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Research Article

Budget Deficit and Economic Growth in Nigeria: An Empirical Analysis

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Abstract

This study was expected to investigate the impact of Budget Deficit on economic growth of Nigeria between 1983 and 2023. Ex – post facto research design was accepted; annual time series data for analyses were collected from Central Bank of Nigeria Statistical Bulletin of 2022. Real Gross Domestic Product (RGDP) was used as the explained or dependent variable proxy for economic growth. budget deficit (BDF), inflation (INF) and money supply (MS) all represent explanatory or independent variables. The study employed Auto Regressive Distributed Lag (ARDL) Model which was used to analyzed and evaluate the coefficients of the model's parameters. Other diagnostic tests employed by this study include; unit root test, descriptive statistics, correlation coefficient matrix, Cointegration test and test of Normality, and they confirmed the validity and reliability of the model used; the inferential results showed that budget deficits impacted significantly on the economic growth of Nigeria under the review period. The paper recommended strongly that the country should display a high degree of transparency in its fiscal policies or operations by directing its fiscal deficits present towards investments that will increase productivity such as building roads, providing electricity and encouraging Foreign Direct Investments (FDI). The paper equally recommended inflation targeting in order to achieve a non-inflationary trend economy purposely to achieve the macroeconomic goal of price stability. The policy makers should direct capital and financial resources of government toward targeted programs like employment opportunity in productive ventures.

Keywords

Budget Deficits, Economic Growth, Inflation, Expenditure, Money Supply, Revenue

1. Introduction

The fiscal system of government is generally viewed by many scholars in economics and politics as one characterized with a package of instruments for explaining developmental policy objectives of government. One of such known packages of instruments is called fiscal deficits [6, 14]. Fiscal policies are measures designed by government to influence the allocation of revenue generated and propose expenditure with the aim of achieving economic and social development, it is also a deliberate attempt by the government to manipulate budget position with the primary goal to influence eco-

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nomic activities at a given time period [25, 20].

However, Ubi and Inyang [44] demonstrated academically by defining fiscal deficit as an economic situation where current expenditure exceeds current expected revenue. Fiscal deficit as defined above is said to be efficient and effective if it realizes its designed primary objectives. This implies that it is a means to an end and not an end in itself to the government. The end in this state is ensuring the stabilization of price level, economic growth and hence an overall improvement in the standard of living of citizens. Given that it is not an end in itself; its usefulness to the nation depends on its ability to achieve the targeted goals which the policy makers set out. In Nigeria for instance, government has always relied more on fiscal policy as a key to solving her economic problems or issues.

In line with the above assertion, Adesuyi and Falowo [4] stated that a fiscal deficit is a situation where expected income or revenue is less than proposed expenditure. The policy of fiscal deficits has posed challenges to many nations' economies with regard to its efficiencies and debt accumulation over a certain period of time.

Adesuyi and Falowo [4] also observed that fiscal deficit is fundamentally a measure of the extent to which a government is spending beyond its financial capacity. It could be used primarily as an instrument of fiscal policy to bring about economic growth through the means of capital formation either in developed and developing countries of the world.

It becomes expedient that the need for government to borrow domestically or internationally to finance deficit budget is of paramount importance to its economy and, it is unavoidable. A budget deficit practically occurs in Nigeria when government expenditure surpasses its generated revenue. In fact, mishandling of fiscal deficit in Nigeria has been a major cause of economic crisis since 1980 to date. Nigeria budget deficits have been increasing year-in year-out. When a budget surplus occurs in the economy, generated revenue will be more than proposed expenses which will lead to excess funds in circulation that can be further distributed or trickled down among the various arms of government (executive, legislature and judiciary) or levels of government (federal, state and local governments). When the generated revenue is proportional or equal to the proposed expenditure, the budget is considered balanced [32, 17, 26].

Sanusi [41] pointed out that the study of budget deficit is commonly traced to the Keynesian expenditure-led growth theory. It is based on the condition that government stimulates the aggregate demand through increased spending. The issue of budget deficits has become a recurring decimal in most of the developing economies. In Nigeria's economy, the following negatives are noticeable; fiscal and monetary policy inconsistencies, falling government revenue, increase in foreign and domestic borrowing, increase in general poverty level, a continuous decline in people's standard of living, depletion of foreign reserves, unfavorable balance of payments, growth debt rate, excess imports, declining exports, uncontrolled inflationary pressures and dependence on external aids from developed nations.

According to Adebisi and Oyeleke [1] stressed that in the last three decades of Nigerian economy, almost every year exception of 1995 and 1996 respectively, annual budget of Nigeria have been ended in deficits (expenditure $>$ $revenue$). For instance, in 1980, the authors observed critically that government income was ₦12.993 billion, expenses - ₦14.923 billion, and the deficit was ₦1.975 billion respectively. Also, in the year 1990 when the total revenue generated by the Nigerian economy, including oil sales, was ₦38.152 billion, expenditure incurred was ₦60.268 billion and the deficit rose to ₦22.116 billion geometrically. Just like the beginning of another decade that is, year 2000, the divergence between government revenue and a decline in government revenue, largely due to fall in global oil prices, these expenditures have become worrisome in Nigeria on yearly basis. In the year 2000, the government proposed to spend ₦597.282 billion, but ₦701,059 was estimated to cover capital expenditure and recurrent expenditure. Finally, in 2018, total government revenue was ₦4185 trillion 640 billion, expenditure was ₦7813 trillion 740 billion, leaving a deficit of ₦3628 trillion 100 billion.

A deficit policy plays an importance role in assisting many nations' economies to achieve their macroeconomic stability, poverty reduction, employment generation, export promotion, national income distribution and sustainable economic growth and development. For this singular reason, many governments in developed and developing countries use the budget as an effective instrument to achieve their economic determined goals. In fact, this indicates that huge and accumulated budget deficit may not essentially be a corrupt policy objective if such deficits are successfully and efficiently used to actualize economic growth and development. It is on this background that a suitable operational definitions and measures of budget deficit must be clearly specified. Then, the emergence of large nominal budget deficits due to emergency measures taking in certain countries could be misleading [2, 27, 7].

Umaru and Gatawa [47] argued that in Nigeria, government relied solely more on fiscal policy as a key measure to remedies her economic problems. These policies are primarily anchored on Keynesian economic assumptions of increasing or decreasing government spending and decreasing or increasing taxes and subsidies as the case may be. In the early 80s, federal government expenditure had grown tremendously resulting in fiscal difficulties such as inflation, currency devaluation and other economic crisis. The low level of private sector driven development led to public sector control the major sectors of the economy facilitated by massive growth in Nigeria's oil sector. Similarly. Similarly, Awe and Funlayo [10] pointed out that Nigeria has a large economic process characterized with public expenditure management which lead to the introduction of Structural Adjust-

ment Programme (SAP) introduced in 1986 and a few financial reforms introduced recently. The budget analyses of the country have been in deficit over the years as pointed out by [32].

The know-how of unsustainable deficits in most developing countries like Nigeria, exploit heavy debt burden and poor economic performance which led to substantial deterioration in welfare of the people suggests that budget deficit in Nigeria ought to be re-examined. Even after the implementation of Structural Adjustment Programme (SAP) in 1986, Nigeria as a country still depends majorly on the oil sector as the major source of revenue. Nigeria is known as a mono cultural economy based on its 90 percent reliance on oil sector. Foreign Exchange Market came in place in the late September 1986 and since then the naira has been depreciated steadily against the US dollar [24].

In view of the argument, Oladipo and Akinbobola [35] stressed that deficit spending of government has posed problems to the Nigerian economy with regards to its effectiveness and accumulation of debt. In addition to this analysis, Mohammed and Ogba [24] explained that budget deficit arises as a result of deliberate gap between public expenditure and revenue and such gaps created can be financed by government through borrowing. Deliberate gap created with primary motive of creating economic activities in the economy. Scholars of various ideologies argue that deficit reduction is critical to the future of the economy.

Umaru, Aliero and Abubakar [46] argued that it is the sole responsibility of every country, particularly the less developed economy that is characterized by excess labor and raw material resources to effectively and efficiently manage its fiscal accounts in a manner that will bring about macroeconomic stability and sustainable growth.

From the above analyses of the research topic, the authors conclude that whenever there is increase in budget deficits, the government will borrow in order to finance the expenditure which will result to an increase in interest rate and decrease in the amount of money in circulation. Whenever government borrow to finance budget deficits it implies that, the money meant for the future is what is been used currently to pay for the living standard of the citizenry. In fact, government can finance budget deficit through taxation, borrowing and printing of money respectively.

This study seeks to address the impact of budget deficit on economic growth in Nigeria from the period of 1983 to 2022.

Statement of the problem

The importance of budget deficit in economic growth in Nigeria cannot be over emphasize. The topic of budget deficit has become a recurring decimal in many years back due to inconsistency in both fiscal and monetary policy in Nigeria. Whereas, a decline in government revenue largely due to fall in global oil price leading to both foreign and domestic borrowing by Nigerian government. The economy is apparently characterized by increase poverty, constant fall in standard of living, high unemployment, depleting foreign reserve, unfavorable balance of payments, increase debt, over importation, little exportation, uncontrollable inflationary pressure and over dependence on external bodies for aids [29, 28, 12].

Maji and Achegbulu [23] pointed out that the impact of budget deficits on Economic growth in Nigeria is obvious while other research scholars employ other variables such as broad money supply along with fiscal deficits may give a better outlook of the budget deficit situation in Nigeria. The scholars in this field suggest that government spending should be more in productive sectors of the economy and adequate monetary policy should be geared towards balancing both budget deficits and inflation in the economy.

Efuntade [16] investigated budget deficit and economic growth in Nigeria. The author examined the relationship between excess public expenditure, public revenue reduction, inflation rate, unemployment rate and real gross domestic product of Nigeria under the period of study. The research study resolved that there was noticeable correlation or relationship between public expenditure and economic growth in Nigeria.

This research work is primarily designed to investigate the impact of budget deficit on economic growth of Nigeria between 1983 and 2022. The study is premised on the following objectives:

1. Examine the impact of budget deficit on the economic growth in Nigeria
2. Determine the impact of inflation on the economic growth in Nigeria
3. Investigate the impact of money supply on the economic growth in Nigeria

In order to carry out the research work smoothly, the study is organized or outline serially into five sections. Section one contains the introduction of the study, section two displays the literature review, section three covers the methodology, section four explains analysis of data and interpretation of result while section five depicts conclusion and recommendations of the research work.

2. Literature Review

The impact of budget deficit on economic growth of Nigeria has been intensively studied in economic literature. To gain a comprehensive knowledge of this research topic within the context of a developing economy like Nigeria, it is crucial to systematically review the conceptual review, theoretical framework of the study and also analyses some of the relevant empirical literatures so as to get an in-depth understanding of the research topic.

Conceptual Review

Concept of Fiscal Policy

Fiscal policy plays an important role in economic growth and macroeconomic stability of a country. Osuka and Achinihu [36] pointed out that fiscal policy aimed at the use of government budget to influence economic activities which

could be surplus, balanced or deficit respectively. It is deficit when government proposed expenditure surpasses its expected revenue. Many economies either developed or developing economies alike often engage in profitable investment activities (fiscal deficit) which enhances the development of the domestic economies but also put the economies on the path of sustainable growth.

Musa [25] opined that fiscal policy encompasses the use of government spending, taxation, and borrowing to stimulate the pattern of economic activities, the level of growth of aggregate demand, output and employment. In developing countries, fiscal policy is regarded as an instrument for moving backward economies to the path of sustained economic growth and development.

The primary aim of fiscal policy is to facilitate and encourage business growth while government actions are consistent with macroeconomic stability. It is clear that when fiscal policy is implemented, coordinated with other measures like business cycle it will result to economic growth and development. Budget deficit is an instrument of fiscal policy, and in order to achieve the macroeconomics objective, the budget deficit is increasing at a steady low rate [44].

Concept of Budget Deficit

According to Mohammed and Ogba [24] a budget deficit can only occur when government spending exceeds expected revenue, and is usually measured during the fiscal year. The term budget deficit is usually earmarked for government, organization, business or individual. Each fiscal year, the deficit is added to the national debt which makes the public debt to be quite high.

Pesaran, Shin & Smith [38] argued that a deficit policy plays an important role in supporting countries to achieve their macroeconomic stability, poverty reduction, income redistribution and sustainable growth. On this note, most economies use the budget deficit as an effective instrument in achieving their macroeconomic objectives. This implies that budget deficit may not necessarily be a bad policy objective of government if such deficit is effectively utilized to boost economic growth.

When a country depends on bank resources for funding Budget deficits that could lead to domestic inflation as the imbalance persists, it will be transferred to the external economic sector. Government spending initially leads to a strong increase in aggregate demand. However, in terms of aggregate supply, an increase in government spending should not lead to economic growth, hence due to structural imbalances in the economy the end result of these impacts is the emergence of inflation in the economy. Here depending on the circumstances, countries having these characteristics will experience an upsurge in imports and a reduction in exports [16, 39, 18].

Ubi and Inyang [44] argued that one of the critical instruments of fiscal policy is fiscal deficits, in addition, stabilization of prices, growth of per capita income, and employment opportunity requires the fiscal deficit must grow at a low constant rate.

Budget Deficit – Components

a. Revenues: Revenue is clearly defined as money received by the government from outside minus refunds, such as sources from "outside the government" other remedial activities, proceeds from bond issuances, sales of investments, private trust transactions and domestic remittances [5, 21].

b. Public expenditure: It can be characterized as the expenditure incurred by government like the federal, state, and local governments to satisfy the aggregate needs of individuals. It is fundamentally made by the government of a country on citizen's needs, payment on pension, expenses on infrastructure etc. Public Expenditure also comprises of government payments for the goods and made by local, state, and national government agencies as distinct from those of private financial, and social transfers, donations and grants, and others [30].

Budget Deficits in Nigeria

According to Udoh et al [45] pointed out that during the recent recession in Nigeria, the poor state of the country's infrastructures, high levels of poverty and the need to safeguard rapid economic growth, are some of the reasons put forward by federal government of Nigeria over time for the continuance of fiscal deficit. However, in view of the criticisms of fiscal irresponsibility, corruption and misappropriation of public funds which have so far been leveled against the government in recent times, there is a need for assessment of such justification of the sustenance of fiscal deficit. Prior to this period, the various military administrations were accused of high levels of corruption and the maintenance of deficits as a means of enriching the military rulers, despite the potential negative impacts of such actions on the economy. The author confidently pointed out that the fall in government revenue as a result of falling oil prices in the global market led to the deficits recorded in the early 1980s. Except in 1995 and 1996 when surpluses were recorded, the remaining of the fiscal years all recorded deficits.

Edame and Okoi [15] the emergence of democratic rule in 1999 witnessed new era of fiscal discipline and economic prosperity in Nigeria. While different studies on the Nigerian economy have investigated the growth effects of fiscal deficit from various angles, the relative performance of fiscal deficits under military and civilian governments in Nigeria have so far been neglected.

According to Musa [25] outlined that the budget deficits in Nigeria has been rising and falling over the years, in year 1983 the growth rate of fiscal deficit was negative (-44.88 percent) and increased in 1986 to 171.54 percent and rose to 3104.94 percent in 1996. In the year 1997, the fiscal deficit growth rate was negative (-115.60 percent), but rose steadily to 2567.78 percent in 1998 and drop down to 2.07 percent in 2016. It increased to 109.42 in 2017 and in 2018 and 2019 there was a drop of 33.53 and 25.95 respectively. Between

the year 1998 and 2021, the deficit growth rate has been increasing and decreasing.

Concept of Economic Growth

Economic growth can be defined as the process by which the productive capacity of the economy is increased over time to achieve rising degrees of public yield and pay [43].

Economic growth can be viewed as the increase overtime of a country's capacity to produce goods and services needed to improve the well-being of the citizens over time [8, 19].

Economic growth is the quantitative and sustained increase in a country's output or per capita income, along with increases in labor, consumption, capital, and trade. In Nigeria, changes in inflation, interest rate and real Gross Domestic Product have reacted negatively to changes in budget deficit. For instance, high inflation in 1983 caused by budget deficit which increase by 35.8 percent due to decline in direct tax revenue. In 1984, changes in real interest rate brought by increased budget deficit by 11.3 percent of GDP in 1984. And subsequently, high wage bill increased the deficit by 2.5 percent in 1985 [16].

Theoretical Framework

This research work shall explain the subsequent theories that are in line with this study accordingly.

Keynesian Theory

According to this Keynesian theory, an increase in the fiscal deficit will lead to domestic absorption and the expansion of imports causes a current account deficit.

Keynesian theory as explained by Musa [25] pointed out that fiscal deficit positively affects growth in an economy. There would be an increase in government outlays due to addition in money supply. There is relative short fall of demand in accordance with money supply. The lending rate will decrease as a result of increased money supply. Investment will increase especially in private sector due to incentive of reduced lending rate. Keynesian multiplier will work and investment will increase. As investment increases, the output capacity will be enhanced.

Okoro and Oksakei [34] explained that Keynes is of the view that investment decision is a function of interest rates which definitely lead to future profit. He rather opines that an economy would experience partial crowding out at times of deep depression.

Saleh [40] point out that they are Keynesians who provided a counter argument to the crowd-in effect by making reference to the expansionary effects of budget deficits. They argue that budget deficits result in an increase in domestic production, which makes private investors more optimistic about the future progression of the economy resulting in them investing more. This is known as the “crowding-in” effect.

Ubi and Inyang [44] observed that Government expenditure in an underemployed economy add to aggregate demand at market prices and interest rates with no necessity for private family units to offset their own purchases as long as public goods are not close substitutes for private goods. Awe and Funlayo 10] demonstrated categorically that Keynesian economists stressed that there is direct positive correlation between budget deficit and economic growth respectively.

The Ricardian Equivalence Theory

Barro [11] explained clearly this theory called Ricardian equivalence theory, this theory is of the view that fiscal deficits or tax cuts do not affect aggregate demand, interest rate and investment in the economy.

Efuntade [16] stressed that this theory encompasses tax reduction and budget deficit supply through borrowing, the government would have no choice of increasing taxes in the future in order to repay the debts and interests. Barro (1989) equally observe that deficit-induced expenditure or a current tax cut would both lead to a higher tax in the future. Therefore, the tax payers will pay for current government expenditure eventually. The author further clarified that a consumer will plan his consumption expenditure based on the level of his net wealth position. Subsequently, any change in the present value of government expenditure will be accompanied by a corresponding change in the present value of tax. Equally, a fall in government savings will be offset by a rise in the desired private savings leaving national savings unchanged.

Awe and Funlayo [10] stated categorically that the Ricardian equivalence hypothesis or theory claimed that there is unbiassed relationship between budget deficit and economic growth in a country.

Ricardian Equivalence hypothesis shows that when government attempts to influence demand through fiscal policy in an economy it will lead to ineffective. It is believed that any increase in the budget deficit as a result of increased public spending will be paid for by both parties. The total value of income is determined by the total value of expenses, So the intermediate today's taxes must be kept pace with future tax increases, keeping the real interest rate separate. In the same view, investment and current account balances, exchange rates and local production remained unaffected. Thus, Budget deficits may not necessarily exclude macroeconomic variables, no positive or negative relationship exist.

Neoclassical Theory

Friedman (1968) has made it clear that the monetary authorities could control inflationary rate in the economy especially in the long run period through the efficient and effective control of the money supply. When the economic output is at full employment level the deficits can lead to inflation.

Efuntade [16] identified that the Neoclassical theory stressed that fiscal deficits leads to higher interest rates, dampens the issue of private bonds, private investments and private spending, increases inflationary level in the economy, and cause a similar increase in the current account deficits and finally slows the economic growth through crowding out. The Neoclassical school of thought considers individuals planning their consumption over their entire cycle. When shifting taxes to future generations, fiscal deficits increase current consumption. By assuming full employment of resources, the neoclassical school argues that increased con-

sumption implies a decrease in savings. Interest rate must rise to bring equilibrium in the Capital markets. Higher interest rates result in a decline in private investment, domestic production and an increase in the aggregate price level.

Awe and Funlayo [10] summarized that the new classical economists argued that there is an inverse relationship between budget deficits and economic growth.

Sargent and Wallace Hypothesis

Lozano [22] states that this Sargent and Wallace Hypothesis portrayed that fiscal deficit affects output growth through two channels. First, fiscal deficit affects money growth through its financing. When funds are generated by increasing money supply, the surplus money may not be absorbed by the economy due to shortage of aggregate supply. The increased demand may push the general price level which may result in inflation. Second, inflation generated from increased money growth may affect output growth negatively by rising cost of production and a decrease in aggregate supply.

Empirical Review

Efuntade [16] investigated the impact of budget deficit on economic growth in Nigeria between 2009-2019 period, the research work employed ex-post facto research design. Data used for this study were obtained from the Central Bank of Nigeria (CBN) statistical bulletin of 2023. The findings of the study indicated that there is significant relationship between public expenditure and economic growth of Nigeria. The study recommends that government should ensure efficiency in the public financial management and reduce considerably public borrowing as it has a heavy negative impact on the economic growth of Nigeria in the long-run period.

Musa [25] researched on the theoretical review of the impact of fiscal deficits on economic growth in Nigeria, the data used in the research work were generated from the Central Bank of Nigeria statistical bulletin of 2020 and World Development Indicator. The findings of the study revealed that fiscal operation in Nigeria under review was unsuccessful in providing the desirable macroeconomic environment for sustainable growth and development. The research study strongly recommended that the government should stop fiscal recklessness and provide conducive environment for investment to thrive for sustainable and progressive development to be attained at all levels.

Umaru et al [46] examined critically the relationship between Budget Deficit and Economic Growth in Nigeria between 1981 and 2019. The study applied linear and non-linear econometric techniques involving an autoregressive distributed lag (ARDL) model and threshold autoregressive (TAR). The data used in this research work were sourced from the Central Bank of Nigeria Statistical Bulletin. The findings showed that interest rate has negative and significant impact on economic growth while exchange rate has no impact on economic growth under review. The recommendation suggested by this study ist that government should lower interest rate and expansionary fiscal policy should be encouraged so that fiscal deficit do not exceed 2.02 per cent of the gross domestic product.

Adeleke and Abdulsalam [3] conducted an independent study on the research topic- Impact of Budget Deficit on the Nigerian Economic Growth from 1983 to 2014 using time series data. The study made use of Augmented Dickey Fuller (ADF) test, co integration test and Ordinary Least Square (OLS) technique respectively. The results revealed that there is a significant fiscal operation that would bring about realistic fiscal deficit and the need to strengthen monetary relationship between the deficit budget and inflation. The study recommended that the Nigerian government should display a high sense of policies to act as checks and balances used to complement fiscal policies.

Okoro and Oksakei [34] independently studied the impact of fiscal deficits on the macroeconomic variables in Nigeria, using Auto-Regressive Distributed lag (ARDL) model applying quarterly data between 2000 to 2015. The data are sourced from Central Bank of Nigeria (CBN) statistical bulletin of 2014 and National Bureau of Statistics (NBS). This study's findings showed that there is significant long run relationship between fiscal deficits and selected macroeconomic variables in Nigeria under review. The study recommended that the policy makers of government should consider fiscal deficit in the long run, its effects are likely to have on the economic growth.

Ottih et al. [37] conducted an independent on the impact of Budget deficit on some selected macroeconomic variables in Nigeria. The scope of the research work covered the period from 1990 to 2019, the study applied the Augmented Dickey Fuller (ADF) test, Johansen co-integration test, and Granger causality test. The time series data were obtained from Central Bank of Nigeria statistical bulletin of 2020. The findings indicated that there was a significant impact of budget deficits on macroeconomic variables. The paper recommended that the government should monitor strictly on how budget deficits are utilized and implemented effectively.

Edame and Okoi [15] examined the relative impact of fiscal deficits (FSD) on economic growth in Nigeria during the military and democratic regimes between 1986 to 2013. the data used were sourced from the Central Bank of Nigeria statistical bulletin from1986-2013. The study employed Chow endogenous break test, unit root using the ADF and co integration tests. The results depicted that fiscal deficits had a significant impact during the military regime, and it has not had a significant impact on economic growth during the democratic regime. It also revealed that the interest rate did not have a significant impact during both regimes while the gross fixed capital formation had a significant growth impact during both regimes.

Mohammed and Ogba [24] conducted a research study on the effect of budget deficit on economic growth in Nigeria between 1985 – 2020 period. The data used were obtained from Central Bank of Nigeria Statistical Bulletin and publications of the National Bureau of Statistics (NBS). The study

used the Augmented Dickey Fuller (ADF) Unit root and Autoregressive Distributed Lag (ARDL) co-integration and Granger Causality Test. The findings of the study indicated that the government of this country should pursue policies capable of reducing the size of informal sector which have imposed greater constraint to revenue collection and generation. The study suggested that fiscal discipline should be strongly adhered to at every level of government since inflation has been established as monetary phenomenon in the country.

Chinyere [13] conducted another research study-fiscal deficit and Nigeria economic growth from 1990 to 2020. The study employed unit root test of Phillips perron was employed to investigate time series data and to test the stationarity of the time series of the variables. Johansen co-integration analysis and Error Correction Model (ECM) are applied to test for a relationship between variables. The results of the study concluded that the driving variables of economic growth in Nigeria were Public external debt, total federal collection revenue, and interest rate, also the finding confirm that one standard deviation of shocks of fiscal deficit has a significant influence on economic growth confirming the long-run relationship. The study recommended that Government should pay more attention to capital expenditure geared towards economic growth.

Oladipo and Akinbobola [35] investigated independently the nature and direction of causality among the budget deficits and inflation in Nigeria, using the Granger Causality pair wise test was conducted in determining the causal relationship among the variables. Time series data were obtained from the Central Bank of Nigeria (CBN) and the World Development Indicator respectively. The study showed that budget deficit affects inflation directly and indirectly through fluctuations in exchange rate in the Nigerian economy. The study recommended that since inflation has been recognized as monetary policy in Nigeria, for budget deficit to be operative, some essential changes in the productive base of the economy need to be made.

Sunday [42] investigates the impact of budget deficit on Nigerian economy uses a time series data covering 1980 to 2008. The paper employs Granger-Causality and Vector Auto-Regression (VAR) techniques in the analysis of the data collected. The findings show that deficit financing is an accessible tool or instrument for government to expand trade in the short run and, that in the long-run deficit financing could be effectively used to decrease trade deficit in Nigeria if appropriately managed by government of a country.

Oke-Bello and Toriola [33] conducted investigation the nexus between fiscal deficit and domestic credit in Nigeria over the period of 1981 to 2017. The study based on descriptive survey research design. Annual time series data obtained from Central Bank of Nigeria Statistical Bulletin was utilized and the result was estimated through the Ordinary Least Square (OLS) technique. The study suggested that fiscal deficit has a significant negative effect on domestic credit in Nigeria under study review. The study recommended that government should implement policy that will enhance revenue generation drive and cut down all unproductive expenditure to stimulate a balanced budget.

Ojong et al. [31] conducted a research on the impact of budget deficit financing on the development of the Nigeria economy from 1980 to 2008 period. Time series data was collected from Central Bank Nigeria statistical bulletin. Ordinary least square regression technique was employed. The findings showed that government budget deficit financing significantly influence economic growth in Nigeria. The study suggested that government should bring to the barest minimum deficit financing.

Another study was carried out by Okah et al. [32] specifically analyzing the impact of deficit financing on economic growth of Nigeria ranging from 1987 to 2017. The study employed VAR, the Granger Causality test, Impulse Response Analysis and Forecast Error Variance were applied. The results clearly showed that deficit financing has insignificant association with economic growth of Nigeria and the paper recommended that government should expand its revenue base and establish both its monetary and fiscal operations accordingly.

Asogwu and Okeke [9] investigated the crowding out effect of budget deficits on private investment in Nigerian economy. This study evaluates private investment and budget deficits by adopting an analytical framework that employs the ordinary least squares (OLS) and Granger Causality test. The analysis of the study states that budget deficits crowds out private investments and that private investments granger cause budget deficit with feedback. Following the study's findings, it was recommended that stakeholders should reduce recurrent expenditure and increase its capital expenditure in order to encourage and make conducive environment for private investment to thrive.

3. Research Methodology

Research Design

Effective ex-post facto research design of the research work was carefully adopted as it addresses events that had taken place during the course of the study. For clarity sake, the researchers at any point in time have no bases at all to influence the outcome of the variables applied for this study. To investigate independently the relationship among the variables, the research study depends solely on time series data which was collected and gathered over time. Gross Domestic Product (GDP) was pegged as dependent variable proxy for economic growth while variables considered as the independent variables are budget deficit, inflation and money supply. The variables were estimated by applying ARDL technique. The annualized time-series data that cover a long range of observations was used, the paper tested for stationarity of the series using Augmented Dickey-Fuller (ADF) test. The objective of the study is to investigate the impact of

budget deficit on economic growth in Nigeria between the periods of 1983 to 2022.

Sources of Data Collection

The reliable data for this study which covered from 1983 to 2022 period were sourced directly from the World Bank data base- World Development Indicator and Central Bank of Nigeria Statistical Bulletin of 2022 respectively.

Method of Data Analysis

The following techniques of analyses were carefully employed in this study- Augmented Dickey Fuller (ADF) Test for unit root, Autoregressive Distributive Lag Model (ARDL), cointegration test which contains the Wald Test, test of normality; short Run relationship estimation test, as well as the short run Causality test. E-view 10 econometric software was used for the estimation of the variables.

This research work employs the Keynesian framework upon which the study will be anchored which is in line with Chinyere [13], Keynes suggested that the government should spend more and cut taxes to close the budget deficit. This will increase consumer demand in the economy, this brings to an rise in total activity and a decline in unemployment rate respectively. The simple Keynesian framework can be represented mathematically as:

$$Y = C + I + G \quad (1)$$

Where Y represents national income, C represents consumption, I represent investment and G represents government spending. However, since this study is focused on investigating the impact of budget deficit on economic growth in Nigeria, the above equation is later modified to suit this study by replacing Y with RGDP (Real gross domestic product), C, I and G are replaced with budget deficit (BDF), inflation (INF) and money supply (MS) respectively. Thus, the modified version of the equation (1) becomes as follows:

$$RGDP = BDF + INF + MS \quad (2)$$

Model Specification

The model used by Chinyere [13] was adopted. and Gross Domestic Product (GDP) was seen as a function of budget deficit (BDF), inflation (INF) and money supply (MS). The Independent Variables in the work of Chinyere (2021) are slightly adjusted and the relationship between the explanatory and explained variables for this study is specified as shown below:

$$RGDP = F(BDF, INF, MS) \quad (3)$$

The functional model can be represented as follows:

$$RGDP = \beta_0 + \beta_1 BDF + \beta_2 INF + \beta_3 MS + \mu t \quad (4)$$

To ensure unionism in measurement of the variables in this model and to analyze the based on its growth rate, the variables employed in this model are logged. Hence, the logged model specification is given as:

$$LnRGDP = \beta_0 + \beta_1 lnBDF + \beta 2 lnINF + \beta 3 lnMS + \mu t \quad (5)$$

Where:

RGDP: Real Gross Domestic Product

BDF: Budget Deficit

INF: Inflation

MS: Money supply

Ln = Natural logarithm

B_0= the constant term or the dependent variable intercept or the value of RGDP when the independent variables are equal to zero.

$\beta_1, \beta_2, \beta_3$ = independent variables coefficient.

μt = the error term, stochastic term, white noise, time trend.

Approri Expectation

The apriori expectation is stated as;

$$RGDP = \beta_0 + \beta_1 BDF + \beta_2 INF + \beta_3 MS$$

The apriori expectation is built on the results of the theoretical framework of the study.

Variable Description and Measurement

Gross Domestic product (dependent variable)

Gross Domestic Product (GDP) is a measure of the total value of goods and services produced in a country over a given period of time. It is often used to determine the health of a country's economy and the health of the global economy.

The calculation of a country's GDP includes all private and public consumption expenditure, government expenditure, investment, additions to private inventories, construction costs incurred, and foreign trade balance. Exports are added to the value while imports are subtracted.

Budget Deficit

Budget deficits occur when proposed government spending or expenditure exceeds expected revenues over one-year period and, can indicate a country's fiscal strength. The term is commonly used to refer to government expenditure, not to businesses or individuals. A country spends more money than it collects in revenue when it has a budget deficit.

The budget deficit affects the national debt, the total annual budget deficit, and the cumulative amount the country owes its creditors. Budget deficit can lead to more borrowing, more interest payments, less reinvestment, and less revenue next year respectively.

Inflation

Inflation is the general increase in the general price level of goods and services in an economy. As the general price level rises, each currency unit buys fewer goods and services. Inflation leads to a decrease in the purchasing power of money.

In an inflationary nation, it is difficult for money to function as a medium of exchange and store of value without negatively impacting production, employment and real income. Inflation is one of many problems facing developing

countries that require adequate regulation.

Money Supply

Money supply is the sum of all currencies and other liquid funds in circulation in a country's economy at a particular period of time. Money supply includes all cash in circulation and all bank balances that can be easily converted into cash easily.

The money supply is the total amount of money in circulation that is cash, coins, bank account balances. It is an important concept that greatly affects the financial and economic activities of a given country.

Nature and Source of Data

Ssecondary data will be collected and used in this research work and time series data was gathered directly from the statistical bulletin of Central Bank Nigeria (CBN) and World Development Indicators-World Bank Data Base.

The main objective of the study is to investigate the impact of budget deficit on economic growth in Nigeria between the periods of 1983 to 2021.

Data Analysis

Unit root test

The first important step in computing data variables is conducting a test of stationary. This involves determining the mixed order of integration of the individual variables to be considered. It is termed the pre-test that determines the econometric method to be used when analyzing data. In this case, the study employed the most popular unit root test called ADF test. The tests are conducted with and without a deterministic trend (t) for each of the variables.

$$\Delta Y_t = \alpha + \beta_t + \gamma Y_{t-1} + \delta \Delta Y_{t-1} + \cdots + \delta_{\rho-1} \Delta Y_{t-\rho+1} + \varepsilon_t \quad (6)$$

Where α is a constant, β_t is the coefficient on a time trend and ρ the lag order of the autoregressive mechanism. By including lags of the order p the ADF formulation allows for higher-order autoregressive processes. This means that the lag length p has to be determined when applying the test. ADF means Augmented Dickey Fuller.

The Autoregressive-Distributed Lag (ARDL) Model

This study employed heavily the Autoregressive-Distributed Lag (ARDL) bounds test approach based on the result obtained from the unit root test. It is used here to test for the existence of a long run relationship as well as to make an estimation of long and short run coefficients for the study. Secondly, the ARDL technique is able to differentiate between explained and explanatory variables in a long run. Thirdly, the Error Correction Model (ECM) can be derived from ARDL model through a simple linear transformation, which integrates short run adjustments with long run equilibrium without losing long run information.

$$\Delta RGDP = \beta_0 + \sum_{l=i}^{P} \beta_1 \Delta RGDP_{t-i} + \sum_{l=i}^{Q} \beta_2 \Delta BDF_{t-i} + \sum_{l=i}^{R} \beta_3 \Delta INF_{t-i} + \sum_{l=i}^{S} \beta_4 \Delta MS_{t-i} + \varphi_1 \Delta RGDP_{t-i} + \varphi_2 \Delta BDF_{t-i} + \varphi_3 \Delta INF_{t-i} + \varphi_4 \Delta MS_{t-i} \quad (7)$$

where the first part of the equation with β_0, β_1, β_2, β_3 and β_4, denotes the short run analysis of the model used and the parameters φ_1, φ_2, φ_3 and φ_4 represent the long run association. The hypothesis of the model is as follows:

H_0: $\varphi_1 = \varphi_2 = \varphi_3 = \varphi_4$ (there is no long-run relationship)

H_1: $\varphi_1 \neq \varphi_2 \neq \varphi_3 \neq \varphi_4$

When the order of integration of the variables is known and all the variables are I (1), the decision is made on the upper bound.

$$\Delta RGDP = \beta_0 + \sum_{l=i}^{P} \beta_1 RGDP_{t-1} + \sum_{l=i}^{Q} \beta_2 BDF_{t-1} + \sum_{l=i}^{R} \beta_3 INF_{t-1} + \sum_{l=i}^{S} \beta_4 MS_{t-1} + \mu t \quad (8)$$

If there is evidence of a long-run relationship, the error correction model (ECM) is estimated, which indicates the speed of adjustment back to long-run equilibrium after a short-run disturbance. The standard ECM involves estimating the following equation:

$$\Delta RGDP = \beta_0 + \sum_{l=i}^{P} \beta_1 RGDP_{t-1} + \sum_{l=i}^{Q} \beta_2 BDF_{t-1} + \sum_{l=i}^{R} \beta_3 INF_{t-1} + \sum_{l=i}^{S} \beta_4 MS_{t-1} + \lambda_1 ECM_{t-1} + \mu t \quad (9)$$

where: ECM_{t-1} is the error correcting term, the coefficient of this error term should be negative and statistically significant. This coefficient indicates the speed of adjustment, how quickly the variables return to long run equilibrium.

Diagnostic Test

To get reliable and valid results, this is to ascertain goodness of fit of the ARDL model, diagnostic test and stability tests are conducted in which the diagnostic test will examine, normality, heteroscedasticity, serial correlation. These tests are important because errors might occur and these tests help deduce reliable and valid data. The stability test is conducted by employing the cumulative residual (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ).

Granger Causality Test

It is a statistical hypothesis test to investigate causality between two variables in a time series. The method is a probabilistic account of causality; it uses empirical data sets to find patterns of correlation. Causality is closely related to the idea of cause and effect, although it is not exactly the same. A variable X is causal to variable Y if X is the cause of Y or Y is the cause of X.

4. Data Analysis and Discussion of Results

In this chapter, the study presents the data that were used in the estimation of the models 4 specified in chapter three of this study. The chapter in essence provides empirical tests and analysis of relevant data, and a discussion of the findings. This helps the study to understand the impact of budget deficit on economic growth in Nigeria between 1983 - 2021.

Specifically; data on the following, RGDP (Real gross domestic product), C, I and G are replaced with budget deficit (BDF), inflation (INF) and money supply (MS) were sourced from World Bank development Indicators 2021 and statistical bulletin of Central Bank Nigeria (CBN).

Descriptive Statistics

Descriptive statistics was used in this study because they help to describe the basic features of the data in a study as presented in table 1.

Table 1. Result of Descriptive Statistics.

	BDF	LINF	LMS	LRGDP
Mean	-970.2741	2.687825	7.083425	31.15974
Median	-133.3893	2.555410	7.317188	31.06708
Maximum	32.04940	4.288204	10.60456	31.92671
Minimum	-7118.708	1.684176	2.872882	30.41674
Std. Dev.	1766.692	0.683129	2.601797	0.532218
Skewness	-2.224607	0.886408	-0.206380	0.182871
Kurtosis	7.067243	2.964563	1.648896	1.477430
Jarque-Bera	59.04922	5.109217	3.243259	3.984480
Probability	0.000000	0.077723	0.197576	0.136390
Sum	-37840.69	104.8252	276.2536	1215.230
Sum Sq. Dev.	1.19E+08	17.73326	257.2351	10.76373
Observations	39	39	39	39

Source: Researcher Computation using EViews 10

The descriptive statistics shown in Table 1 above describe the characteristics features of the data. A normally distributed series has zero skewness, three (3) kurtosis, and the JB statistic is not expected to go above the critical value of 5.991 at 5% level of significance. The RGDP, a proxy for economic growth for the study, inflation (INF), and money supply (MS) all have negative signs that are long-left tails, as well as normal skewness and leptokurtic because all of the values are greater than 3 kurtoses, which is considered to be leptokurtic. The budget deficit is the only variable that does not. When the kurtosis is greater than 3, the distribution is peaked in comparison to the normal; when it is lower than 3, the distribution is flat (platykurtic). With the probability that a Jarque-Bera statistic exceeds the observed value under the null hypothesis, the Jarque-Bera test statistic, which measures the difference between the skewness and kurtosis of the series shows that all the variables under study were significant. Trend Analysis of the Variables of the Study in line with the objective one to determine the trend of budget deficit, real Gross Domestic Product (GDP), inflation (INF) and money supply (MS) in Nigeria from 1983 - 2022.

Unit Root Test

Table 2. Result of ADF Unit Root Test.

variables	critical values at 5%	ADF values	probabilities	comments
LRGDP	-2.943427	-4.354511	0.0014	I(1)
BDF	-3.536601	-4.054449	0.0153	I(1)
LMS	-2.943427	-4.018815	0.0035	I(1)
LINF	-2.945842	-6.957132	0.0000	I(1)

Source: Researchers Computation Using (Eviews10 Output)

Table 2 presents the series of unit root tests of (ADF). The results show that all the variables under study are not stationary of order I (0) but stationary at first differencing as displayed in the table above.

Lag length criteria

Table 3. VAR Lag Order Selection Criteria.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-398.9940	NA	62137.64	22.38856	22.56450	22.44997
1	-176.6594	382.9096*	0.657865*	10.92552*	11.80526*	11.23257*
2	-164.4812	18.26729	0.843362	11.13785	12.72137	11.69054
3	-154.2169	13.11558	1.273030	11.45649	13.74380	12.25482

Source: Researchers Computation Using (Eviews10 Output)

Table 4. ARDL model of The Impact of Budget Deficit on Economic Growth in Nigeria.

Dependent Variable: LRGDP				
Method: ARDL				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
LRGDP(-1)	0.916259	0.053798	17.03131	0.0000
BDF	2.86E-05	1.96E-05	1.459499	0.1548
BDF(-1)	-2.28E-05	2.29E-05	-0.994507	0.3279
LMS	-0.062079	0.059407	-1.044979	0.3044
LMS(-1)	0.083106	0.062013	1.340149	0.1903
LINF	-0.004865	0.011959	-0.406814	0.6870
LINF(-1)	-0.005169	0.011527	-0.448421	0.6571
C	2.549670	1.609996	1.583650	0.1238
R-squared	0.996541	Mean dependent var		31.17900
Adjusted R-squared	0.995734	S.D. dependent var		0.525412
S.E. of regression	0.034319	Akaike info criterion		-3.721567
Sum squared resid	0.035334	Schwarz criterion		-3.376812
Log likelihood	78.70977	Hannan-Quinn criter.		-3.598906
F-statistic	1234.602	Durbin-Watson stat		2.339067
Prob(F-statistic)	0.000000			

Source: Researchers Computation Using (Eviews10 Output)

In line with this study objective to examine the impact of budget deficit (BDF), inflation (INF) and money supply (MS) on real gross domestic product (GDP) proxy for economic growth in Nigeria from 1983 - 2022. This employed autoregressive distributed lag (ARDL) model to test for the short-run and long-run relationship between the dependent and independent variables as shown above table 4. ARDL regression estimation, thus, the preliminary part of the result gives a summary of the settings used during calculation. The result shows that programmed selection (using the Akaike

Information Criterion) was used with a maximum of 1 lag of both the dependent variable and the independent. The procedure has selected an ARDL (1,1,1,1) including observation 39 after adjustment.

However, the coefficient of RGDP (-1) at period of lag 1 is 0.916259 quite high but statistically significant with the probability value of 0.00 which is less than 0.05 level of significance. This implies that holding other independent variables constant, a one percentage increase in gross domestic product (RGDP), period of lagged 1 translate to approximately 92% increase in its present value as displayed in the ARDL results above.

The coefficient of RGDP BDF (-1) at period of lag 1 is -2.28 relatively high but statistically insignificant with the probability value of 0.3279 which is greater than 0.05 level of significance. This implies that a one percent increase in budget deficit the previous year will lead to a 228% decrease in the RGDP of the following year. While it will lead to a 228% increase in the present year. This result indicates that budget deficit and economic growth are moving in opposite direction, an increase in RGDP will lead to a decrease in the budget deficit and vice-versa.

Coefficient of the money supply is -0.062079 indicating that a one percent increase in money supply will lead to a 6% decrease in the GDP but it is statistically insignificant with its probability value being greater than 0.05. It also shows that if the money supply was lagged by one-year LMS (-1), the coefficient of LMS would be 0.083106 implies that 81% increase in GDP with a one percent increase in money supply.

The expected coefficient of inflation has a negative sign for both lagged value and current value. That is, -0.004865 demonstrates clearly that, for the current value, a one percent increase in inflation will result in 0.4% decline in RGDP. When the probability value is greater than 0.05 and the lagged and present values, respectively, are 0.6870 and 0.6571, this coefficient is statistically insignificant.

The coefficient of the fixed variable also known as (C) is 2.549670 also known as intercept is the value of economic growth when all other factors in this study are fixed at zero, it is statistically insignificant with a probability value of 0. 1238. This result simply means that there are other factors affecting economic growth that are not captured in the variables used for this study.

Furthermore, the R-Square, which is 0.99 from the table is frequently used to refer to the coefficient of determination. In other words, the changes in the explanatory variables account for 99% of the changes in economic growth (GDP) at time t, while the remaining one percent may be explained by factors not included in the model. Only those independent variables that have an impact on the dependent variable are used to calculate the adjusted R-squared, which has the same value as R-squared and is 99% accurate. The Durbin-Watson statistic (DW) in the result is 2.3 indicates the absence of serial autocorrelation in the model.

The bounds test for the null hypothesis of no co-integration is conducted by the autoregressive distributed lag (ARDL) long-run model. The lower values of the test are based on the assumption that the regressors are I(0), and the upper values are based on the assumption that the regressors are (1). The null hypothesis is rejected if the calculated F-statistics are higher than the upper critical value, which suggests cointegration. The null hypothesis cannot be rejected, however, if it falls below the lower critical value, indicating the lack of cointegration. The result is inconclusive if the calculated F-statistics falls between the lower and upper critical values. The conditional ARDL long-run model can be estimated once cointegration has been established. The ARDL Long Run Form and Bounds Test, which served as the foundation for the ARDL Error Correction Regression, are shown in Table 5 below.

Table 5 presents the F-bound test of null hypothesis of no cointegration regression estimate in order to conform to the long run cointegration status. The calculated f-statistics is 4.62 exceeds the lower and upper critical value of 2.79 and 3.67 respectively at 5% significant level. Therefore, the null hypothesis of no integration is rejected, implying that there is cointegration thus the long run estimate is justified.

Table 5. *ARDL Long Run Form and Bounds Test F-Bounds.*

F-Bounds Test		**Null Hypothesis: No levels relationship**		
Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
			Asymptotic: n=1000	
F-statistic	4.624224	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Actual Sample Size	38		Finite Sample: n=40	

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
		10%	2.592	3.454
		5%	3.1	4.088
		1%	4.31	5.544
			Finite Sample: n=35	
		10%	2.618	3.532
		5%	3.164	4.194
		1%	4.428	5.816

Source: Researchers Computation Using (EViews10 Output)

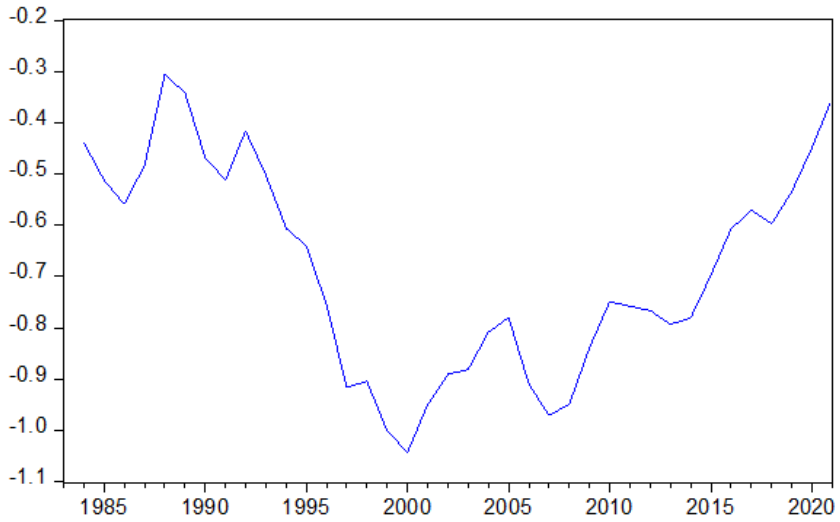


Figure 1. *cointegration graph. Above shows that all the variables garnered for this study were cointegrated in Nigeria. This means that there is evidence of cointegration in the model.*

Table 6. *ARDL Long Run Form and Bounds Test F-Bounds Dependable variable D(LRGDP).*

ARDL Error Correction Regression **Dependent Variable: D(LRGDP)** **Selected Model: ARDL (1, 1, 1, 1)** **Case 2: Restricted Constant and No Trend** **ECM Regression** **Case 2: Restricted Constant and No Trend**				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(BDF)	2.86E-05	1.32E-05	2.161102	0.0388
D(LMS)	-0.062079	0.047465	-1.307897	0.2008
D(LINF)	-0.004865	0.009182	-0.529840	0.6001

Table 7. Conditional Error Correction Regression.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.549670	1.609996	1.583650	0.1238
LRGDP(-1)*	-0.083741	0.053798	-1.556577	0.1301
BDF(-1)	5.80E-06	6.39E-06	0.907508	0.3714
LMS(-1)	0.021028	0.010174	2.066746	0.0475
LINF(-1)	-0.010034	0.010005	-1.002897	0.3239
D(BDF)	2.86E-05	1.96E-05	1.459499	0.1548
D(LMS)	-0.062079	0.059407	-1.044979	0.3044
D(LINF)	-0.004865	0.011959	-0.406814	0.6870

Source: Researchers Computation Using (EViews 10 Output)

Table 7 above reveals the results of ARDL long run form of estimation of conditional error correction regression. The coefficient of fixed variable 2.55 is statistically insignificant based on the probability value of 0.1238 which is greater than the 0.05 level of significance. This result reveals that there is autonomous increase in economic growth which is not accounted for by explanatory variables stated in the model. More so the estimated economic growth at period of lag one LRGDP (-1) is -0.083741 with probability value of 0.1301 which is greater than 0.05 level of significance implies that there is decrease in economic growth at current period as a result of 0.8% decrease in period of lag. Current level of money supply is -0.062079 with probability value of 0.3044 which is greater than 0.05 level of significance, this implies that money supply has negative impact on economic growth under the period of this study. The implication is that a one percent increase in money supply will lead to a 0.6% decrease in RGDP. The coefficient of budget deficit is 2.86E-05 and inflation with -0.004865 with a probability value of 0.1548 and 0.6870 respectively, this implies that's a one percent increase in budget deficit will lead to a 286% increase in the economic growth and a one percent increase in inflation will lead to a 0.04 decrease in economic growth. This means that budget deficit and economic growth are related strongly but inversely related between inflation and economic growth. The probabilities values are greater than 0.05 as shown in the table.

The results of the conditional error correction regression were produced as a level equation. With little variation in the coefficients of the variables under study, the level equation result is similar to the outcome of the conditional error correction regression.

Table 8 below is the error correction model mechanism regression, it illustrates how quickly errors are corrected. A type of multiple time series model known as an ECM directly calculates how quickly a dependent variable reaches equilibrium following a change in an independent variable. The dynamic adjustment of the ECM considers the long-run equilibrium. The idea of co-integration and the ECM are closely related.

Table 8. Error correction model.

Dependable variable D(LRGDP)

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CointEq(-1)*	-0.083741	0.016359	-5.118978	0.0000
R-squared	0.323937	Mean dependent var		0.039441
Adjusted R-squared	0.264285	S.D. dependent var		0.037584
S.E. of regression	0.032237	Akaike info criterion		-3.932093

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Sum squared resid	0.035334	Schwarz criterion		-3.759716
Log likelihood	78.70977	Hannan-Quinn criter.		-3.870762
Durbin-Watson stat	1.939067			

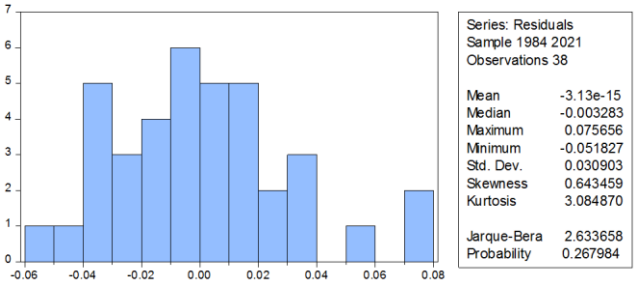
Source: Researchers Computation Using (EViews 10 Output)

Table 8 above shows ARDL ECM regression estimation, in this context the estimated parameters were subjected to test based on economic theory so as to ascertain whether they agree with expected results. In order words, the theory sort to relate the changes in economic growth in Nigeria to its explanatory variables which include budget deficit (BDF), inflation (INF) and money supply (MS) respectively to ascertain if they conform with the Apriori expectation of the research work.

The outcome of the result demonstrates that the error correction term CointEq (-1) coefficient, which gauges how quickly a system is adjusting to long-run equilibrium is negative and statistically significant at the 5% level. The ECM is showing the projected negative sign which is -0.083741. This submits that the rate of adjustment to the single long-run co-integrating relationship by changes in economic growth (GDP) at time t is not zero. In other words, the co-integrating equation enters the model automatically because the equation of economic growth (GDP) at time t contains information about the long run relationship. The ECM's coefficient showed that in the short run, regressors respond to changes in economic growth (GDP) at time t at a rate of about -0.8%. This is in conformity with this study apriori expectation.

Additionally, the R-Square, which is also known as the coefficient of determination or a change in economic growth (GDP) at time t, indicates that 68% of the variation in the explanatory variables can be accounted for by these changes, with the remaining 32% being explained by variables outside of the model built. Only those independent variables that actually have an impact on the dependent variable are accounted for by adjusted R-squared, which has the same value 69%. Approximately 2 Durbin-Watson statistic (DW) indicates that there is no serial autocorrelation.

This is conducted to establish that the distribution of the variables under study are normally distributed. The histogram below represents a normality test.



Source: Researchers Computation Using (EViews 10 Output)

Figure 2. *Normality Test.*

If the residuals are normally distributed, the histogram should be bell-shaped and the jarque-Bera statistic should not be significant. The normality test shows that the stochastic error term is normally distributed based on the Jarque-Berra statistic of 2.634 with probability value of 0.268; the study rejects the null hypothesis and concluded that the residuals are normally distributed respectively.

Table 9. *Autocorrelation.*

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	3.132653	Prob. F(2,28)	0.0592
Obs*R-squared	6.948183	Prob. Chi-Square(2)	0.0310

Source: Researchers Computation Using (EViews 10 Output)

Based on F-statistics of 3.132653 and F-statistic probability of value of 0.0592 clearly shown above table 9 at a degree of freedom of (2,28) which is greater than 0.05 level of significance, the test failed to reject the hypothesis of no serial correlation. The LM-test indicates that the residuals are not serially correlated and the equation needs not to be respecified before using it.

Table 10. *Heteroskedasticity Test.*

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.147221	Prob. F(7,30)	0.3613
Obs*R-squared	8.024099	Prob. Chi-Square(7)	0.3305
Scaled explained SS	5.213395	Prob. Chi-Square(7)	0.6339

Source: Researchers Computation Using (EViews 10 Output)

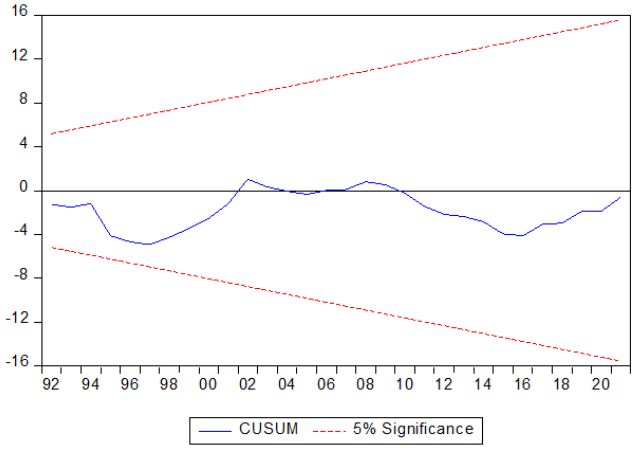
To accept the presence of heteroskedasticity, the probability value of F-test must be less or equal to the confidence interval. In this case, 5% level of significance is used.

The test in table 10 above shows that F-statistic is 1.147221 and with corresponding f-probability value of 0.3613 at a degree of freedom of (7,30) indicate that the test failed to reject the null hypothesis of no homoskedasticity and conclude that there is evidence of Heteroskedasticity in the model adopted.

Stability diagnostic tests

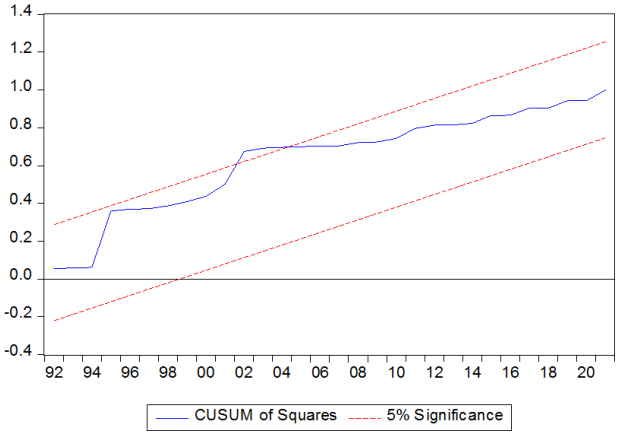
More so, in order to ensure the robustness of the ARDL model, it is useful to estimate the stability of the parameters. To test the null hypothesis of the model stability, the study applies recursive estimates of cumulative sum (CUSUM) and the CUSUM of square (CUSUMSQ) tests. CUSUM statistics and bands represent the bounds of the critical region for the test at the 5% significance level. The test finds parameter instability if the cumulative sum goes outside the area between the two critical lines.

Additionally, the results in figures 3 and 4 demonstrate that the plots of the CUSUM and CUSUMSQ statistics remain within the critical bounds of the 5% significant level, as a result, it shows that the regression coefficients are stable.



Source: Researchers Computation Using (EViews 10 Output)

Figure 3. *CUSUM.*



Source: Researchers Computation Using (EViews 10 Output)

Figure 4. *CUSUM of squares.*

5. Conclusion and Recommendation

This section presents the conclusion and recommendations of the paper

Conclusion

The primary motive of this paper was to investigate the impact of budget deficit on economic growth of Nigeria between 1983 and 2022. Real gross domestic product sourced from Central Bank of Nigeria was used as a proxy for economic growth of Nigeria while budget deficit, money supply and inflation collected from the same source were used as explanatory variables. The findings of this research work indicated that budget deficit had a positive significant impact on economic growth of Nigeria which corresponded with the findings of related study by Chinyere [3] whose inferential results proved clearly that budget deficit impacted significantly on economic growth of Nigeria between 1982 and 2021. In order to reach a clear cut conclusion, some existing research works of scholars in this field were studied including different theories that serve as a theoretical framework on the research topic and, the paper technically employed ARDL model since the unit root tests of the variables employed showed a mixed order of I(1) and I(0) respectively.

Policy Recommendations

From the empirical findings obtained, budget deficit has shown a positive impact on economic growth of Nigeria under the review period of investigation. The paper recommended strongly that the government should all the time display a high degree of accountability and transparency in its fiscal policies or operations by directing its fiscal deficits present towards investments that will increase productivity such as building roads, providing electricity and encouraging Foreign Direct Investments (FDI). The paper equally recommended inflation targeting in order to achieve a non-inflationary trend economy purposely to achieve the macroeconomic goal of price stability. Finally, the policy makers should direct capital and financial resources of government toward targeted program like employment opportunity in

productive ventures and employment of technology in area of tax collection purposely to avert tax aversion and other corrupt practices.

Abbreviations

GDPX	Gross Domestic Product
RGDP	Real Gross Domestic Product
BDF	Budget Deficit
CBN	Central Bank of Nigeria
CUSUM	Cumulative Sum
CUSUMSQ	Cumulative Sum of Square
ARDL	Auto Regressive Distributed Lag
ADF	Augmented Dicky Fuller Test
ECM	Error Correction Model
FDI	Foreign Direct Investment
TAR	Threshold Auto Regressive
INF	Inflation
MS	Money Supply
NBS	National Bureau of Statistics
OLS	Ordinary Least Sqaure
LN	Natural Logarith

Conflicts of Interest

The authors declare no conflicts of interest.

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