits have been blamed for causing much economic crises, high inflation, poor investment performance and economic growth due to excessive debt to bridge the finance gap (Ibikunle & Atukson, 2022). One of the most important objectives of fiscal policy is to reduce national debts and to check the interest payment on such debts from rising to prevent high deficits in the future. However, Nigerian government budget deficits have witnessed increases in the past decades. For instance, from 1981, budgets increased from ₦3.9billion to ₦8.3billion in 1989. From 1990, the rising trend of budget deficit continued except in 1995 when the budget of recorded a surplus of ₦1billion. In 1998, an overall budget deficit jumped to ₦133.3 billion and reached ₦301.4billion in 2002. Starting 2003, government budget deficit slightly declined from ₦202.7billion to ₦188.2 billion, ₦150.6 billion and ₦101.3 billion in 2003, 2004, 2005 and 2006, respectively. Another increase was witnessed from 2007 at 117.2 billion to 7,118.7 billion in 2021 (Umezurike, 2023). These increases in the budget deficit were due to largely to government's desire to enhance productivity in the Nigerian economy in the face of low revenue generation (CBN, 2021). Due to the frequent deficits inherent in the Nigerian budgeting system, total debts have been on the increase. Overall, Nigeria's public debt continued to accumulate due to the need to finance budget deficits and ensure economic advancement that has been sluggish with chronic poverty (IMF, 2023).

In every economy, public expenditure has active role to play in reducing regional disparities, developing social overheads and creation of infrastructure in the form of transport and communication facilities, growth of capital goods industries, basic and key industries, research and development (Hussain & Haque, 2017). Public expenditure on infrastructure stimulates the growth process of economy and the channel through which this manifest depends largely on the precise form and size of expenditure allocated to economic and social development projects (Agu, Onwuka and Aruomah, 2019).

As noted in Ghate et al., (2016), when public expenditure is incurred in the form of investments or re-allocation of investible resources to the private sector, the effect if basically on the nature of channeling resources from less to more desirable productive lines of investment. Such category of

expenditure is also noticeable in public-private spending on education, health, transport, communication, water disposal, electricity, water and sanitation which could also accentuate growth process. The role of capital expenditure on infrastructure development has been of much concern to several scholars. The notion is, if capital expenditure is judiciously applied it has the capacity to open up vast opportunities, create employments, stimulate investments and improve human welfare (Ibikunle & Akutson, 2022).

In a purely, Keynesian situation, deficit financing and capital formation are organically, related depending on whether or not for employment conditions obtained in the economy. Indeed, the whole Keynesian revolution rests on the hypothesis that in a period of unemployment, dis-saving by the government, contrary to traditional beliefs; creates new capital and in so doing creates new employment. The Keynesian situation is one in which monetary flows lead to real physical flows in the system. In order for the system to function in the defined manner, there must be assumption that there are no serious imperfections in the system. For example, newly generated funds must not be boarded but must be spent on projects that utilize the under-employed and unemployed resources (Nwikina, et al., 2021).

Where there are serious imperfections, events in the field of real resources and production might not be related to monetary developments in the system. Nevertheless, the Keynesian correlation between deficit financing and new capital creation is generally accepted by most economists in developed countries. The relationship between deficit financing and capital formation on the one hand, and inflation, on the other, however, could be most speculative in a developing country like Nigeria.

As an instance, Gross domestic product (GDP) recorded a low growth from 1981 to 1986 ranging from ₦144.83 billion in 1981 to N202.44 billion in 1986. This was the period when the Nigerian economy was regulated, to the extent that it was sustained on agricultural output. From 1987 to date, there have been substantial annual increases in GDP with recorded figures of ₦249.44 billion in 1988; ₦1,259.07 billion in 1993; N22,269.98 billion in 2005, and N101,489.49 billion in 2016 and N127,762.55 billion in 2019. The continuous increases in GDP should be attributed to the shift from an agrarian economy to an oil dependent economy within the period (CBN, 2021).

Finally, the implications of budget deficits and economic growth of Nigeria have been one of the subjects of a long-standing debate in macroeconomics (Eze & Nwambeke, 2015). The present study would join in the debate surrounding government budget deficits and economic growth among nations to ascertain the way forward. By the time it has been concluded, the researchers should be in position to establish the right perspective a about government budget deficits and economic growth of Nigeria.

Statement of the Problem

Budget deficit financing concerning economic growth has been one of the most recurring issues facing Nigeria over the decades. According to Chigbo (2021), this is because, despite the several fiscal policy measures introduced by governments in curbing excessive deficits coupled with the quantum of domestic and external loans, Nigeria remains at bay with citizens suffering from high levels of unemployment and insecurity, while poverty remained widespread in both urban and rural areas.

From a general perspective, individuals have assumed that the current state of the Nigerian economy is linked to deficit financing and mismanagement of both external and domestic debts on the part of the government (Nwankpa, 2022). A critical review of the budgets in Nigeria has shown that it has been counter-productive to see multiple overlaps in the budgets without substantial impacts on the population classified as “capital projects”. Consequently, the debts must be linked to the capital projects (IMF, 2023). However, these recent historic advances have witnessed declining economic growth, rising hunger and speedy environmental degradation in Nigeria. These are all indicators that economic growth has not created opportunities to benefit citizens while many Asian countries and other developing countries have been making remarkable progress in addressing these challenges and reducing their budget benefits and their costs of financing (Abubakar, 2021).

Additionally, the socio-economic problems facing the region are exacerbated by the misuse of loans that the government did not utilize wisely (Onyele et al., 2023). The growing debts of Nigeria continue to raise concerns about its development, given that borrowing has not yielded the expected results in terms of the increased physical asset investments required for the growth of the economy (Sunday et al., 2019). As a result, rising debt profile and repayment levels have severely limited Nigeria's ability to finance important imports and new development projects (Onyele et al., 2023). The continued dependence of Nigeria on foreign debts to cover its fiscal deficits has raised concerns which has led to the ongoing debate over the effect of government deficit financing on the Nigerian economy.

Despite relentless efforts by scholars to come up with a clear-cut solution to the ills attributable to deficit financing, most submissions seem as a mirage and have not given a clear picture of the current events in the developing economies and Nigeria in particular.

For instance, Ughulu et al., (2023) found that external sources of deficit financing do not affect economic growth, while Alam et al., (2022), observed that foreign sources of deficit financing increased economic performance. On the other hand, Ibukunle & Akuston (2022) and Abubakar (2021) reported that domestic sources of deficit financing enhanced economic growth in Nigeria; Jakpa & Osho-Itsudi (2020), observed that domestic sources of deficit financing did not enhance the Nigerian economy. Studies such as Umaru (2017); Eze & Ogiji (2016), Eze & Nwambeke (2016); and Nwanne (2014) disaggregated domestic sources of deficit financing into external sources of deficit financing, banking system sources of deficit financing, non-banking public deficit financing, ways and means source of deficit financing, with varying results, thereby intensifying the debate on budget deficit financing and its effect on economic growth, engendering the motivation for the present study.

The general objective of this study is to examine the effect of government budget deficits on the economy of Nigeria and how different sources of deficit financing (external source, banking system, non-bank public, and ways and means, etc.) impact on real gross domestic product of Nigeria. By the time the study has been completed, the authors would be in a position to ascertain the time state of affairs in Nigeria.

Literature Review

Conceptual Framework

The meaning of 'deficit' differs from that of "debt", which is an accumulation of yearly deficits. Deficits occur when a government's expenditures exceed the revenue that it generates. The deficit could be measured with or without the interest payments on the debts. The primary deficit is defined as the difference between current government spending on goods and services and total current revenue from all types of taxes, not transfer payments. The total deficit (which is often called the fiscal deficit or just the 'deficit') is the primary deficit plus interest payments on the debt (Abubakar, 2021).

Economic trends can influence the growth or shrinkage of fiscal deficits in several ways - increased levels of economic activity generally would lead to higher tax revenues, while government expenditures often increase during economic downturns because of higher outlays for social insurance programs such as unemployment benefits (Eze & Ogiji, 2016). Changes in tax rates, tax enforcement policies, levels of social benefits and other government policy decisions could also have major effects on public debt. In addition, inflation reduces the real value of accumulated debt (Uremadu & Onyele, 2019) if investors anticipate future inflation, however, they would demand higher interest rates on government debt, making public borrowing or deficit financing more expensive.

In the same vein, gross domestic product (GDP) is the value of all goods and services produced within a country during one year. GDP measures flows rather than stocks for example, the public deficit is a flow measured per unit of time, while the government debt is a stock, an accumulation. GDP can be expressed equivalently in terms of production or types of newly produced goods purchased, as per the National Accounting relationship between aggregate spending and income.

$$Y = C + I + G = (X - M) \quad \text{Eqn. (1)}$$

Where, Y is GDP (production, equivalently, income), C is consumption spending, I is private investment spending, G is government spending on goods and services, X is exports and M is imports and $X - M$ is net exports.

The three sectoral balances equation depicting private domestic, government budget and external is stated as follows:

$$(S - I) = (G - T) + (X - M) \quad \text{Eqn. (2)}$$

Thus, the sectoral balances equation states that total private savings (S) minus private investment (I) equal the public deficit (spending G , minus net taxes, T) plus net export (exports (X) minus imports (M), where net exports represent the net spending of non-residents on the country's production. Put in another way, total private savings is equal to private investment plus the public budget plus net exports. Therefore, in any given period, the government's budget can be either in deficit or in surplus. A deficit occurs when the government spends more than it taxes, and a surplus occurs when a government taxes more than it spends. Hence, the government budget deficit adds net financial assets to the private sector. This is because a budget deficit means that a government has deposited more money and a bond into private holdings than it has removed in taxes and the additional holdings that it has removed in taxes. The addition of assets to the private sector boosts the investment level which has the multiplier effect of increasing output level through an increase in economic activities, employment, and standard of living through the increase in per-capita income of the households, among others.

Hence, during a recession, the deficit widens when the government tries to spend money to stimulate economic growth. In this scenario, deficits increase as the government significantly raises expenditures, whereas revenues decrease drastically (Ajigboye, 2022).

Theoretical Framework

This study is anchored on the Keynesian view of budget deficits. Keynesian theory advocates government borrowing only in cyclical downturns when there is a rise in private sector saving and a period of unemployment. The neo-classical growth theory, on the other hand, envisioned far-sighted individuals planning consumption over their life cycles. Budget deficits raise total lifetime consumption by shifting taxes to subsequent generations (Penchman, 2018). If economic resources are fully employed, increased consumption would necessarily imply decreasing savings. Interest rates must then rise to bring capital markets into balance.

The Keynesian theory is hinged on the premise that public spending can make a positive contribution to economic growth by increasing government consumption through employment, profitability and investment. In other words, the federal government can reverse the recession by borrowing money from the private sector and returning it to the private sector through various expenditures. The theory is of the view that active government in the market through deficit finance is the only way to ensure growth and stability through efficient resource allocation, market regulation, economic stabilization and harmonization of social conflicts. Keynes stated that in the short run, economic growth through economic stability could be strongly influenced by total spending in the economy (Dao & Bui, 2016). This theory considers the economy to be inherently volatile and require active government intervention through spending to achieve economic stability and growth. This theory is relevant to this study in that deficit financing of shortfalls would make up for investable funds that would boost economic activities that would engender economic growth in real terms.

Empirical Review of Literature

Krugman (2010), while studying fiscal deficits in Britain contended that deficit financing was a central point of controversy in economics, with prominent economists holding a differing view. The mainstream economists' position was that deficit spending was desirable and necessary, as part of cyclical fiscal, but that there should not be a structural deficit. In an economic slump, the government

should run deficits, to compensate for the shortfall in aggregate demand, but should run corresponding surpluses in boom times so that there was no net deficit over an economic cycle.

Dao & Bui (2016) examined the effect of budget deficit on growth of the Vietnamese economy, using an Auto-regressive Distributed Lag (ARDL) to analyze the quarterly data from 2003 to 2015, and it was found that there was a long-run relationship between macro variables under study. Moreover, the budget deficit did not affect economic growth. While useful expenditure had a substantial positive influence, non-productive expenditure and consumer price index (inflation) together had a negative influence on the budget deficit.

In another study, Hussain & Haque (2017) analyzed the impact of fiscal deficit on economic growth in Bangladesh using fully modified ordinary least squares (FOLM). Their findings revealed that there was a positive and significant relationship between fiscal deficit and the growth rate of GDP thereby supporting the Keynesian theory.

Again et al. (2019) investigated the effect of deficit financing on economic stability in Jordan from 2005 – 2017, using quarterly data by employing the VECM after seasonally adjusting the variables. Results provided empirical evidence that external borrowing and domestic bank financing negatively affected economic stability in Jordan. The bank effect was due to crowding out the private sector. External borrowing's negative impact was driven by the current high level of outstanding public debt, 98 per cent of GDP. Public debt was mainly channelled to finance current expenditures at the expense of capital expenditures, which had a minimal impact on growth. The interest rate effect was in line with the finance theory as higher rates led to lower growth. Non-bank financing, although not statistically significant, exhibited the right sign as it had a positive effect.

Alam et al., (2022) examined the effects of budget deficit financing on economic growth in Bangladesh from 1981 to 2018 using secondary data that were subjected to a co-integration test, vector error correction mechanism (VECM) and Granger causality test. Johansen's co-integration subsequently had a long-run nexus among the variables. The study found that in the long run, government domestic debt, government external debt and money supply affected economic growth positively. The results expressed that in the short run, government domestic debt, external debt and money supply negatively affected economic growth.

On the foreign scene, specifically in Ghana, Nkrumah et al. (2016) assessed the relationship between budget deficits and the economic growth of Ghana, using quarterly data from 2000 to 2015, with an ARDL approach with trend analysis. From the trend analysis, the study revealed that since 2000, years of high budget deficits were usually followed by years of low economic growth and vice versa. This phenomenon was pronounced in 2009 when the GDP growth rate fell from 7.3 per cent in 2008 to 4 per cent in 2009, following an increase in the budget deficit from 8 per cent in 2007 to 11.5 per cent in 2008. The same phenomenon was observed between 2012 and 2015. Thus, the econometric results showed a significantly negative effect of budget deficits on economic growth.

On the home front, Ughulu et al. (2023) investigated the impact of deficit financing on economic growth in Nigeria from 1981 to 2019 using secondary data subjected to a fully modified least squares method of econometrics analysis. The findings of their study showed that government domestic debt, budget deficits, foreign exchange reserves, and broad money, supply variables exerted positive impacts on growth, while the external debt variable exerted a negative and insignificant impact on economic growth in Nigeria.

Nwankpa (2022) appraised the impact of public sector budget deficit financing on economic growth in Nigeria over the period 2003 – 2018. The study employed OLS regression analysis that incorporated the log-linear of real GDP as the dependent variable and explanatory variables (bank credit to government, non-bank public credit, ways and means, and external deficit financing). Results revealed that budget deficit financing through bank credit and non-bank public was positively proportional to the growth rate of the Nigerian economy. It further revealed that financing through ways and means was inversely related to real GDP growth. The result for external financing exhibited

an inverse relationship with the growth rate of the Nigerian economy but the coefficient of external deficit financing was not statistically significant.

Onwuka (2022), analyzed the nexus between deficit financing and economic growth using a disaggregated vector Auto-regression (VAR) approach to investigate the impact of deficit financing on economic growth with inflation as an interaction variable. The study found, amongst others, that overall, deficit financing had a positive and significant impact on economic growth when financed 0 & Umeh (2019), examined the effect of deficit financing on Nigeria's economic growth using secondary data from 1981 – 2016 studied. Augmented Dickey-fuller (ADF) unit root test, Johansen cointegration test and normality test were applied for the analysis. Findings revealed that deficit financing through external debt borrowing had a significant negative effect on growth and domestic debt had a positive significant effect on economic growth, while debt service had an insignificant negative effect on growth.

Besides et al., (2018) examined the impact of deficit financing on the economic growth of Nigeria for the period spanning 1981 to 2016. The augmented Dickey-Fuller (ADF) test was applied to ascertain the stationarity properties of the time series variables and the ARDL technique was employed for the regression analysis proper. The variables employed include real gross domestic product, government budget deficit, exchange rate, interest rate, and domestic private investment. The results showed that government deficit financing over the years had significantly impacted the output growth of Nigeria.

Similarly, Vincent et al., (2012), investigated the relationship between fiscal deficit and economic growth in Nigeria using modelling techniques that incorporated cointegration and structural analysis at a 5% (0.05) level of significance from 1970 to 2006. The study, with the help of cointegration techniques, discovered that fiscal deficit had affected economic growth negatively, that there was a 1 per cent increase in fiscal deficit which was capable of diminishing economic growth by about 0.023 per cent and there was a strong negative relationship between government consumption expenditure and economic growth.

Again, Eze & Ogiji (2016) investigated the implications of deficit financing on the economic stability of Nigeria using OLS regression analysis. He revealed that external sources of deficit financing and exchange had positive and significant implications on economic stability proxy for GDP, while ways and means source of deficit financing, banking system source of deficit financing and interest rate had negative implications on economic stability in Nigeria. The implication is that government deficit financing through external sources of deficit financing and non-bank public sources of deficit financing would maintain economic stability while government deficit financing through the banking system source of deficit financing and ways and means source of deficit financing reduces economic growth thereby causing instability in the economy.

Finally, Eze and Nwambeke (2015) examined the effect of deficit financing on the unemployment rate in Nigeria from 1970 to 2013 using both the OLS method and vector error correction mechanism of multiple regression analysis. The study confirmed the validity of the long-run equilibrium relationship between unemployment and the explanatory variables (external source of deficit financing, ways and means source of deficit financing, banking system source of deficit financing, non-banking public source of deficit financing, interest rate and exchange rate. The error correction analysis showed that external sources of deficit financing, ways and means source of deficit financing and interest rate had negative and insignificant implications on economic stability through unemployment level in Nigeria, while banking system source of deficit financing, non-banking public source of deficit financing and the exchange rate had a positive and significant implication on economic stability in Nigeria.

Methodology

Research Design

This study applied *ex-post facto* research design which is a quasi-experimental study that investigated how data on independent variables existing before the study affects a dependent variable (Umezurike, 2023). As a result, this study used *an ex post facto* research design because it is aimed at investigating the effects of budget deficit financing on the economy of Nigeria in retrospect, specifically from 1981 to 2021.

Nature and Sources of Data

The nature of data collected and used for this study were from secondary sources spanning from 1981 to 2021. All the data were sourced from the Central Bank of Nigeria (CBN, 2021).

Model Specification

The model used for this study was drawn from the empirical work of Eze & Nwambeke (2015), which explains the interactive effects of foreign sources of deficit financing and different components of domestic sources as expressed in equation 3:

$$UNP_t = \beta_0 + \beta_1 EXF_t + \beta_2 WM_t + \beta_3 BSF_t + \beta_4 NPBF_t + \beta_5 INTR_t + \beta_6 EXR_t + \mu_t$$

Eqn. (3)

Where;

UNP = unemployment rate

EXF = external source of deficit financing

WM = ways and means source of deficit financing

BSF = banking system source of deficit financing

NBPF = non-banking public deficit

INTR = interest rate (control variable)

EXR = exchange rate (control variable)

t = Time series (annual) values

μ_t = Error or disturbance term

In the model used by Eze & Nwambeke (2015), the dependent variable was the unemployment rate, but the current study replaced “unemployment rate” with real gross domestic product which happens to be the area of departure of the two models. Also, as a control variable, this study used the real interest rate (RINTR) instead of the bank lending rate because it captures the inflation-adjusted rate of interest. Also, the gross capital formation (GCF) was used to capture the effect of private domestic investments in the dynamics of deficit financing and economic growth. Based on this modification, the functional form of the anchor model was expressed in Equation 4:

$$RGDP = \hat{f}(EXDF, BSDF, NBPf, WM, GCF, RINTR, EXCHR) \quad \text{Eqn. (4)}$$

The econometric form of equation 4 is denoted by equation 5 based on the Ordinary Least Squares (OLS) multiple regression technique:

$$LN RGDP_t = \beta_0 + \beta_1 LN EXDF_t + \beta_2 LN BSDF_t + \beta_3 LN NBPf_t + \beta_4 LN WM_t + \beta_5 LN GCF_t + \beta_6 LN RINTR_t + \beta_7 LN EXCHR_t + \mu_t \quad \text{Eqn. (5)}$$

Where;

RGDP = real gross domestic product

EXDF = external source of deficit financing

BSDF = banking system source of deficit financing

NBPf = non-banking public deficit financing

WM = ways and means source of deficit financing

GCF = gross capital formation

RINTR = real interest rate

EXCHR = Exchange rate (proxy for naira-dollar exchange rate)

LN = natural log

β_0 = constant parameter

$\beta_1 - \beta_6$ = coefficients of the independent variables

μ_t = Stochastic term

\hat{f} = Functional notation

A priori expectation

Components of government budget deficit financing are expected to have positive coefficients because they represent a means of getting investible funds to bridge the fiscal gap and enhance economic growth. *Ceteris paribus*, the *a priori* expectation (predicted signs) of the independent variables were summarized in Table 1:

The dependent variable, which is real gross domestic product (RGDP) and the independent variables are the external source of deficit financing (EXDF), ways and means source of deficit financing, banking system source of deficit financing (BSDF), and non-banking public deficit financing (NBPDF), gross capital formation (GCF), real interest rate (RINTR) and Exchange Rate (EXCHR). These variables are described below as follows:

Table 1: Summary of a priori expectation of the independent variables

Variables	Measurement	A priori sign	Source
EXDF	Total amount of foreign debt used to finance budget deficit.	Significantly positive (+)	Nwanna and Umeh (2019)
BSDF	Aggregate amount of government borrowing from domestic banks.	Significantly positive (+)	Umaru (2017)
NBPDF	Quantum amount of funds raised by the government from non-bank financial institutions	Significantly positive (+)	Umaru (2017)
WM	Ways and means of deficit financing by the CBN through minting of money	Significantly positive (+)	Eze and Ogiji (2016)
GCF	GCF is the net accumulation of capital goods for a particular country.	Significantly positive (+)	
RINTR	Real interest rate is the savings interest rate adjusted for inflation.	(-/+)	Eze and Nwambeke (2015)
EXCHR	Naira – dollar rate	(-/+)	Eze and Nwambeke (2015)

Source: Summarized by the authors (2023)

Description of Model Variables

Real Gross Domestic Product (RGDP): In this work, gross domestic product (RGDP) was proxied as the dependent variable to measure economic growth. This is because RGDP measures the sustainability of the economic growth of a country. It refers to the inflation-adjusted market or money value of all goods and services produced in a country at a particular period. RGDP measures the

economic size of a country. It also measures how fast the nation's economy is growing. It is an important indicator or measure of economic stability.

External Source of Deficit Financing (EXDF): At any given time, this is the outstanding amount of those actual current, and not contingent, liabilities that require payment(s) of interest and/or principal by the debtor at some point(s) in the future and that are owed to non-residents by the government.

Banking System Source of Deficit Financing (BSDF): BSF represents debt sourced from domestic bank financial institutions to cushion the effect of the budget deficit. It is money deposits loans to the government to finance the budget deficit.

Non-banking Public Deficit Financing (NBPFD): This aspect of deficit financing reflects the annual amount the government need to borrow, and it is primarily funded by selling government bonds (gilts) to the private sector.

Ways and Means Source of Deficit Financing (WM): WM implies the printing of new currency by the apex bank, that is, CBN. The government may borrow from the Central Bank of Nigeria (CBN) against its securities to meet the fiscal deficit. CBN issues new currency to finance its fiscal deficit.

Gross Capital Formation (GCF): GCF is the net capital accumulation during an accounting period for a particular country. The term refers to additions of capital goods, such as equipment, tools, transportation assets, and electricity. Countries need capital goods to replace the older ones that are used to produce goods and services. If a country cannot replace capital goods as they reach the end of their useful lives, production declines. Generally, the higher the capital formation of an economy, the faster an economy can grow its aggregate income.

Real Interest Rate (RINTR): The real interest rate is the rate of interest an investor, saver or lender receives after allowing for inflation. It can be described more formally by the Fisher equation, which states that the real interest rate is approximately the nominal interest rate minus the inflation rate. The present study uses real interest rate on savings in that if it is positive savers would be motivated to save more money with the banks thereby enabling commercial banks to mobilize adequate deposits which they would lend to the government to be used to fund deficit financing of projects.

Exchange Rate (EXR): Nigeria is one country that has seen its currency depreciate in recent times. A large proportion of Nigeria's deficit finance is sourced from foreign currencies whose exchange rates in terms of the domestic currencies (Naira) are highly volatile. This weakens the purchasing power of the domestic currency and mounts inflationary pressure on the economy, leading to low productivity in terms of real GDP.

Results and Discussion

Ordinary Least Squares (OLS) Regression

The outcome of the general OLS is presented in Table 2. The result of the regression in Table 2 revealed that the overall estimated model was good as it had an Adjusted R-squared of 0.990849. It also implied that about 99 per cent of the total variation in RGDP (dependent variable) could be explained by the independent variables while the remaining 1 per cent was explained by other variables not included in the model (error term). Similarly, the F- F-statistic value of 619.7511 and probability (F-statistic) of 0.000000 showed that the overall model was statistically significant at 5% level of significance. This implied that the components of government budget deficit financing (independent variables) collectively and significantly influenced the dynamics of economic growth (measured by RGDP) of Nigeria.

The Durbin-Watson statistic is in the range 0-4. A value of 2 or nearly 2 indicated that there was no first-order autocorrelation. An acceptable range is 1.50 - 2.50. Where successive error differences are small, Durbin-Watson is low (less than 1.50); this indicates the presence of positive autocorrelation. Hence, it could be said that there was no significant case of autocorrelation in the OLS model since its Durbin-Watson was 1.789693. As such, the regression analysis was not spurious, hence is reliable for making inferences.

Table 2: OLS results

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
LNEXDF	-0.025269	0.015540	-1.626011	0.1135	
LNBSDF	0.042544	0.015128	2.812247	0.0082	***
LNNBPDF	0.194247	0.013354	14.54632	0.0000	***
LNWM	-0.032081	0.019211	-1.669981	0.1044	
LNGCF	0.034404	0.029960	1.148347	0.2591	
RINTR	-0.001760	0.000719	-2.449144	0.0198	**
LNEXCHR	-0.010548	0.021990	-0.479671	0.6346	
C	9.284679	0.110083	84.34246	0.0000	**
R-squared	0.992451				
Adjusted R-squared	0.990849				
F-statistic	619.7511				
Prob(F-statistic)	0.000000	***			
Durbin-Watson stat	1.789693				

Source: Author's computations using E-Views 10.0 (2023)

Key: * and ** denote significance at 1 per cent and 5 per cent levels of significance, respectively**

Hypothesis Testing

With the findings that the model followed a long-run path, the hypotheses testing was based on the OLS estimates of the model presented in Table 2. The hypothesis testing was based on the following decision rule:

- Accept the null hypothesis of “no significant effect” and reject the alternative hypothesis of “significant effect” if the probability value is greater than 0.05.
- Reject the null hypothesis of “no significant effect” and accept the alternative hypothesis of “significant effect” if the probability value is less than 0.05.

Hypothesis 1: External source of deficit financing does not have a significant effect on real gross domestic product of Nigeria.

External sources of budget deficit financing (EXDF) had a p-value ($0.1135 > 0.05$) that was greater than 0.05. This implied that EXDF did not have a statistically insignificant long-run effect on the Nigerian economy. As such, the null hypothesis was accepted that External sources of budget deficit financing did not have a statistically significant effect on the real gross domestic product of Nigeria at a 5 per cent level of significance.

Hypothesis 2: Banking system source of deficit financing does not have a significant effect on real gross domestic product of Nigeria.

Banking sector sources of budget deficit financing (BSF) turned out with a probability value ($0.0082 < 0.05$). This implied that banking sector sources of budget deficit financing had a positive significant effect on real gross domestic product in Nigeria. Hence, the null hypothesis of no statistical significance

was rejected in favour of the alternative hypothesis that the Banking sector sources of budget deficit financing had a statistically significant effect on real gross domestic product in Nigeria at 1 per cent level of significance.

Hypothesis 3: Non-banking public deficit financing does not have a significant effect on real gross domestic product of Nigeria.

Based on the p-value (0.0000) of non-banking sector public finance sources of budget deficit financing (NBPF), it was concluded that non-banking sector public sources of budget deficit financing had a very significant long-run effect on the real gross domestic product of Nigeria. Based on this premise, the null hypothesis was rejected and the alternative accepted that non-banking sector public sources of budget deficit financing had a positive significant effect on the real gross domestic product of Nigeria at a 1 per cent level of statistical significance.

Hypothesis 4: Ways and means sources of deficit financing do not have a significant effect on the real gross domestic product of Nigeria.

With a p-value of $0.1044 > 0.05$, the effect of ways and means sources of the Central Bank for budget deficit financing was adjudged to be statistically non-significant because the p-value was greater than 0.05. Hence the null hypothesis was accepted and the alternative hypothesis rejected. Hence, the study held that the ways and means of the Central Bank for budget deficit financing did have no statistically significant effect on the real gross domestic product in Nigeria at a 5 per cent level of significance.

Hypothesis 5: Gross capital formation does not have a significant effect on the real gross domestic product of Nigeria.

The probability value ($0.2591 > 0.05$) meant that gross capital formation (GCF) had no statistically significant effect on the real gross domestic product. Hence, the study accepted the null hypothesis of “no significance” that gross capital formation had no statistically significant effect on the real gross domestic product of Nigeria at a 5 per cent level of statistical significance.

Hypothesis 6: Real interest rate does not have a significant effect on the real gross domestic product of Nigeria.

Looking at the probability value of 0.0198, the effect of RINTR on RGDP was adjudged to be statistically significant at a 5% level. As such, the null hypothesis was rejected in favour of the alternative hypothesis that the real interest rate had a statistically significant effect on real gross domestic product at a 5 per cent level.

Hypothesis 7: Exchange rate does not have a significant effect on real gross domestic product of Nigeria.

Exchange rate (EXCHR) turned out with a probability value of $0.6346 > 0.05$, indicating that the effect of exchange rate on real gross domestic was not statistically significant. Consequently, the null hypothesis of “no significance” was accepted, leading to the conclusion that exchange rate did not have a statistically significant effect on real gross domestic product in Nigeria at 5 percent level of significance.

Interpretation of the OLS Coefficients

The estimated coefficient of LNEXDF indicated that a percentage decrease in the number of external sources of budget deficit financing resulted in an approximately 2.5 per cent increase in LNRGDP, implying that the number of external sources of budget deficit financing only caused a marginal increase in economic growth. The effect of external sources of budget deficit financing on the Nigerian economy was adjudged to be marginal since its coefficient was found to be statistically insignificant. This marginal effect could be attributed to the fact that external sources of budget deficit financing in Nigeria were always denominated in hard currencies and as such were undermined by the depreciating exchange rate of the naira against the major currencies of the world since the domestic currency (naira) is converted to service external sources of finance in the face of low foreign exchange earnings and high payments for imports.

Looking at the estimated coefficient of LNBSDF, it was realized that the domestic banking system source of government budget deficit financing exerted a positive and statistically significant effect on the Nigerian economy. The coefficient of LNBSDF was indicative of the fact that a percentage increase in the banking system sources of budget deficit financing led to approximately 4.3 per cent increase in the real GDP of Nigeria. This reflected the fact that the Nigerian banking system could help cushion the deficit in the budgetary system by extending investible funds to the government to cushion revenue shortage. The positive and significant effect of banking system sources of budget deficit financing could be attributed to the fact that the rates of interest associated with loans from domestic banks were often favourable to than those of foreign banks and the domestic commercial banks did lend money in domestic currency thus reducing the effect of exchange rate risk and the difficulty of debt servicing.

Again, the non-banking public sources of deficit financing emerged with a positive and statistically significant coefficient. The coefficient of LNNBPDF showed that the real gross domestic product of Nigeria rose by approximately 19.4 per cent due to an increase in the non-banking public finance sources for deficit financing in Nigeria. This implied that sourcing funds from non-banking financial institutions helped in the economic advancement of Nigeria. Also, it showed that the raising of bonds and treasury bills in the Nigerian, financial market provided the government with substantial funds with which to bridge the deficit gap and enhance domestic production in the country.

Regarding the estimated coefficient of LNWM which exhibited a negative trend, it was observed the CBN's ways and means sources of deficit financing caused a statistically significant diminishing effect on the Nigerian economy. This implied that sourcing for funds through the CBN whether by drawing from the Federation account or seigniorage did not encourage productivity in the Nigerian economy within the period under study. The coefficient specifically showed that an increase in the CBN's ways and means for deficit financing resulted in an approximately 3.2 per cent decrease in the real gross domestic product (RGDP) of Nigeria. This could also be an indication that the CBN's ways and means for deficit financing in the Nigerian economy have not been an effective and efficient means of budget deficit financing in the country.

The estimated coefficient of GCF was found to be positive (0.034404) and statistically insignificant following its probability value of $0.2591 > 0.05$. It then indicated that the GCF was increasing slowly hence having a marginal effect on RGDP. This could be an implication that the level of domestic private investments has been low thus explaining the reason behind excessive borrowings to finance the budget deficit in Nigeria.

The control variables, real interest rate (RINTR) and exchange rate (EXCHR) both turned out negative but only the RINTR variable was found to be statistically significant. The negative coefficients of RINTR and EXCHR were indications that the process of driving economic growth in Nigeria through budget deficit financing could be undermined by the dynamics of the real interest rate and exchange rate. This is because if the RINTR on savings rate is positive savers would save more to raise deposits in commercial banks which the banking system would use to lend to the government for

its deficit financing. Similarly, if the RINTR on lending is high or positive then the lenders (banks and non-bank public) could lend more to the government to fund its deficits. However, its negative result showed that the inflation rate was still higher during the period studied and as such had led to a negative influence on the Nigerian economy within the period under study.

Test for Stationarity of Data

Having analyzed the data using the OLS approach, there is a need to carry out further analysis to ascertain the time-varying effects of the independent variables. Before this is done, there is a need to subject the variables to a test for stationarity. The test for stationarity of data followed the Augmented Dickey-Fuller (ADF) approach to unit root testing. The ADF test was applied to the variables under consideration to ascertain the stationarity of the time-series data. Table 3 displayed the variables in level form and first difference form (where the variable was not stationary at level).

Table 3: Augmented Dickey-Fuller (ADF) test for unit root

Variable	ADF @ level; I(0)		ADF first difference; I(1)		Status
	t-Statistic	Prob.	t-Statistic	Prob.	
LNRGDP	-1.447232	0.8300	-3.891207	0.0219	I(1)
LNEXF	-1.967110	0.6005	-4.771975	0.0023	I(1)
LNBSF	-1.711262	0.7255	-4.223299	0.0103	I(1)
LNNBPF	-2.302126	0.4232	-6.078936	0.0001	I(1)
LNWM	-1.888795	0.6417	-6.475951	0.0000	I(1)
LNGCF	-2.228929	0.4611	-3.928612	0.0201	I(1)
RINTR	-7.588137	0.0000	-	-	I(0)
LNEXCHR	-1.413068	0.8418	-5.745823	0.0002	I(1)

Source: Author's computations using E-Views 10.0 (2023)

The results of the ADF showed that the stationarity of the variables is mixed. Looking at the tests, the variables were either integrated at level (I(0)) or first difference I(1) and no variable was integrated of order two (I(2)). This result made the ARDL (Autoregressive Distributed Lag) approach to co-integration developed by Pesaran et al., (2001) most appropriate to estimate the model. This approach was employed as it has several advantages. First, it is more appropriate than in particular Johansen's (1988) technique, which requires all variables to be integrated in the same order, because of its specificity, which is applicable regardless of whether the variables were purely zero-order integrated (I(0)), first-order integrated (I(1)) or mutually co-integrated. Also, it was able to overcome correlation and endogeneity problems in the variables under study. Again, the ARDL approach was able to estimate the parameters using a single equation rather than a vector approach where a system of equations would be required and it was also more efficient and robust for small samples compared to other techniques (Pesaran et al., 2001).

Lag Selection and ARDL Bounds Test

ARDL or bound test procedure was embarked upon to ascertain the impact of deficit financing on the Nigerian economy. Such a technique is used when variables are stationary at levels and the first difference, that is, combining both I(0) and I(1). Since the computation of the F-statistic for bounds testing approach to cointegration is sensitive to lag length, the optimal lag length was selected based on the various lag selection criteria shown in Table 4:

Table 4: VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-301.0500	NA	0.001601	16.26579	16.61054	16.38845
1	-1.986156	456.4659	7.30e-09	3.894008	6.996803	4.997959
2	73.56505	83.50396	6.37e-09	3.286050	9.146885	5.371290
3	239.4440	113.4961*	1.41e-10*	-2.075999*	6.542876*	0.990531*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: Author’s computations using E-Views 10.0 (2023)

The optimal lag length at lag 3 was taken as indicated by all the selection criteria, implying that any of the selection criteria can be used for the estimation. Hence, the ARDL model was based on a maximum lag order of three (3).

Akaike Information Criteria (top 20 models)

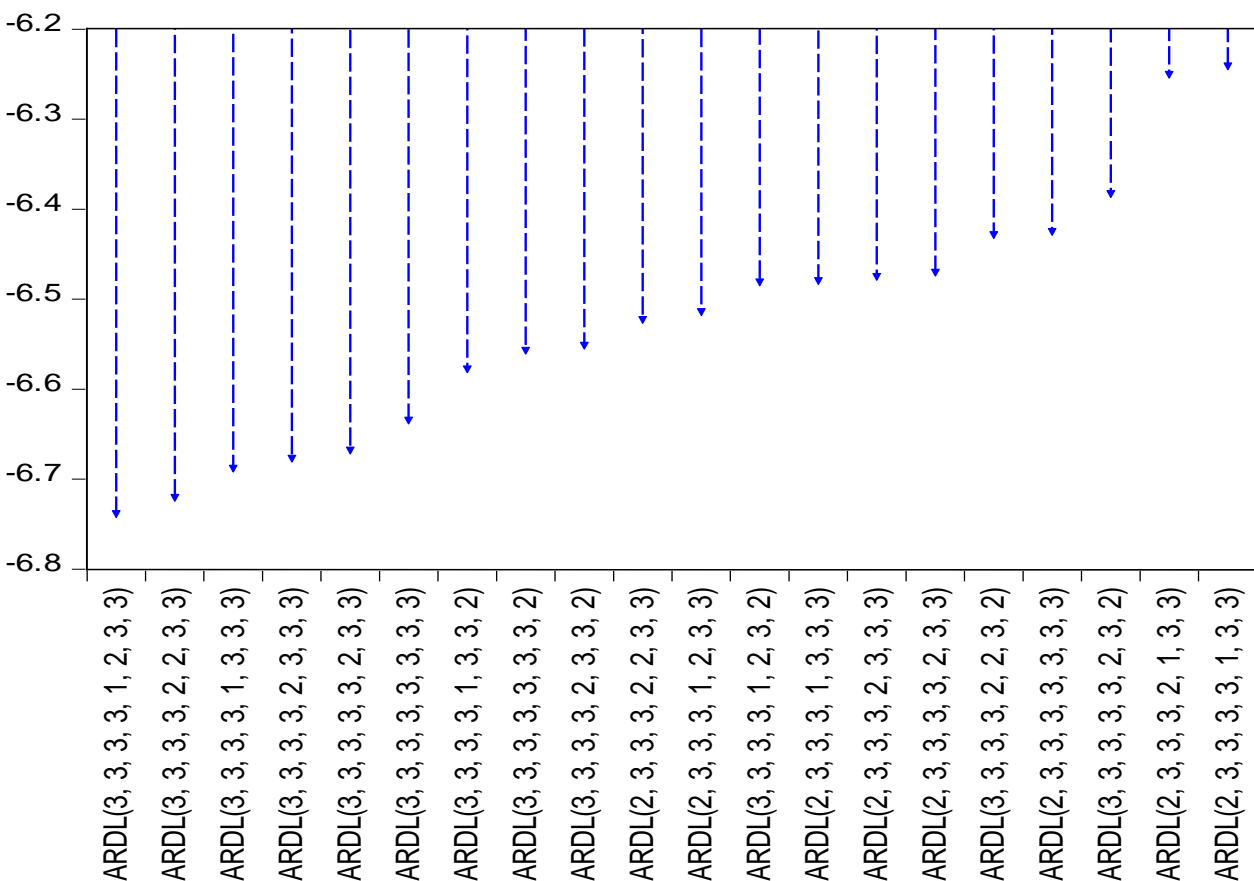


Figure 1: AIC model selection plot

Source: Author’s computations using EViews 10.0 (2023)

The study proceeded to ascertain the cointegration or the existence of a long-run equilibrium relationship between the variables studied using the bounds test of Pesaran et al. (2001) based on the ARDL approach. The purpose of choosing optimal lag is to reduce residual correlation and minimize the incidence of serial correlation in the ARDL estimation. AIC was used to identify the most suitable

ARDL models for the selected countries as seen from Figure 1. Among the top 20 models, the optimal model was ARDL (3, 3, 3, 3, 1, 2, 3, 3).

The results of the ARDL bounds test were given in Table 5:

Table 5: Bounds test for cointegration

Test Statistic	Value	k
F-statistic	34.13806	6
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	1.92	2.89
5%	2.17	3.21
2.5%	2.43	3.51
1%	2.73	3.90

Source: Author's computations using E-Views 10.0 (2023)

The results of the bounds test showed that the F-statistic value was 34.13806. It was noted that the reported F-statistic exceeded the critical value of the bounds at a 5 per cent level, implying a long-run equilibrium relationship between different orders of the dependent and independent variables. This meant that the effect of the interactions between budget deficit financing sources and the Nigerian economy followed a long-term path, implying that budget deficit financing might not have an immediate or instantaneous effect on the domestic economy but it could take a longer time probable effect due to the mode of implementation or the government policies.

ARDL Estimation

Long-run Estimates

To show the robustness of our analysis, the ARDL was employed. The optimal lag length of 3 was chosen based on the Akaike info criterion (AIC) generated from the ARDL (3, 1, 2, 3, 3, 1, 1). From the ARDL estimation of the effect of budget deficit financing on the Nigerian economy, the results of the long-run estimates and error correction mechanism (ECM) were discussed. The long-run estimates of the ARDL model are presented in Table 6:

Table 6: Long Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
LNEXDF	-0.027407	0.007040	-3.893026	0.0037	***
LNBSDF	0.038219	0.010324	3.701857	0.0049	***
LNNBPDF	0.133953	0.022876	5.855741	0.0002	***
LNWM	-0.064862	0.013888	-4.670427	0.0012	***
LNGCF	0.060578	0.027978	2.165234	0.0586	*
RINTR	0.006243	0.002529	2.468402	0.0357	**
LNEXR	0.047574	0.022528	2.111724	0.0639	*
C	9.501611	0.068605	138.4964	0.0000	***

Source: Author's computations using EViews 10.0 (2023)

Key: ***, ** and * denote significance at 1 per cent, 5 per cent and 10 per cent levels of significance, respectively

From the long-run coefficients, it was seen that the external source of deficit financing (EXDF) and, the ways and means source of deficit financing had a negative and statistically significant effect on real gross domestic product (RGDP). This could be an indication that overtime, the Nigerian government has not been able to use externally borrowed funds appropriately coupled with the inflationary pressure

that had accompanied the ways and means approach due to seignorage. This could as well be attributed to the fact that the government might have mismanaged the borrowed funds.

On the other hand, deficit financing sourced from the domestic banking system (BSDF) and non-bank sources of budget deficit financing (NBPDI) were positive and statistically significant in the long run. This showed that it has been more beneficial to source for budget deficit finance through BSDF and NBPDI. Another plausible reason for their having a positive and significant effect on RGDP could be because the funds were borrowed from funds saved by non-bank public sources as well as from the deposits mobilized by the banking system from the Nigerian public in real terms. Both sources of deficit financing amounted to savings accumulation in real terms rather than to fund government projects and programs by the Government from the private sector of the economy. As such they were bound to lead to the real growth of the economy when compared to the ways and means from the CBN and or external sources of deficit financing.

Although the gross capital formation (GCF) was positive and marginally significant in affecting RGDP in the long run, this could be an indication of low gross domestic investments in Nigeria over the years. Also, the control variables of real interest rate (RINTR) and exchange rate (EXCHR) both had positive long-run effects on RGDP but only RINTR was statistically significant, indicating that the changes in RINTR increased the level of RGDP in the long run. In particular, it showed that the real interest rates on both the exchange rate and interest rate were positive in the long run to lead to a positive influence on RGDP while considering both variables in conjunction with the effect of deficit financing on the economy of Nigeria.

Error Correction Model (ECM)

Table 7 displays the results of the ECM:

Table 7: Error correction model

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
D(LNRGDP(-1))	-0.386233	0.042303	-9.130063	0.0000	***
D(LNRGDP(-2))	0.143757	0.034330	4.187526	0.0023	***
D(LNEXDF)	0.029581	0.003567	8.292743	0.0000	***
D(LNEXDF(-1))	0.001669	0.004035	0.413617	0.6888	
D(LNEXDF(-2))	0.021428	0.003707	5.780157	0.0003	***
D(LNBSDF)	0.003786	0.002919	1.297103	0.2269	
D(LNBSDF(-1))	-0.046337	0.002989	-15.50179	0.0000	***
D(LNBSDF(-2))	-0.045154	0.003544	-12.74179	0.0000	***
D(LNBNPDF)	0.018544	0.005199	3.566617	0.0061	***
D(LNBNPDF(-1))	-0.042731	0.006437	-6.638561	0.0001	***
D(LNBNPDF(-2))	-0.043414	0.005688	-7.632155	0.0000	***
D(LNWM)	-0.017117	0.002793	-6.128777	0.0002	***
D(LNGCF)	0.117648	0.011071	10.62649	0.0000	***
D(LNGCF(-1))	-0.081183	0.012077	-6.722032	0.0001	***
D(RINTR)	0.000202	0.000139	1.451489	0.1806	
D(RINTR(-1))	-0.004017	0.000221	-18.14575	0.0000	***
D(RINTR(-2))	-0.001811	0.000134	-13.52688	0.0000	***
D(LNEXCHR)	-0.117345	0.006910	-16.98296	0.0000	***
D(LNEXCHR(-1))	-0.088142	0.007951	-11.08577	0.0000	***
D(LNEXCHR(-2))	-0.023882	0.005438	-4.391774	0.0017	***
ECM(-1)	-0.855852	0.035527	-24.09039	0.0000	***
R-squared	0.989040				
Adjusted R-squared	0.976145				
Durbin-Watson stat	2.498804				

Source: Author's computations using E-Views 10.0 (2023)

Key: *, ** and * denote significance at 1 per cent and 5 per cent levels of significance, respectively**

The coefficient of the ECM was negative and significant thereby confirming the existence of the long-run equilibrium relationship among the variables in the cointegration test and it has also indicated that the estimated model was stable. It thus revealed how variables in the model converged to a long-run equilibrium after a shock in the short run. The result indicated that equilibrium, in the long run, was adjusted by approximately 86 per cent after a short-run shock, which depicted a relatively high speed of adjustment to the long-run equilibrium. This speed of adjustment was an indication that it took a rapid period for real gross domestic product (RGDP) to adjust to long-run equilibrium after a shock in the short run.

The coefficients of EXDF at the various lags were positive and statistically significant except for the coefficient of lag one. However, the first difference coefficient denoted by D(LNEXDF) was statistically significant, indicating that EXDF had an instantaneous effect on the real gross domestic product of Nigeria.

It was realized that BSDF had mixed coefficients over the selected lags. The D(LNBSDF) was not statistically significant, implying that BSDF did not have an instantaneous effect on RGDP but the coefficients at lags one and two showed that the effect of BSDF on RGDP only followed a long-run path.

Also, the coefficients of NBNPDF had varying signs but the statistical significance of D(LNBNPDF) revealed that NBNPDF exerted an instantaneous effect on the Nigerian economy.

Similarly, the statistically significant coefficients at lags 1 and 2 further lent credence to the fact that the effect of NBPFD extended into the long run.

Regarding GCF, the statistical significance of coefficient D(LNGCF) suggested that GCF had an immediate effect on the RGDP of Nigeria. Also, the significance of GCF at lag one was indicative of the fact that the effect of GCF transcended the current period into the future, implying that an investment made today in real asset terms would cause increases in the Nigerian economy (measured by RGDP) in the years to come.

The coefficients of the control variables (RINTR and EXCHR) were largely statistically significant except for D(RINTR). The implication of this was that over time, the dynamics of RINTR and EXCHR would have the potential to influence the effect of budget deficit financing to have a negative influence on the Nigerian economy, meaning that when the RINTR and EXCHR were unfavourable, government efforts towards budget deficit financing and economic growth could be undermined and rendered ineffective if not positively guided and moderated to yield the desired results.

Diagnostic tests of the ARDL models

To ascertain the robustness of the outcomes of the results, it was important to ensure that the stability and the correct functional form of the models were specified, as well as the avoidance of severe serial correlation and heteroscedasticity. The test statistic for the various tests must be statistically insignificant to ensure the absence of the aforementioned econometric problems.

Table 9: Diagnostic tests

Test	t-Statistic	Prob.
Breusch-Godfrey Serial Correlation LM Test:		
F-statistic	1.701922	0.1989
Obs*R-squared	4.056454	0.1316
Heteroskedasticity Test: Breusch-Pagan-Godfrey		
F-statistic	1.859854	0.1086
Obs*R-squared	11.59909	0.1145

Source: Author's results from E-Views 10.0 package (2023)

These results in Table 9 and Figure 2 demonstrated that the ARDL model passed the diagnostic tests of serial correlation, heteroscedasticity and normal distribution. There was no evidence of autocorrelation at a 5% confidence level and that the model passed the test for normality, the error term was also proved to be normally distributed. There was no presence of heteroscedasticity in the model.

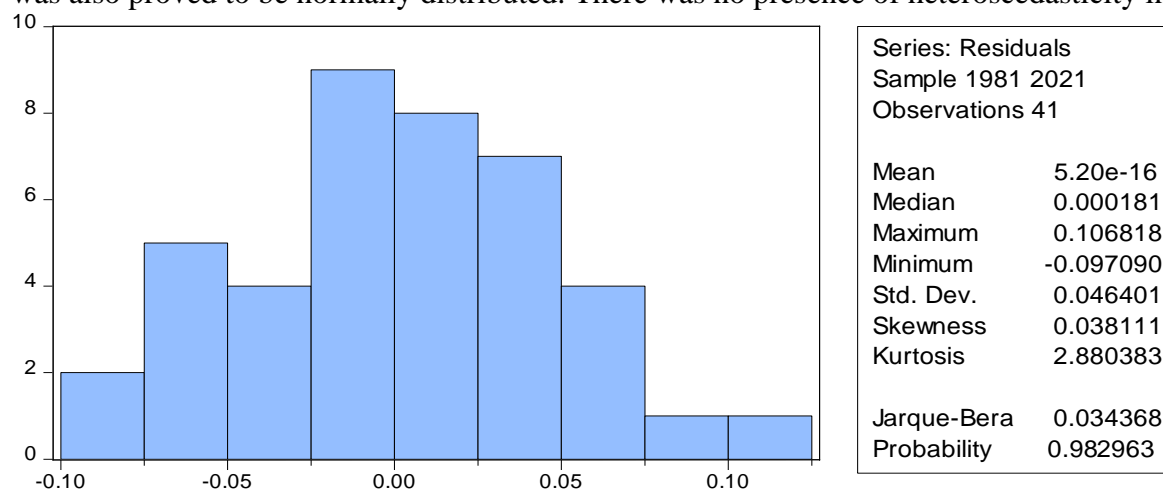


Figure 4.10: Jarque Bera

Figures 3 and 4 showed that the cumulative number of recursive residues (CUSUM) and the cumulative number of recursive residues of squares (CUSUMSQ) for the ARDL models were within critical limits for the 5 per cent significance level, indicating that the ARDL model coefficients in each specification were stable.

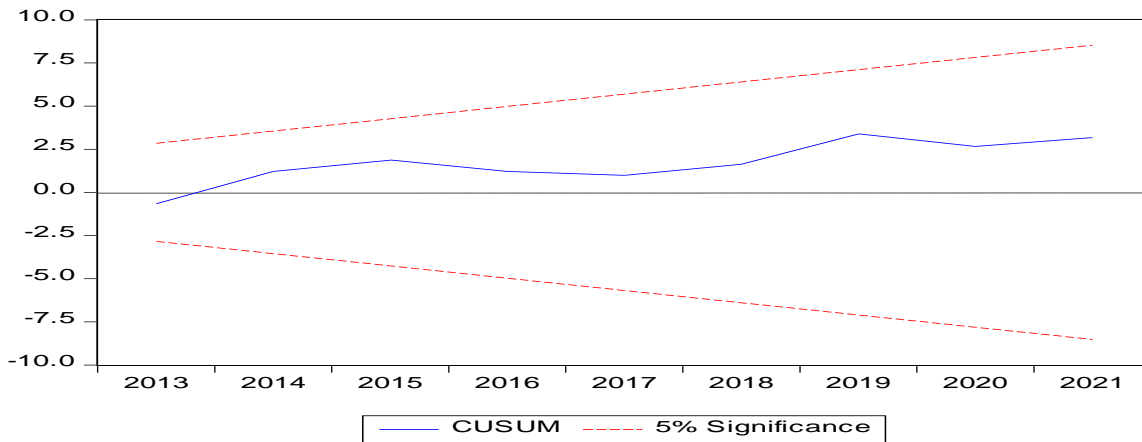


Figure 3: CUSUM test

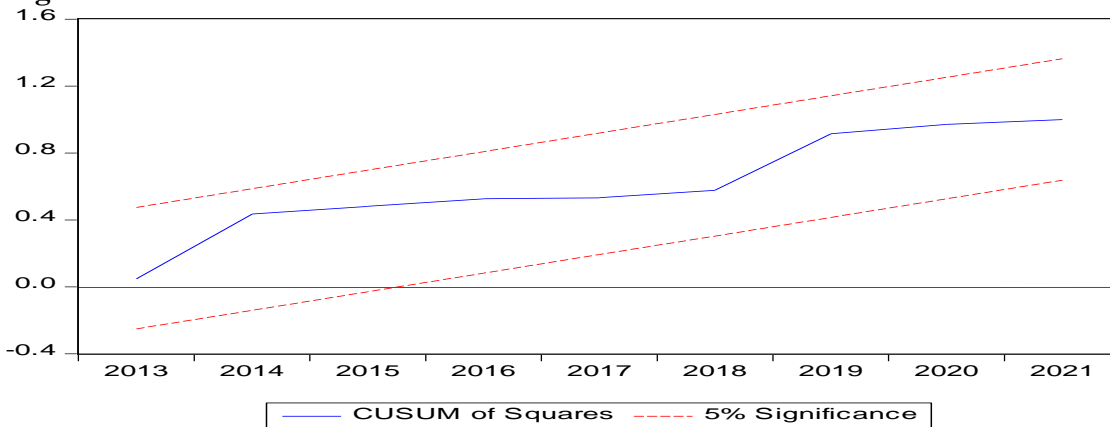


Fig. 4: CUSUM Sum of Squares

Discussion of Findings

On a general note, the results from the OLS analysis showed that the external source of deficit financing (denoted as LNXDF) had a negative but marginal effect on LNRGDP. In the long run, it was observed to have exerted a negative and statistically significant effect on RGDP. In the short run, it had a positive and statistically significant effect on RGDP. This finding pointed to the fact that EXDF had a time-varying effect on the RGDP of Nigeria. It meant that the effect of EXDF on the Nigerian economy depended on the state of the economy. For instance, Onyele et al. (2023) showed that external sources of deficit financing were not sustainable during the period of macroeconomic instability. This could also be attributed to the fact that externally borrowed funds to finance domestic budget deficits subject the economy to severe exchange rate risk since those funds are denominated in hard currencies in the long run. This implied that external sources of deficit financing could leave a country with a serious debt burden and economic crisis which could undermine its expected impact in the long run. This finding fell in line with those of Ughulu et al. (2023); Onwuka (2022); and Kasasbeh & Alzoub (2019) who disclosed that the positive impact of external sources of deficit financing on economic prosperity in the long run could be overridden by deleterious debt burden caused by macroeconomic swings.

The domestic banking sector source of deficit financing (LNBSDF) generally had a positive and statistically significant effect as depicted by the OLS and the long-run estimations. This indicated that sourcing funds to bridge the budget deficit gap domestically spurred economic growth more than the external sources of funds. This could be attributed to the fact that domestic sources of funds for deficit financing were subjected to excessive interest rates and exchange rate risk. However, the study

found that RINTR on the savings rate and lending rate dynamics were unfavourable to the growth of LNRGDP plausibly because it favoured government borrowings and crowded out private investments, but the positive and statistical effect of LNBSDF justified the fact that domestic banks as a source of deficit financing enhanced economic growth of Nigeria. Studies such as Nwanne (2014) lent credence to the findings that deficit financing through the domestic banking system enhanced economic growth in the long-run and short-run. However, Umaru (2017), observed that the domestic banking system did not provide sufficient funds to the government to finance its budget deficits, hence LNBSDF does not exert any significant effect on economic growth. On the other hand, Eze & Nwambeke (2015) held the view that domestic banking system deficit financing crowded out private investments, hence it reduced economic growth and development.

From the general OLS estimation, non-banking public deficit financing (NBPDF) has a positive and significant effect on RGDP. Likewise, in the long-run and short-run NBPDF was found to have increased the level of RGDP. This denoted that raising deficit financing from non-banking public institutions like the financial markets through bonds and treasury bills increased the pace of economic growth in Nigeria. It has indicated that the government through its monetary policy could mop up excess liquidity in the economy by issuing treasury bills and bonds to private individuals and then use the same to finance economically productive activities that in turn could enhance economic growth. This finding was supported by the work of Umaru (2017) who found that non-banking public financing enhanced economic growth. Similarly, Nwankpa (2022); Eze & Nwambeke (2015) observed that non-banking public financing helped to increase government investments, reduce unemployment and increase the pace of economic growth in Nigeria.

The results of the OLS generally revealed that the WM had a diminishing but marginal effect on the level of RGDP. On the other hand, the long-run and short-run effects of ways and means of deficit financing (WM) were found to exert a statistically significantly diminishing effect on RGDP. This implied that the more the CBN minted money, the more the economy would retard. This is because, with substantial infrastructural deficits, the minted money is expended on a bloated government, recurrent expenditures and loan maintenance (Umaru, 2017; Eze & Ogiji, 2016). Also, when the government prints money faster than actual output (GDP) growth, the naira is bound to depreciate. The influx of cash in circulation would drive up the prices of goods. The looming consequence is hyperinflation. In effect, Nigeria is an import-dependent country, and this would mount pressure on the naira and trigger the demand for dollars (Eze & Nwambeke, 2015). On the other hand, this explained the negative and significant coefficients of the real interest rate (RINTR) and exchange rate (EXCHR) because unrestrained reliance on money printing and the resultant inflationary pressures would portend serious dangers (in terms of high-interest rate and loss of money value) for Nigeria's essentially fragile economy. It was also an indication that money minting in Nigeria has not been done cautiously within the period under investigation.

The gross capital formation (GCF) did not significantly enhance the level of RGDP in Nigeria though it was seen to have exerted an immediate positive and significant effect on RGDP in the short-run. This showed that the positive and significant effect of GCF in the short-run turned marginal over time. This could be attributed to the unstable macroeconomic nature of the Nigerian economy which has been characterized by inflationary pressures, rising cost of funds and production, and eventually leading to capital flight and loss of domestic investments and low resource mobilization. This finding has explained why the instantaneous positive and significant effect of GCF on RGDP in the short run could not be replicated in the long run. This finding has lent credence to those of Abubakar (2021) who found that the state of gross capital formation and its ability to foster economic growth could be hampered by incessant distortions in the macroeconomic system.

The effect of RINTR and EXCHR in the model were time-varying but RINTR had a better significant influence on RGDP than EXCHR factor. This was indicative of the fact that the expected growth-enhancing effect of budget deficit financing could be undermined by inflation-induced interest rate changes and exchange rate dynamics. Without appropriate interest rate management, the

macroeconomic system would become unstable and investors would lose the value of their investments, leading to low productivity and economic growth. On the other hand, an unstable exchange rate could reduce the real value of external sources of deficit financing when converted into domestic currency, thus making it burdensome to repay (Ughulu et al., 2023). Also, the external creditors, the domestic banking system and non-banking private institutions would be discouraged from availing their funds for deficit financing in Nigeria since such finances would be at risk of losing their value, hence there would be widened budget deficit and low productivity in the economy as a result

Conclusion

This study was concerned with the effect of deficit financing on the Nigerian economy from 1981 to 2021. The independent variable in the study was budget deficit financing measured by external sources of deficit financing, domestic banking system as a source of budget deficit financing, non-banking public finance source for deficit financing, the CBN's ways and means for deficit financing, gross capital formation, real interest rate and exchange rate while the dependent variable in the study was economic growth measured by real gross domestic product (RGDP). This study adopted both the OLS and ARDL estimation techniques. The OLS estimation clearly showed that both the domestic banking system as a source of budget deficit financing and the non-banking public finance source for deficit financing were the most prominent factors that enhanced the economic growth of Nigeria within the period studied. The ARDL technique, on the other hand, established that the effect of budget deficit financing on the Nigerian economy varied with time following the different results obtained from the different lag lengths. Hence, the study concluded that deficit financing remained the surest way for Nigeria to achieve outstanding economic performance provided that loans borrowed are not used to service previous loans borrowed and channelled to unproductive activities but should be used for economically productive activities.

Recommendations

Based on the major findings of the study, the recommendations are:

- 1) The federal government through the debt management office should maintain an optimum level of external debt and ensure that it is used to finance high-income generating investments capable of attracting adequate revenue required to amortize the debt and also create future streams of revenue that would help reduce national debt and enhance future economic growth.
- 2) Policymakers should encourage state-owned financial enterprises and also strengthen privately owned banks through proper implementation of monetary policy to help the government borrow through government guarantees to execute projects with expected revenue streams. This is expected to eliminate huge interest rates on loans and reduce the fiscal deficits to sustainable levels.
- 3) To maintain the budget deficit at sustainable levels and enhance economic growth, other options for financing expenditure especially the development expenditure like public-private partnership (PPP) to support funds raised from the non-bank financial institutions which would create fiscal space off the government balance sheet should be explored.
- 4) In regulating money printing and other operations, the Central Bank of Nigeria should follow the setup of the CBN Act of 2007 to ensure that the total amount of such advances outstanding should not at any time exceed 5% of the previous year's actual revenue of the Federal Government to help reduce the negative effect of money printing in Nigeria.
- 5) It should be noted that if the Nigerian economy would make meaningful progress, there could be a need to increase gross capital formation in the domestic economy. This could be achieved by encouraging industrialization, promoting agricultural output drastically and above all drafting a developmental document that should address how the country would achieve a sustainable high level of economic growth.

- 6) The Central Bank of Nigeria (CBN) should track down the inflation rate which eroded the real interest rate as this would engender more increase in economic growth via an increase in the real interest rate in the country. Hence, interest rates on savings need to be maintained at ranges that could lead to a positive real interest on savings or lending to motivate the mobilization of huge deposits to spur more banking system funding of government deficit financing. Besides a positive RINTR on lending would spur banking system lending to the government. Both policy targets would increase RGDP.
- 7) There is a need to improve the existing exchange rate management framework in Nigeria. This could influence the rate of income growth, but only in the context of a broad-based economic reform involving a complementary monetary policy.

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