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Effect of budget deficit and infrastructural financing on the economy of Nigeria

Umezuruike, Innocent Ndidi* and Ariwa, Florence Onyinye

Department of Banking and Finance, College of Management Sciences, Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria.

*Corresponding author. Email: umezuruike60@gmail.com; Tel: +234 8034060491. Co-author. Email: florony4j@gmail.com

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ABSTRACT: Nigeria has been financing budget deficits over time but their implications on economic stability have not been fully ascertained. This study sought to investigate the implications of budget deficit financing on economic stability in Nigeria between 1981 and 2021. The study adopted the Autoregressive Distributed Lag (ARDL) for its estimation. The study revealed that the total government deficit exerted a negative and significant effect on the economic growth of Nigeria. Government expenditure on transportation, government expenditure on health, and gross capital formation had a positive and significant effect on economic growth while government expenditure on education had a negative and significant effect on the economic growth of Nigeria. It was therefore recommended that deficit financing in Nigeria should be focused on the productive sectors of the economy. This is because deficit financing has merely resulted in economic instability indicating that sound policies are needed to achieve economic stability in Nigeria.

Keywords: Budget deficit, economy, economic stability, infrastructural financing, government expenditure, Nigeria.

INTRODUCTION

The government budget is a major event in the legislative calendar of democratic countries. Virtually, all the countries in the world have to get their budget approved by the legislature (National Assembly in the case of Nigeria) in order to be implementable. This financial control of the public purse by the legislature is a salient feature of democracy. A government's budget has two sides namely government expenditure and government revenue, both of which have to be approved by the parliament. That is, every appropriation (allocation) of public funds and taxation (revenue generation) by the government has to be approved by the Parliament. It is a document prepared by the government and/or other political entity presenting its anticipated tax revenues (inheritance tax, income tax, corporation tax, import taxes) and proposed spending/ expenditure (healthcare, education, defence, roads, state benefits) for the coming financial year (Zuze, 2016). In most parliamentary systems, the budget is presented to the lower house of the legislature and often requires approval of the legislature. Through the budget, the government can implement its economic policy and realize its program priorities.

Developing countries across the globe have been spending the least and those in Africa, the Middle East and Eastern Europe spend the most. Yet, the majority of developing countries run deficits, with the occasional exception of 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 populations put less spending pressure on governments, and in many countries, there was a joint family system and elderly members were taken care of by their own families. Large and persistent fiscal deficits pushed up interest rates, reduced investments, and created a burden of indebtedness that was difficult for the governments and taxpayers to bear. Deficits also interfered with the effective functioning of markets at home

and abroad. Most importantly, they compromised the living standards of current and future generations (Ahmed and Alamdar, 2018).

In Nigeria, budget deficits have been blamed for causing many economic crises, high inflation, poor investment performance and economic growth (Akamobi and Unachukwu, 2021). One of the most important objectives of fiscal policy is to reduce the national debt and to check the interest payment on such debt from rising to prevent a high deficit in the future. However, the Nigerian government budget deficit witnessed an increase in the past decades. For instance, from 1981, deficits increased from ₦3.9billion to ₦8.2billion in 1986 and it further increased to ₦15.1billion in 1989. From 1990, the rising trend of budget deficit continued except in 1995 when the budget witnessed or registered a surplus of N1 billion. In 1998, the overall deficit jumped to ₦133.3 billion and in 2002, it increased up to ₦301.4 billion. Starting from 2003 to 2004, the government budget deficit declined from ₦202.7 billion to ₦172.6 billion, respectively. It further went down to N161.4 billion in 2005 and N100.8 billion in 2006. Another increase was witnessed from 2007 at N117.2 billion and it continued to fluctuate but with more increases in the years that followed, reaching N7,119.2 billion in 2021 (CBN, 2021).

The issue of government budget deficits, infrastructural financing and economic growth certainly are not new but the level of economic stability of the last decades has brought about more interest in fiscal policy issues that would engender growth. Government expenditure has been increasing each year because of government spending activities. An increase in government revenue is not sufficient to finance increased government expenditures which will lead to deficit financing/spending. Government revenue has not been ever efficient and it causes large differences or imbalances between expenditures and revenue. The government always borrows from both internal and external sources to finance such large differences or disparities in spending and revenue generation (Onyele and Nwadike, 2021). Therefore, increasing the revenue gap has been the characteristic phenomenon of the Nigerian budget every year so as to ensure economic stability. The implications of deficit financing on economic stability have not been as positive as could necessarily be expected. Both factors (deficit financing and economic stability) have been significant over the years in engendering economic growth, but studies about their relationship have created a research gap, as little attention has been paid to the implications of deficit financing that would engender desired growth in Nigeria, especially in the recent years. Despite huge government spending to ensure economic stability in Nigeria, a lot of challenges appeared to have persisted.

Among these challenges are: financing budget deficit and persistent macroeconomic instability in Nigeria, corruption and ineffective economic policies, ineffective implementation of economic policies, lack of consensus on the effectiveness of government budget in achieving macroeconomic stability, inadequate integration of macroeconomic plans and gross mismanagement and misappropriations of public funds, as well as the high level of inflation, current account deficit, excessive volatility in the exchange rate, high level of the unemployment rate and high indebted economy (Babalola and Oyeyemi, 2023; Kolawole, 2023; Onwuka, 2022; Umaru *et al*., 2021; Fagbohoun, 2017; Ahmad, 2013). Despite the emphasis placed on government budget deficit financing in the management of the economy, the Nigerian economy is yet to attain the path of improved economic growth and development. This ugly situation has permeated the entire sector of the Nigerian economy. Statistics have also shown that government deficit financing has been on the increase since 1980 from ₦1.9 billion to ₦161.4billion in 2005 before reducing to ₦ N4.62 trillion in 2019, accounting for over 20 per cent of its gross domestic product GDP) from 1980 to 2021 (CBN, 2021). However, the inability of the government to match revenue and expenditure as a part of its key drivers of growth in Nigeria might be responsible for the lack of congruence between economic growth and the well-being of the Nigerian people (Onyele and Nwadike, 2021; Uremadu and Onyele, 2019).

However, a lot of empirical studies such as Akamobi and Unachukwu (2021), and Edame and Okoi (2015) have used one variable to represent the measure of macroeconomic economic stability (GDP). The present study will try to ascertain if there exists a link between government budget deficits, infrastructural financing and economic growth of Nigeria with a view to proffering possible recommendations for solving the problem. This is because for an economy to be considered healthy there must be economic stability coupled with sustainable infrastructural development that would lead to sustainable economic growth. By the time the study is concluded, the researcher would be in a position to ascertain if government budget deficits and infrastructural financing ensure the growth and stability of the economy and the factors that positively influence it.

LITERATURE REVIEW

Deficit financing

According to Taiwo and Agbatogun (2011), deficit financing has major implications for the macroeconomic environment. However, this would depend on the level of economic employment in the country. In a situation of less than full employment, deficit financing could contribute to growth. This would result in idle capacities being employed in the economy. However, when full employment is already achieved; excessive deficit financing could affect the

economy, thereby leading to serious macroeconomic problems (Onyele *et al*., 2023). However, if deficit financing is channelled into investment in productive activities such as capital goods, training or new technology, the economy might grow faster than the burden of the growth.

Ordinarily, the deficit resulting from the fiscal operations of the federal government could be defined as the difference between tax revenue and total expenditure (Onyele *et al*., 2020; Onwe, 2014). However, to underline the seriousness of the fiscal imbalance, fiscal deficits are identified and used in fiscal analysis. Some of the examples are:

Current deficit/surplus: This defines the difference between the total current revenue and the recurrent expenditure. If it is negative, the current balance is in deficit and if it is positive the current balance is in surplus.

Primary balance: This is the difference between the total current revenue and total expenditure, less interest payments on public debt. This could either be a primary deficit or a primary surplus, it is the difference between the total current revenue and the total expenditure without any exclusion. When the overall balance is negative, the fiscal operations for a given period result in an overall deficit and if it is positive, then the overall balance is otherwise known as an overall surplus.

Cyclical deficit: This is the portion of the deficit that results from an economy being at a low level of economic activity.

Structural deficit: This is the deficit that would exist even if the economy was at its potential output. A structural deficit is not directly contributable to the behaviour of the economy and is part of the deficit for which policymakers are responsible. In other words, it is the result of decisions policymakers have made about tax rates, the level of government spending and benefits levels for transfer payment.

However, to break the budget deficit into cyclical and structural components, three (3) measures of potential national output, that is, the level of national output achieved when both capital and labour are utilized at the highest sustainable rates should be considered. For economists, there is no one agreed-upon definition of output and consequently, there are several measures of the structural deficit.

Eli (2010) in the study found that increases in government expenditure would increase fiscal deficit if revenue has not been generated in the same proportion. However, there are other reasons also due to which government expenditures could increase the budget deficit even after a rise in tax revenue. Budget deficit and infrastructural financing often increase even after rise in the tax revenue due to inefficient social programs. The study further found that high inflation leads to decreases in tax revenue in crisis time and a low level of tax revenue leads to tax loss which leads to a high budget deficit. Further, the study stated that increasing public spending would lead to an increase in the budget deficit and thus concluded that this disequilibrium would result from governments' wrong policies such as using borrowing to finance the deficit which has the potential of stagnating economic growth.

Theoretical review

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 theories on the other hand envision far-sighted individuals planning consumption over their life cycles. Budget deficits raise total lifetime consumption by shifting taxes to subsequent generations. If economic resources are fully employed, increased consumption necessarily implies decreasing savings. Interest rates must then rise to bring capital markets into balance. Under the Ricardian view, successive generations are linked through voluntary motivated resources transfer and under certain conditions, consumption is determined as a function of dynastic resources. To Ricardian economists, deficits merely shift the payment of taxes to future generations making deficits a matter of indifference.

Keynesian view of budget deficits

This theory was first put forth by Keynes (1936). The theory postulated that government intervention is necessary to stimulate economic growth. The government could intervene to correct market failures that lead to budget deficits by adjusting taxes and government expenditures. In a simple Keynesian model, output is determined by aggregate demand, because of price rigidity and excess capacity (an output gap). Aggregate demand consists of public and private spending.

If there is an exogenous shock, governments could boost public spending and so get the aggregate demand up at the trend level of output with the cost of running a deficit. Another reason to run deficits is unemployment. Unemployment rises when a country is in a recession. When unemployment rises for the long term, fiscal policy is useless, because the equilibrium unemployment has shifted. But when there are short-run fluctuations around the long-term equilibrium because prices and wages are too rigid, fiscal policy could help. This is called countercyclical fiscal policy.

Keynes regarded public expenditures as an exogenous factor which could be utilized as policy instruments to

promote economic growth. From the Keynesian thought, public expenditure could contribute positively to economic growth. Hence, an increase in government consumption is likely to lead to an increase in employment, profitability and investment through multiplier effects on aggregate demand. As a result, government expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers.

According to Keynes, the economy is subject to fluctuations, and supply and demand could well balance out at an equilibrium that did not deliver full employment. The solution to this conundrum was seemingly simple: Replace the missing private investment with public investment, financed by deliberate deficits. The government would borrow money to spend on such things as public works; and that deficit spending, in turn, would create jobs and increase purchasing power. Striving to balance the government's budget during a slump would make things worse, not better. In order to make his argument, Keynes deployed a range of new tools—standardized national income accounting (which led to the basic concept of gross national product), the concept of aggregate demand, and the multiplier (people receiving government money for public-works jobs would spend money, which would create new jobs).

The Keynesian theory implies that the government should take a bigger role in the economy since it is the one that has the ability to intervene and manage market failures effectively. The study deemed government intervention to be superior to that of the marketplace. In many economies in both developing and developed countries, Keynesian theory has laid the intellectual foundations for a managed and welfare-oriented form of capitalism. The widespread absorption of the Keynesian message has in large measure been responsible for the generally high levels of employment achieved by most developed countries and for a significant reorientation in attitudes toward the role of the state in economic life.

A review of Keynesian schools of thought in the study on economic growth is relevant as Keynesian economists are considered the founders of economics. Many economic policies whether monetary or fiscal in nature are either done in accordance with Keynesian economics or against the school of thought in the case of monetary policies. Keynes's analysis laid the basis for the field of macroeconomics, which treated the economy as a whole and focused on the government's use of fiscal policy spending, deficits, and taxes. These tools could be used to manage aggregate demand and thus ensure full employment. As a corollary, the government would cut back its spending during times of recovery and expansion.

Ricardian equivalence theory

Ricardo argued that there was no difference for households if they were faced with the present value of future taxes, or with buying debt now and receiving rent. Only the quantity of government purchases is relevant to the economy as revealed in Barro (1974). This result is called Ricardian Equivalence. Consider a household buying bond *D* at time t_1 and a government retiring bond *D* at t_2 including rent *r*. The government then has to tax the household at $e^{R(t2)-R(t1)}Datt_2$. The household now has an asset with the net present value of *D* at t_1 and a liability with a net present value of $Datt_2$. It is assumed that a household spreads consumption according to the permanent income hypothesis. In short, the permanent-income hypothesis states that consumers would base their spending not just on current income, but on all future income streams. This implies that the household's net wealth does not change and therefore the household's consumption behaviour does not change. Although this result looks simple and straightforward, it has great implications for policymaking. In traditional economics, a shift from tax to bond financing increases consumption, because consumption only depends on disposable income, which is income minus taxes or *Y*-*T*. This implies that a country could increase consumption by cutting taxes and financing it by issuing bonds. But if Ricardian equivalence holds, this does not make a difference.

Ricardian equivalence would also make efforts by countries to cut taxes during recessions futile since households expect taxes to rise afterwards. Ricardian equivalence is still debated. There are some reasons why Ricardian equivalence would not hold. One would be the turnover of the population. Since it is not the same population holding debt and paying taxes because of a limited lifespan, the population does not expect to pay the taxes associated with a rise in debt and therefore does increase consumption when taxes are replaced by bonds (tax cuts). Another could be the fact that Ricardian equivalence is built on the permanent-income hypothesis. For Ricardian equivalence, this implies that consumers would not spend more today if they received a tax cut if they knew they would be facing higher taxes in the future. But liquidity constraints, a pre-cautionary saving motive or impatience could cause a departure from the permanent-income hypothesis. Some empirical analyses have also shown that permanent income does not always hold (Babalola and Oyeyemi, 2023).

Ricardian equivalence theory analyzes the trade-off between the use of government bonds to raise money to close the budget deficit versus the use of taxation to raise money. A review of this theory is necessary for a study of deficit financing as it provides options by comparing the more productive options for governments to raise money to balance their budgets. The theory also provides insight into income theories of consumers and households which is one of the factors used in the measurement of economic growth in the GDP approach.

Neo-classical growth theory

Fisher (1993) postulated that governments should not intervene in the economy. They claim that an unobstructed free market is the best means of inducing rapid and successful development. Competitive free markets that are unrestrained by excessive government regulation are seen as being able to naturally ensure that the allocation of resources occurs in such a way that the greatest efficiency possible is achieved. Only if this happens would economic growth and stabilization occur. The proponents of neoclassical growth theories suggest three alternative approaches to achieving economic growth; the free market approach, the public choice approach and the market-friendly approach. The free market and public choice approach contend that the market should be completely free and any government intervention would distort the situation. The market-friendly approach advocated free markets while recognizing the possibility of the presence of market imperfections especially in markets of developing countries.

Neoclassical theories also have their base on good governance. The notion of good governance has been elaborated, in part, through a component of the neoclassical counter-revolution called new institutionalism. The basic premise of this perspective is that development outcomes depend on institutions such as property rights, price and market structures, money and financial institutions, firms and industrial organizations, and relationships between government and markets. The essence of good governance is to ensure the existence of these institutions and their proper role and functioning, as seen from the perspective of neoliberal theory. According to neoliberal thought, good governance requires freeing the market from state control and regulation; reducing government expenditures for social services like education and health care; maintaining roads, bridges, the water supply, and so forth; and selling state-owned enterprises, goods, and services (including banks, key industries, railroads, toll highways, electricity, schools, and hospitals) to private investors (Catao and Terrones, 2003).

The Solow growth model in Solow (1988) as a neoclassical model agreed that market price allocation is more efficient than government intervention. Additionally, it has been noted that state-owned enterprises hardly fulfilled their promises leading to inefficiency besides the lack of incentives to promote economic growth. Neoclassical school of thought provides the basis for monetary policies adopted by the government. A review of the theory by this school of thought is relevant in this study as it might explain the negative effect of deficit financing as a fiscal policy by the government on economic growth.

Review of empirical literature

Kolawole (2023) assessed the effect of budget deficit on economic growth over the period 1981-2021 in Nigeria. On the assumption that economic growth is influenced by other factors aside from the main sources of budget deficit, the individual average effect of FDI, ODA, and public investment was also examined. The pre-estimation diagnostics used the ADF, PP, and KPSS methods, as well as, the Bai-Perron multiple structural break methodology. Moreover, following the unit-root results, the ARDL technique was employed for model estimation. Consequently, whereas a two-way causal relation was established between economic growth and FDI, a one-way causality was rather found to run from each budget deficit, ODA, and public investment to economic growth. Furthermore, the analyses revealed that public investment positively affects economic growth in both the short- and long run while the budget deficit positively affects the short-run as against negatively in the long run.

Babalola and Oyeyemi (2023) provided empirical insight into the relationship between budget deficit and inflation rate in Nigeria. Secondary data were used in this study. Data on the inflation rate, budget deficit exchange rate, and Gross Domestic Product (GDP) trade balance were collected from the World Development Indicator (WDI) and Central Bank of Nigeria (CBN) Statistical Bulletin. The Granger Causality pair-wise test was conducted to determine the causal relationship among the variables. The result showed that there was a causal relationship between inflation to budget deficit, while there was no causal relationship between budget deficit to inflation was significant. This implied that a uni-directional causality from inflation to budget deficit exists in Nigeria. Furthermore, the result showed that inflation affects budget deficits directly and indirectly through fluctuations in the exchange rate and balance of trade in the Nigerian economy.

Sie *et al*. (2021) in a study, tested the crowding-out effect of disaggregated public expenditure on private investment. The study covered the period 1980 to 2016. Vector error correction modelling (VECM) technique was employed as an analytical tool. Findings showed that private investment significantly crowded out health and transportation expenditures while it crowded in education and defence of government expenditures significantly in the long term.

Umaru *et al*. (2021) examined the relationship between budget deficit and economic growth in Nigeria, from a linear and non-linear perspective, using annual time series data from 1981 to 2019. The linear model, which involves the use of an autoregressive distributed lag (ARDL) approach, was compared with a non-linear analysis, using a threshold autoregressive (TAR) model. The ARDL analysis revealed that the growth of national output was positively driven by the persistent budget deficit in Nigeria. This was substantiated by the TAR model which indicates that though budget deficit drives economic growth in Nigeria, the positive relationship holds only if the deficit does not exceed the optimal threshold, which is 2.02 per

cent of GDP.

Akamobi and Unachukwu (2021) probed the macroeconomic effects of the budget deficit in Nigeria. Specifically, it seeks to probe the effect of budget deficit on private investment and public investment in Nigeria by adopting the ADF unit root test and ARDL model, Granger Causality test and the short-run diagnostics and stability using annual time series data covering 37 years from 1981 to 2019. The research findings admitted that the budget deficit had a positive and significant impact on economic growth in Nigeria. Therefore, the government budget deficit had no crowding-out effect on investment. The study also revealed that the budget deficit has a negative and insignificant impact on private investment in Nigeria. In addition, further investigation showed budget deficit has a positive and significant impact on public investment in Nigeria. Also, the study asserted that there is unidirectional causality running from budget deficit to economic growth, private investment and public investment.

Onwuka (2022) studied the effect of government expenditure on economic growth and has continued to generate a series of empirical studies but so far no consensus has been achieved on the exact nexus between deficit financing and economic growth and when interacting with inflation variable. The study contributed to this debate by using the disaggregated Vector Autoregression (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 through external sources but had a deleterious effect when financed through domestic sources. This could be attributed to the crowding-out effect of the private sector when deficit financing is funded through the domestic loan market. The study also found that overall deficit financing is inflationary which also resulted in to decrease in real interest rates.

Mohammed and Ogba (2021) evaluated the effect of the budget deficit on economic growth in Nigeria from 1985 to 2020. The data used for the study were obtained from the Central Bank of Nigeria Statistical Bulletin, Annual Report and publications of the National Bureau of Statistics (NBS). The study applied the Augmented Dickey-Fuller (ADF) Unit root and Autoregressive Distributed Lag (ARDL) co-integration and Granger causality test. The results revealed that the Government Budget Deficit (GBD) had a negative and insignificant impact on economic growth; the inflation rate (INFL) had a positive and insignificant impact on economic growth while the government expenditure (GEX) had a positive and significant impact on economic growth in Nigeria during the period under study.

Ugochukwu and Oruta (2021) examined the effect of various components of government expenditures on economic growth in Nigeria for periods between 1981 and 2020. The analysis was based on secondary data. The study adopted the ECM and Granger Causality Test. The short-run model revealed that the components of government expenditures like recurrent expenditures on agriculture, health and education have an insignificant negative impact on economic growth. Recurrent expenditure on debt servicing and road and construction indicated a positive and negligible impact on economic growth. Concerning capital expenditures, government capital expenditures on social services were shown to have a negative and significant impact on economic growth. In contrast, government capital expenditures on economic services indicated a positive and insignificant impact on economic growth in Nigeria. In the long run, all the components of government expenditures employed showed a significant effect on economic growth.

Adewale and Abolaji (2020) analyzed the influence of the budget deficit on Nigeria's growth. This research is based on data from the Central Bank, World Bank and World Development Indicators of Nigeria from 1981 to 2016. The main findings are that, in the long term, the ARDL bounds test result reveals that there is a cointegrating relationship between variables. Furthermore, the study revealed that in the long run, gross domestic savings, interest rate, and budget deficit have a significant relationship with economic growth while in the short run, only budget deficit and gross domestic savings have a positive influence on economic growth. The study concluded that the budget deficit has a significant impact on the economic growth of Nigeria. Thus, the Keynesian theory is true for Nigeria.

Adesina and Olatise (2019) investigated the effect of deficit budgeting and financing strategies on economic growth in Nigeria for a period of thirty (30) years, 1987-2016. Specifically, it examined the trends and effects of deficit budgeting, external financing and domestic financing of the budget deficit and its implication on economic growth in Nigeria. The secondary method of data collection was used in the study. Data collected from the Central Bank of Nigeria Statistical Bulletin (CBN) 2016 were analyzed using descriptive statistics to determine the mean and standard deviation of the variables and a Vector error correction regression analysis model for the estimation of the data. The effect of deficit budgeting on economic growth in Nigeria is positive and significant while external financing and domestic financing exerted a significant negative effect on economic growth in Nigeria in the period of the study.

Oluwafadekemi and Adeyemi (2018) investigated the effects of fiscal deficits on Nigeria’s economic growth from 1981 to 2014. The study established an optimal fiscal deficit level using the Threshold Autoregressive (TAR) model. The empirical analysis supported the existence of a significant positive relationship between economic growth and the regressors – capital, labour, inflation rate, and trade openness. On the other hand, the study found

that a significant negative relationship existed between fiscal deficits, financial depth and economic growth in Nigeria. The study established a threshold level of 5% which is conducive for economic growth at a lag of one year, for the Nigerian economy.

Yusufu *et al.* (2018) examined the impact of government expenditure on the transportation sector and economic growth in Nigeria. The related literature was reviewed. Time series data for real gross domestic product (RGDP), capital expenditure (CEX), government expenditure on transport (GEXT) and interest rate (INTR) from 1980 to 2016 were used. Unit root test result indicated that all the variables are not stationary at level but become stationary at the first difference I(1) necessitating the use of ECM to determine the short and the long-run relationship of the variables. The result of the analysis revealed that there was a long-run relationship among the variables with government expenditure on the transport sector having a positive effect on the economic growth of Nigeria.

Tung (2018) investigated the effect of fiscal deficits on emerging economies: Vietnam's case study, using quarterly data from 2003 to 2016 and using econometrics techniques such as the ADF and PP test, multiple OLS and error correction mechanisms. Variables are the fiscal deficit, economic growth, private investment and foreign direct investment as well as net exports. The empirical findings reveal strongly the negative long-term and short-term relationship between fiscal deficit and economic growth. Though, there has been a positive impact on economic growth in private investment, direct foreign investment, and net exports. This shows that in the long run and short-run budget deficit is harmful to the economic growth of Vietnam.

Between 1981 and 2016, Ali *et al*. (2018) reviewed the effects of economic deficits in Nigeria. The secondary data from the statistical bulletin of the Central Bank and the analysis of the stationary characteristics of the time series variables were performed by using ADF to analyze and evaluate regression with the ARDL technique. Domestic private investment, foreign currency, interest rate and shortfall finance are the variables used. The estimate shows that government deficit funding over the years has had a significant impact on Nigeria's output growth. Thus, this view is consistent with the neoclassical view.

Fagbohoun (2017) examined the impact of the budget deficit on economic performance in Nigeria between 1970 and 2013. The study incorporated bank rate, broad money supply, external reserves and fiscal balance as the independent variables, while, economic performance is measured by per capita income, unemployment rate and price stability. Using the least squares method, the results revealed that both budget deficits and external reserves have a positive and significant impact on capita income, whereas bank rate and money supply have indirect and insignificant on the same per capita income. Unfortunately, budget deficits, money supply and external reserves do not create growth that enhances the employment rate in Nigeria. However, the result showed that the bank rate reduces the unemployment rate. Similarly, budget deficits, money supply and bank rates caused price instability but the result of bank rate reports the opposite.

Momodu and Monogbe (2017) examined the lag effect of the previous year's budget deficit on the performance of the Nigerian economy in the contemporary year using VAR estimation between the periods 1981 to 2015. From the foregoing statistical output, findings established that Budget deficit significantly stimulated economic performance. The output of the Granger causality test showed that budget deficit statistically Granger causes economic performance and *vice versa* while the result of the multiple regression of the ordinary least squares reported a significant but negative relationship to economic performance. The negative response of budget deficit to economic performance could be attributed to moral hazard, mismanagement of funds and financial indiscipline which prevent the country from enjoying the sustainable level of expected growth over time. The output of the VAR estimate established that the lag value of the federal government budget deficit had contributed to the performance of the economy in the current year although the contributive quadrant is not been felt to a reasonable extent.

Dao and Bui (2016) examined the effect of budget deficits on growth in the Vietnamese economy. An Autoregressive Distributed Lag (ARDL) was employed 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. Nevertheless, non-productive expenditure and consumer price index (inflation) together had a negative influence on the budget deficit.

Again, between 1970 and 2013, Eze and Ogiji (2016), looked into the effects of deficit finance on economic stability in Nigeria. Analysis of regression was used in the study. In contrast to the ways and means source of deficit financing (WM), banking system source of deficit financing (BSF), and interest rate (INTR), the study found that external sources of deficit financing (EXF), non-banking public sources of deficit financing (NBPF), and the exchange rate had significant and favourable effects on economic stability as measured by GDP. The implication was that government deficit financing through non-banking public sources of deficit financing and external sources of deficit financing (EXF and NBPF, respectively) would maintain economic stability while government deficit financing through banking system sources of deficit financing (BSF and WM) would reduce economic growth and lead to economic instability.

On the other hand, Keho (2016) studied the influence of budget deficit on private consumption in the West African

Economic and Monetary Union (WAEMU) seven member countries, namely; Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal and Togo. The study covered the period 1970 to 2013. The researcher employed the pooled ordinary least squares (POLS) technique for analysis. Findings revealed that per capita GDP and budget deficit had a long-term positive impact on households, while the rate of inflation was negative for private consumption. This indicates that private consumption was not accountable for any crowding-out effect a budget deficit might take on extended periods of total demand and growth of an economy in WAEMU. Consequently, limiting budget deficits was expensive for the growth of WAEMU countries.

Nwaeke and Korgbeelo (2016) investigated the relationship between deficit financing and selected macroeconomic variables in Nigeria. Ordinary least squares (OLS) estimation technique was employed to analyze the data. The study showed that budget deficit (irrespective of the source of financing with the exception of external loans) had no significant impact on inflation in Nigeria. However, the study showed that the budget deficit financed from external loans was negatively but insignificantly related to economic growth.

Monogbe *et al*. (2015) empirically investigated deficit finance and Nigeria's economic performance from 1981 to 2014. Descriptive statistics, ordinary least squares (OLS) technique, granger causality test, error correction modelling (ECM) technique and impulse response test were employed in analyzing the data. Findings revealed that deficit financing through borrowing from foreign countries had a negative and significant effect on economic performance in Nigeria. From the granger-causality test, it was shown that external debt did not granger cause economic growth. However, the results of the error correction mechanism (ECM) and ordinary least squares (OLS) technique revealed that an increase in total money supply would influence economic growth in Nigeria.

Akinmulegun (2014) studied deficit financing and its effect on economic growth in Nigeria. The study employed the Vector Autoregression (VAR) Modeling technique as an analytical tool. Findings showed that deficit financing had no significant effect on economic growth in Nigeria and as such has not contributed significantly to economic growth in Nigeria. The study recommends that the government should reduce unnecessary public spending, ensure greater budget discipline and adopt a financial structural transformation that could help to reduce wastage in public spending.

Xu and Yan (2014) investigated the effect of government capital expenditure on private investment in China. The study divided government capital expenditures into two types namely; public goods and infrastructure; and private industry and commerce. Structured Vector Autoregressive (SVAR) was employed in analyzing the data. The results showed that government expenditure on public goods in China is crowded with private investment. On the other hand, the study showed that government capital expenditure in private goods, industry and commerce crowded out private investment significantly.

Osuji and Ozurumba (2013) investigated the impact of external debt financing on economic development in Nigeria. Unit root test, co-integration test and vector error correction modelling (ECM) technique were employed as analytical tools. The study showed that London debt financing possessed a positive impact on economic growth while Paris Club and Promissory Note were inversely related to economic development in Nigeria. The study recommended that debt services should be used to encourage the survival of SMEs in Nigeria.

The gap in the empirical literature

The empirical review showed that budget deficit has had a mixed impact on economic growth as some studies revealed a positive impact and some others a negative impact due to the choice of variables, period of study and methodological differences. The question then arises whether the budget deficit will not lead to an increase in economic growth in Nigeria. Should the Keynesian economists be acknowledged that budget deficit is necessary to enhance economic growth, or should hope be put in the neoclassical economists that its effects on interest rates and other variables crowd private investment in the fiscal deficit? Or can we accept that there is no positive or negative effect on the aggregate demand as put forward by the Ricardian school of thought? The study objective is to ascertain the long and short-term link between budget deficit and growth.

METHODOLOGY

Sources of Data

The study on the effect of budget deficits on the economy of Nigeria made use of secondary sources of data. The data for the study were sourced from the IMF database (World Development Indicator), National Bureau of Statistics (NBS), Central Bank of Nigeria Statistical Bulletin and annual reports, CBN journals, articles, publications from the Federal Office of Statistics (FOS) and World Bank Economic Reports for the period 1981-2021.

Model specification

Following the review of prior related empirical works, this study modified the model as adopted from the work of Oluwafadekemi and Adeyemi (2018) in a study of fiscal deficit financing and economic growth specified as:

$$RGDPt = f(GFCFt, Labt, Deft, Inft, OPNt, FDt) \quad (1)$$

The econometric form of the model used in the study is stated as follows:

$$RGDPt = \alpha_0+\alpha_1 GFCF_t, \alpha_2 Lab_t,+ \alpha_3 Def_t,+ \alpha_4 Inf_t, + \alpha_5 OPNt, + \alpha_6 FD_t +\varepsilon_i \quad (2)$$

Where: RGDPt = Growth rate of real GDP, GFCFt = Gross fixed capital formation as a ratio of GDP, (proxy for growth in capita stock), Labt = Labour force, Deft = Fiscal deficit per GDP (excluding grants), Inft = inflation rate, OPNt = Trade openness, and FD = measures financial depth.

In line with the foregoing model, the effects of the budget deficit on the Nigerian economy were modified and specified as:

$$GDP = f (GDEF, GXTC, GXOE, GXOH, GCF, EXR) \quad (3)$$

The econometric form of the model for this study will be stated as follows:

$$LNGDP = \beta o + \beta_1 LNGDEF + \beta_2 LNGXTCFSTR + \beta_3 LNGXOE + \beta_4 LNGXOH + \beta_5 LNGCF + \beta_6 LNEXR + \mu \quad (4)$$

Where: GDP = Gross domestic product, GDEF = Government total deficit financing, GXTC = federal government expenditure on transport and communication, GXOE = Government expenditure on education, GXOH = Government expenditure on health, GCF = Gross capital formation, EXR = Exchange rate, β_0 = Constant term, βi' s = Estimation parameters, LN = Natural logarithm, and μ = sample Error term

***A priori* expectation:** $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8 > 0$ judging by the literature underpinning, the study expects a direct and positive change among $\beta_1, \beta_2, \beta_3, \beta_4, \beta_6$ and indirect and negative relationship among $\beta_5, \beta_7, \beta_8$ of the employed variables and its dependent counterpart.

Description of model variables

The economic variables used in this study are described here to justify the relevance and the inclusion of each of them in this study.

Gross domestic product (GDP): GDP is employed as the dependent variable in this study to capture economic growth. By this, the study refers to the monetary worth of all production output and service outlet produced in a geographical confine over a particular time frame adjusted for inflation. It is measured in billions of Naira.

Government expenditure on transport and communication (GXTC): This is federal government capital spending on transport and communication. A capital expenditure is an amount spent to acquire or significantly improve the capacity or capabilities of a long-term asset such as equipment or buildings. Usually, the cost is recorded in a balance sheet account that is reported under the heading of Property, Plant and Equipment.

Government expenditure on education (GXOE): Total general (local, regional and central) government expenditure on education (current, capital, and transfers), expressed as a percentage of total general government expenditure on all sectors (including health, education, social services, etc.). It includes expenditures funded by transfers from international sources to the government.

Government expenditure on health (GXOH): Public health expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds.

Total government deficit financing (GDEF): A budget deficit occurs when expenses exceed revenue and indicates the financial health of a country. The government generally uses the term budget deficit when referring to spending rather than businesses or individuals. Accrued deficits form national debt.

Gross capital formation (GCF): Gross capital formation is the sum of gross private domestic fixed investment, the change in private inventories, and government gross investment.

Exchange rate (EXR): An exchange rate is the price of a country's currency in terms of another currency. In other words, it represents how many units of foreign currency a consumer can buy with one unit of their home currency. Exchange rates are ratios that are used across all international markets, including finance, trading, and investment. Businesses and investors use these rates to compare their currency's purchasing power with other countries. They also use this to determine the comparative strength of their domestic currency against foreign currencies.

Method of data analysis

Unit root test

One of the important data to be used in this empirical analysis is time series. The use of time series data could pose several challenges to econometricians and practitioners. First, one could obtain a very high R^2 (in excess of 0.90) even though there is no meaningful

relationship between the two variables. This study would expect significant relationships between two variables, which a regression of one on the other variable often shows. This situation exemplifies the problem of spurious or nonsense regression. It is therefore very important to find out if the relationship between economic variables is spurious or nonsensical. Spurious regression can therefore occur if time series are not stationary. A test of stationarity or (non-stationary) that has become widely popular over the past several years is the unit root test.

This study adopted the Augmented Dickey-Fuller (ADF) unit root test. The ADF test simply runs a regression of the first-difference of the series against a first lagged value, constant, and time trend as follows:

Without Intercept and Trend, $\Delta Yt = Y_{t\_1+Ut}$ (4)

With intercept, $\Delta Yt = \alpha + \delta t\text{-}1\ Ut$ (5)

With Intercept and Trend, $\Delta Yt = \alpha + \beta T + \delta Yt\text{-}1 + Ut$ (6)

The hypothesis is
H_0: δ= 0 (Unit Root)
H_1: δ≠0

Decision rule:
If t^* > ADF critical value, = = > do not reject null hypothesis, i.e. unit root exists.
If t^*< ADF critical value, reject null hypothesis, i.e. unit root does not exist.

The test for a unit root is a test on the coefficient of (Y_{t-1}) in the regression. If the ADF test-statistic (t-test) is less (in the absolute value) than the Macinnon critical values, the null hypothesis of a unit root cannot be rejected for the time series and hence, one can conclude that the series is non-stationary at their levels. The unit root test tests for the existence of a unit root in three cases: without intercept and trend, with intercept only and with intercept and trend, to take into account the impact of the trend on the series.

ARDL estimation

It is also important, after determining their fixed level, to study the co-integration properties of the current series. Co-integration is because stationary variables may be linearly combined, but not stationarity and integrated in order I(0). The logic behind the co-integration technique is to determine whether two or more variables move closely together in the long run, even if the variables have a trend, the difference between them must remain constant (Adebayo, 2020). However, if variables are stationary at different levels, such as 1(0) and 1(1), the Johannsen cointegration test cannot be used to check the long-term relationship. We, therefore, use the ARDL bound test to verify the long-term relationship. In view of the above reasons, it is not possible to use the Johannsen cointegration technique to check that the endogenous and exogenous variables have long-term links. This study is therefore intended for the Pesaran *et al*. (2001) Auto-Regressive Distributed Lag Model (ARDL). The study's primary aim is to verify the long-term or short-term relationship between ARDL support and growth. This technique enables us to identify and discuss the link between budget deficits and economic growth.

The ARDL model is a co-integration model used to ascertain the long-run cointegration among the variables used. The general ARDL is depicted in Equation 7;

$$Y_t = \alpha_0 + \beta_t + \sum_{i=1}^{\rho} \theta_i Y_{t-1} + \sum_{i=0}^{q} \beta'_i X_{t-1} + \varepsilon_t \quad (7)$$

Y_t represents the vector, X_{t-1} shows other variables, I (0) or I (1) reflects the order of the integration, β and θ are the endogenous variable coefficients and exogenous variables, γ means constant term, p and q represent optimal lag order of the dependent variable and exogenous variables, ε_t = stochastic term.

In order to identify the cointegrated vectors in a series in which the fundamental series has a long single-long-term balance equation, it is preferable to another co-integrative model. Before the co-integration testing, the model does not involve a unit root test since only I (0), I (1) or both should be included in the model. It should be noted that when the variable(s) has 1 (2), ARDL techniques cannot be used to check any form of relationship (Adebayo, 2020). The long-term relationship is not captured with the presence of 1 (2). Therefore, the ARDL model of a long-term relationship is depicted in Equation 8 as follows;

$$LNGDP_t = \alpha_0 + \sum_{i=1}^{i} \delta_1 \Delta LNGDP_{t-1} + \sum_{i=1}^{i} \delta_2 \Delta LNGDEF_{t-1} + \sum_{i=1}^{i} \delta_3 \Delta LNGXTCFSTR_{t-1} + \sum_{i=1}^{i} \delta_4 \Delta LNGXOE_{t-1} + \sum_{i=1}^{i} \delta_5 \Delta LNGXOH_{t-1} + \sum_{i=1}^{i} \delta_6 \Delta LNGCF_{t-1} + \sum_{i=1}^{i} \delta_7 \Delta LNEXR_{t-1} + \varepsilon_{t-1} \quad (8)$$

Where; Δ denotes the first difference operator, δ means the short-term coefficients of variables, i reflects the maximum lag order of the ARDL model, ε indicates the error term.

After the long-term relationship is established, the error correction model (ECM) is now incorporated to determine the existence of a short-term link between the dependent variable and its regressors using short-term coefficients and the error correction period (ECT). Hence, by incorporating the ECM model, thus the ARDL is depicted in Equation 9 as follows;

$$LNGDP_t = \alpha_0 + \sum_{i=1}^{i} \delta_1 \Delta LNGDP_{t-1} + \sum_{i=1}^{i} \delta_2 \Delta LNGDEF_{t-1} + \sum_{i=1}^{i} \delta_3 \Delta LNGXTCFSTR_{t-1} + \sum_{i=1}^{i} \delta_4 \Delta LNGXOE_{t-1} + \sum_{i=1}^{i} \delta_5 \Delta LNGXOH_{t-1} + \sum_{i=1}^{i} \delta_6 \Delta LNGCF_{t-1} + \sum_{i=1}^{i} \delta_7 \Delta LNEXR_{t-1} + \varphi ECT_{t-1} + \varepsilon_{t-1} \quad (9)$$

Diagnostic and stability tests were carried out to determine the suitability of the ARDL model. The diagnostic test evaluates the selected model's serial correlation, functional form, normal distribution, and heteroskedasticity. According to Pesaran *et al*. (2001), it is crucial to carry out a stability test. To assess the stability of the parameters, we used the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ). Recursively updated data for CUSUM and CUSUMSQ are shown against the breakpoints. If the plots of the CUSUM and CUSUMSQ statistics remain inside the critical boundaries of the 5% significance level, the null hypothesis of stable coefficients in a particular regression cannot be rejected.

ANALYSIS OF DATA AND RESULTS

Descriptive statistic

Descriptive statistic is a summary statistic that quantitatively describes features from a collection of information, while descriptive statistics is the process of using and analysing those statistics. The statistical characteristics of the variables, such as their measures of dispersion, such as the maximum, minimum, and standard deviation, and their measures of central tendency, such as the mean and median, are examined using descriptive statistics. In order to determine whether or not the variables were normally distributed, the descriptive statistics also show the pattern of distribution of the variables as detailed in Table 1.

According to the given descriptive statistics, the statistical characteristics of the variables, such as mean, median, maximum, minimum, etc., as well as the distribution pattern of the variables, are also indicated by the results. With reference to the Skewness and Kurtosis, it was possible to observe that the variables under consideration are not normally distributed since the skewness values which are largely far from zero and the Kurtosis which are greater than 3 denoted abnormal skewness and leptokurtic (highly peaked) distribution. However, it can be said based on the foregoing that the variables GDP and EXR can be said to be close to normal distribution with their respective Kurtosis values being approximately 3.

Unit root tests

The previous chapter discussed extensively the unit root test, including its importance and explained various types of unit root tests. For this study, ADF unit root test is used for the reasons of checking the reliable nature of the variable used in this study. The results of the unit root test are presented in Table 2.

Time series data are naturally considered unstable and using them in their unstable nature leads to spurious regression results. Augmented Dickey-Fuller (ADF) unit root test was employed to determine the stationarity of the variables. From the result in Table 2, there was evidence that only exchange rate was stationary at level given that the ADF value for EXR which was 3.484601 (in absolute terms) was greater than the test significant level at five percent (2.936942). However, the other variables were not stationary at level given that their ADF values were less than the critical values at five percent level of significance. At first differencing, GDP, GDEF, GXTC, GXOE, GXOH and GCF were stationary as their ADF values (in absolute terms) which were 3.459534, 10.06496, 8.320843, 7.868023, 10.24587 and 5.195354, respectively, were greater than the test significant levels at five percent. Thus, the variables had mixed order of integration (i.e. I(0) and I(1)). With this outcome, cointegration test was carried out to determine the existence or otherwise of long run equilibrium relationship amongst the variables.

Bounds test

Having established that there was mixed order of integration among the variables, cointegration test was carried out to establish the existence or otherwise of unique long run equilibrium relationship among the variables. The study adopted the ARDL (autoregressive distributed lag) Bounds cointegration test which makes use of F-statistics and compares it to the lower and upper bounds critical values to determine whether there existed long-run equilibrium relationship among the variables or

Table 1. Descriptive statistics.

Statistics	GDP	GXTC	GXOE	GXOH	GDEF	GCF	EXR
Mean	34087.79	15.69175	267.0823	81.33825	-768.300	6616.627	105.2663
Maximum	154252.3	90.03000	5874.230	388.3700	32.00000	40276.00	381.0000
Minimum	139.3100	0.030000	0.160000	0.040000	-6248.600	40.20000	0.390000
Skewness	1.265728	1.731617	5.802905	1.354301	-2.387164	1.949084	0.906488
Kurtosis	3.351861	6.306324	35.76071	3.712464	8.067288	6.016018	2.745302

Source: Researcher's computation (2023) from E-views 10 software package.

Table 2. Augmented Dickey-Fuller (ADF) Unit Root test result.

Variable	ADF Values		0.05 Critical Values		Order of Integration
	Level	1st Difference	Level	1st Difference	
D(LNGDP)	-1.394594	-3.459534	-2.936942	-2.938987	I(1)
D(LNGDEF)	-0.674196	-10.06496	-2.938987	-2.938987	I(1)
D(LNGXTC)	-1.596428	-8.320843	-2.936942	-2.938987	I(1)
D(LNGXOE)	-0.681035	-7.868023	-2.936642	-2.938987	I(1)
D(LNGXOH)	-1.660273	-10.24587	-2.948404	-2.941145	I(1)
D(LNGCF)	-1.088743	-5.195354	-2.936942	-2.938987	I(1)
D(LNEXR)	-3.484601	-	-2.936942	-	I(0)

Source: Author's computation (2023) from E-views 10 software package.

Table 3. Bounds cointegration test result.

Test Statistics	Value	Critical Values	I(0)	I(1)
F-Statistic	23.81266	10%	1.99	2.94
		5%	**2.27**	**3.28**
		2.5%	2.55	3.61
		1%	2.88	3.99

Source: Author's computation (2022) from E-views 10 software package.

not. The decision rule follows that if the computed F-statistic value is less than the critical value for the lower bound, we conclude that there is no cointegration. However, if the computed F-statistic value is greater than the critical value for the lower bound and upper bound values, then there is a long-run equilibrium relationship among the variables. The result of the ARDL bounds tests is presented in Table 3.

From the bounds cointegration test results, the F-statistic value (23.81266) was greater than the critical value for the lower bound (2.27) and upper bound (3.28) at a five per cent level of significance. This indicated that there was a long-run equilibrium relationship among gross domestic product (GDP), government expenditure on transport and communication (GXTC), government expenditure on education (GXOE), government expenditure on health (GXOH), government total deficit financing (GDEF) and exchange rate (EXR). Having established that the variables had mixed order of integration and that there is a long-run relationship among the variables, the study employed the error correction modelling (ECM) technique as the appropriate analytical tool.

From the results (Table 4), evidence showed that there was a positive relationship between lagged one year gross domestic product and the current gross domestic product in Nigeria. One (1) per cent increase in lagged one year gross domestic product led to a 53.28 per cent increase in the current gross domestic product in Nigeria. The computed t-statistic for lagged one year GDP (4.123202) was greater than the critical value (2.021) at five percent. As a confirmation, the probability value of the lagged one year GDP (0.0106) was less than the test significant level (0.05). With this, the researcher concluded that lagged one year GDP had a significant effect on the current GDP in Nigeria.

Total government deficit financing had a negative

Table 4. Parsimonious error correction mechanism (ECM) result.

Variable	Coefficient	Std. Error	t-statistic	Prob. Value
C	0.077231	0.028192	2.739478	0.0106
D(LNGDP(-1))	0.532757	0.129209	4.123202	0.0003*
D(LNGDEF)	-0.023754	0.011815	-2.010450	0.0541**
D(LNGXTC(-1))	0.017092	0.018204	0.938918	0.3558
D(LNGXOE(-1))	-0.121187	0.045639	-2.655332	0.0129*
D(LNGXOH)	0.027278	0.023884	1.142090	0.2631
D(LNGXOH(-1))	0.074424	0.049862	1.492606	0.1467
D(LNGCF)	0.036149	0.019686	1.836292	0.0770**
D(LNEXR(-1))	0.034571	0.046918	0.736845	0.4673
ECM(-1)	-0.140786	0.061034	-2.306686	0.0287*
Adj. R-squared =	0.535322	Prob. F-statistic =	0.000163	DW = 1.976735

*indicates significance at 5% level; **indicates significance at 10% level; Critical value @ 5% level = 2.021; critical value @ 10 per cent = 1.684 (Source: Author's computation (2023) from E-views 10 software package).

relationship with the current GDP in Nigeria. From the result (Table 4), one (1) per cent increase in total government deficit financial led to a 2.38 per cent decrease in current GDP in Nigeria. The computed t-statistic for GDEF (2.010450) in absolute terms was greater than the test critical value (1.684) at a 10 per cent level. As a confirmation, the probability value of GDEF (0.0541) was less than the test significant level at 10 per cent (0.10) but greater than the test significant level at 5 per cent (0.05). Thus, the researcher concluded that total government deficit financing had a weak significant effect on the gross domestic product in Nigeria.

Lagged one year government expenditure on transport and communication had a positive relationship with the current GDP in Nigeria. From the result (Table 4), one (1) per cent increase in lagged one year government expenditure on transport and communication led to a 1.71 per cent increase in the current GDP in Nigeria. The computed t-statistic for lagged one year GXTC (0.938918) was less than the critical value (2.021) at a 5 percent level. As a confirmation, the probability value of lagged one year GXTC (0.3558) was greater than the test significant level at five per cent (0.05). Thus, the researcher concluded that lagged one year government expenditure on transport and communication had no significant effect on the gross domestic product in Nigeria.

On the other hand, lagged one year government expenditure on education had a negative relationship with the current GDP in Nigeria. From the result (Table 4), one (1) percent increase in lagged one year government expenditure on education led to a 12.12 per cent decrease in the current GDP in Nigeria. The computed t-statistic for lagged one year GXOE (2.655332) in absolute terms was greater than the critical value (2.021) at a five percent level. As a confirmation, the probability value of lagged one year GXOE (0.0129) was less than the test significant level at five per cent (0.05). Thus, the researcher concluded that lagged one year government expenditure on education had a significant effect on the gross domestic product in Nigeria.

Government expenditure on health had a positive nexus with the current gross domestic product in Nigeria. From the result (Table 4), one (1) per cent increase in government expenditure on health led to a 2.73 per cent increase in current GDP in Nigeria. The computed t-statistic for GXOH (1.142090) was less than the critical value (2.021) at a five per cent level. As a confirmation, the probability value of GXOH (0.2631) was greater than the test significant level at five per cent (0.05). In this same vein, lagged government expenditure on health had a positive link with the current gross domestic product in Nigeria. One (1) per cent increase in lagged one year government expenditure on health led to a 7.44 per cent increase in the current GDP in Nigeria. The computed t-statistic for lagged one year GXOH (1.492606) was less than the critical value (2.021) at a five percent level. As a confirmation, the probability value of lagged one year GXOH (0.1467) was greater than the test significant level at five per cent (0.05). Thus, the researcher concluded that both current and lagged one year government expenditure on health had no significant effect on the gross domestic product in Nigeria.

Gross capital formation had a positive relationship with gross domestic product in Nigeria. One (1) per cent increase in gross capital formation led to a 3.61 per cent increase in the current GDP in Nigeria (Table 4). The computed t-statistic for GCF (1.836292) in absolute terms was greater than the critical value (1.684) at the 10 per cent level. As a confirmation, the probability value of GCF (0.0770) was less than the test significant level at 10 per cent (0.10) but greater than the test significant level at five per cent (0.05). Thus, the researcher concluded that gross

capital formation had a weak significant effect on gross domestic product in Nigeria.

Surprisingly, it was revealed that a positive relationship existed between lagged one year exchange rate and gross domestic product in Nigeria. One (1) per cent rise in lagged one year exchange rate led to a 3.46 per cent rise in the gross domestic product in Nigeria (Table 4). The computed t-statistic for lagged one year exchange rate (0.736845) was less than the critical value (2.021) at the five per cent level. As a confirmation, the probability value of lagged one year EXR (0.4673) was greater than the test significant level at five percent (0.05). Thus, the researcher concluded that the exchange rate had no significant effect on gross domestic product in Nigeria.

The error term (-0.140786) had the expected negative sign and was also significant (Table 4). It showed that short-run disequilibrium in gross domestic product adjusted to long-run equilibrium at the speed of 14 per cent. This was a slow speed of adjustment. In addition, the coefficient of determination (0.535322) showed that 54 per cent of changes in gross domestic product in Nigeria were due to variations in government total deficit financing, government expenditure on transportation and communication, government expenditure on education, government expenditure on health, gross capital formation and exchange rate. It meant that the remaining 46 per cent of variations in gross domestic product in Nigeria were due to other factors not included in the model. The probability F-statistic (0.000163) was less than the test significant level (0.05) and this is an indication that the model adopted for the study was reliable, significant and appropriate for making sound policies. The Durbin-Watson statistic (1.976735) lay within the acceptance threshold as $2 \leq 1.976735 < 4$ and this indicated that there is no presence of autocorrelation in the results.

DISCUSSION

First, the study showed that government total deficit financing had a negative and significant effect on the Nigerian economy in the long run. This finding corroborates Mohammed and Ogba (2021) who found that budget deficit financing exerted a negative effect on economic growth. However, the outcome of this study contrasts with the study of Eze and Ogiji (2016) which found a positive effect of budget deficit financing on the economic growth of Nigeria. Perhaps, this finding might be attributed to the fact that Nigeria's fiscal deficits have mainly been financed by borrowing from the Central Bank of Nigeria (CBN) and foreign debts. Financing of deficits through borrowing from the CBN has undermined the objectives of the apex bank in mobilizing domestic savings in the country thereby leading to inflationary pressures in the economy. With high inflationary pressures, purchasing power of individuals and firms in the country has been badly hit thereby affecting aggregate demand, investment and output growth. In addition, external borrowing by Nigeria has led to external debt overhang and external debt crisis which has over the years affected productivity given that the monies that would have been used for investment in Nigeria are used to pay or service foreign debts.

Secondly, the study showed that government expenditure on transportation and communication had positive and insignificant effect on Nigerian economy in the short run. This finding corroborates Yusufu *et al*. (2018) which found a positive effect of transportation expenditure on economic growth in Nigeria. The positive effect of transportation expenditure on economic growth as evidenced in this study is not surprising because transportation engenders economic activities leading to increase in investment thereby resulting in higher economic growth in Nigeria. However, the insignificant effect of expenditure on transportation on economic growth might be attributed to Nigeria's poor road, air and water infrastructure. Nigeria's road networks are in poor condition due to lack of maintenance. And the nation's air transport does not enjoy high level of safety. Such poor transport infrastructure poses challenges to economic activities and investment and might have insignificantly and positively enhanced economic growth in Nigeria.

Government expenditure on education exerted negative and significant effect on Nigerian economy in the short run. This finding corroborates Ugochukwu and Oruta (2021) which found a negative effect of government expenditure on education on economic growth in Nigeria. This outcome might be attributed to poor state of infrastructure in the different levels of education in Nigeria including the primary, secondary and tertiary. Government has over the years paid lip service to funding of education sector as only about 5 - 7% of the country's budgetary allocation is made for the education sector. This is a far cry from the UNESCO advised 15 - 20% of the government's annual budget to education.

In both the short run and long run, the study showed that government expenditure on health had a positive and insignificant effect on the Nigerian economy. This finding corroborates Onwuka (2022) which found a positive relationship between the previous year's government expenditure on health and economic growth in Nigeria. However, it contrasts with the findings of Onwuka (2022) who found that the current year's government expenditure on health had a negative effect on economic growth in Nigeria. Perhaps, the insignificant effect of government expenditure on health on economic growth in Nigeria in both the short run and long run might be attributed to the 'brain drain syndrome' which has bedevilled the health sector in Nigeria. The challenge of brain drain has mostly been attributed to poor pay or remunerations of the health personnel in Nigeria. In addition, the insignificant effect of health sector expenditure on the Nigerian economy might

be attributed to the failure of the government to streamline health expenditure as well as poor implementation of health programmes. All these have led to the insignificant effect of health expenditure on economic growth in Nigeria.

Gross capital formation had positive and weak significant effects on the Nigerian economy in the long run. This finding corroborates Nweke *et al*. (2017) which found that capital formation had a positive relationship with economic growth in Nigeria in the long run. Perhaps this outcome might be attributed to the concerted efforts of the Nigerian government to create an enabling environment which has translated to the nation being one of the highest recipients of foreign direct investment in Nigeria. With a high inflow of foreign investment, domestic investment has increased thereby increasing economic growth in the country. The weak significant effect of gross capital formation on economic growth in Nigeria might be an indication that more needs to be done by the government to clear any bottlenecks which hinder foreign investors from making quick investment decisions in Nigeria.

Finally, the study showed that the exchange rate had a positive and insignificant effect on the Nigerian economy in the short run. This finding corroborates the work of Umaru *et al*. (2021). This finding is surprising given that the exchange rate condition in Nigeria ought to have a negative effect on the nation's economy. Perhaps, the positive effect of the exchange rate on the Nigerian economy might be attributed to the currency devaluation policy which has been adopted by the government over the years. With the devaluation of the naira, Nigeria's exports have been made cheaper in the international market and this has resulted in increased revenue earnings into the nation's purse. The increased earnings are then channelled into infrastructural development with the multiplier effect being felt on economic activities. As economic activities increase, aggregate demand increases and economic growth in Nigeria becomes enhanced.

Conclusion and Recommendations

Budget deficit financing has become a topical issue as it affects Nigeria's economic growth. This is against the backdrop that the nation has over the years battled with the issue of funding of her recurrent budget deficit. Hence, it became important to determine the effect of budget deficit financing on the Nigerian economy so as to broaden the knowledge of the Nigerian government and its policymakers on how budget deficit financing affects the nation's gross domestic product. From the empirical findings, it has been shown that government total deficit financing had negative and significant effect on Nigerian economic growth (proxied by gross domestic product) in the long run. In the short run, government expenditure on transportation and communication had positive and insignificant effect on Nigerian economy while government expenditure on education had negative and significant effect on Nigerian economy. In short and long run, government expenditure on health had positive and insignificant effect on Nigerian economy. In conclusion, the study argued that deficit financing had significant effect on Nigerian economy.

In order to eliminate the bottleneck associated with achievement of long-term economic growth in Nigeria through sustainable government spending, this research study recommends the following policy outlooks:

1. Government should fashion out ways of reducing her total deficit financing so as to increase economic growth in Nigeria. This can be achieved through increase in taxes paid by individuals and firms such that government tax revenue can surpass her expenditures.
2. Based on the positive and insignificant effect of government expenditure on transportation and communication on economic growth in Nigeria, it is recommended that government should increase her expenditure on the transport and communication sector. In this way, economic growth in Nigeria will be significantly increased.
3. Nigerian government should reverse its lackadaisical approach in education sector by increasing her expenditure in the sector. Concerted efforts should be made by the government to achieve the UNESCO stipulated 15-20% budgetary allocation to the education sector.
4. Government should increase the wages and remunerations of health personnel in the country so as to reduce the brain drain syndrome ravaging the health sector. In this way, quality of health status of Nigerians will increase and productivity will significantly be increased.

CONFLICTS OF INTEREST

The authors declare that they have no conflict of interest.

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