
**THE EFFECTS OF FISCAL DEFICITS IN DEVELOPING COUNTRIES:
IMPLICATIONS ON THE ECONOMIC GROWTH OF NIGERIA.**

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ABSTRACT

This study examines the effects of fiscal deficits on economic growth of the Nigerian economy. The study explore the trend of fiscal deficits over the three decades and showcase its implications on output growth and other macroeconomic indicators. While the issue of fiscal balance remain a prime macroeconomic objective of the Nigerian economy, fiscal deficit has serious implications on the economic and social welfare of a given economy. The study adopts the VAR technique and Johansen cointegration test to determine the possible existence of long-run relationship and other impacts among the variables. Estimated result from the Johansen cointegration test indicates two cointegrating relations between the variables as revealed by both the trace statistics and the maximum eigen value, while the error term is found to be negative and significant indicating a moderate convergence to the long-run equilibrium. It is established by the trend analysis that fiscal deficit adversely affects output growth rates and this situation has been prominent in the domestic economy from the last three decades. Other empirical results show evidence in favour of the negative effect of deficits on economic growth within the sample period. This result is consistent with the epistemological approach of neo-classical theory which established that deficit has growth-retarding effects on the economy. There is need for appropriate accountability in the public sector such that all spending are justified, and government activities are directed in accordance with the principles of equity and efficiency.

Keywords: fiscal deficit, economic growth, Nigerian economy, neo-classical theory.

1. INTRODUCTION

One of the most debated concepts in macroeconomics is the effects of fiscal deficit on economic growth. The aim of attaining sustainable growth and achieving macroeconomic stability have been the prime target of every economies whether developed or developing nations. The aggregate economic performance of developing countries in the recent period has brought the issue of fiscal deficit into the pole position. Different approaches are used in the economic literature to conceptualise the fiscal deficit, hence it is deduced as the differences between total expenditure and total revenue of the public sector. In other words, it is the excess of public expenditure including loans net recovery over revenue receipts and non-debt capital receipts. This deficit occurs either due to shortfall in revenue or rapid increase in expenditure beyond the spending capacity of the government. In some cases, high deficit can negatively affects the economic growth and other essential macroeconomic indicators in a given economy. A large fiscal deficit could be due to accumulation of government debt and debt servicing which may compel the government to cut down expenditures on essential sectors like education, infrastructure, and health services. This will certainly decrease output in human capital development, hence, an important element for realising sustainable growth and development.

In the last three decades among many of these developing economies, there is evidence of dramatic shift in expenditure and tax policies to the extent that budgetary balance have virtually remains unattainable while deficit financing by the public sector becomes realistic. This situation has resulted into several debt crises which are usually noticeable in developing countries including those within the Sub-Saharan region; Nigeria is inclusive, due to poor development of private sector. As a result, it causes increased government participation in economic activities and increased fiscal dominance such that the highest share of aggregate demand is allocated to government spending and investment. While the revenue generation mechanism is weak and underdeveloped, thus, there is lack of adequate revenue to shield the corresponding expenditures. The overall outcome of this tendency is the rising and growing trend of fiscal deficit which is eminent since the early 1980's. This fiscal deficit can be financed through selling the government bonds. However, the main practice of deficit financing in Nigeria is through the financial institutions mostly the Central Bank of Nigeria. This alternative has resulted to countless instabilities including limitations for private sector credits, higher rate of interest, and decline in economic activities within the domestic economy. This decline in productivity causes high increase in price for the limited goods, hence inflation and business cycle's fluctuation arise. Therefore, there is growing need for government to reduce the size of budget deficit with the view to avoiding its instabilities and other spill over effects in the economy.

Since Nigeria is experiencing a rapid increase in budget deficit within the recent period, the need for adopting a reliable fiscal measures becomes necessary since the fiscal policy has the

potentials to regulate the tempo of aggregate economic performance in the Nigeria (Idris & Bakar, 2017). The significant effects of this measure will certainly improve the aggregate output and halt the continuity of fiscal deficit that the Nigerian economy is experiencing. The reason behind the increase in deficit may be due to the over dependency of the economy on oil revenue and external loans (Idris & Ahmad, 2017). Furthermore, in lieu of the general criticisms and allegations of corruption in addition to the mismanagement of public funds which have been listed against the government, the needs for evaluating the impact of deficit becomes paramount. The situation appeared more evident since the previous military government are accused of high level of corruption and maintenance of deficit as a means of enriching the military leadership, despite the negative effects of such scenario on the Nigerian economy (Edame & Okoi, 2015). Now, the question that may interest the reader is whether this increasing level of deficit hinder sustainable economic growth in the Nigerian economy, how those the trend of fiscal deficit impacted on the economic growth of Nigeria during the last three decades? This, and other fascinating issues are discussed in this study.

A good number of literature exists on the impact of fiscal deficit in Nigeria, however, they are not based on critical review that shows the trend of fiscal deficit using a longitudinal dataset. These observed shortcomings has warrant for the need to challenge this traditional approach by examining this scenario using a recent data for developing countries with particular reference to the Nigerian economy. In view of that, this study aimed at examining the effects of fiscal deficits on economic growth in Nigeria using empirical analysis. Based on the previous studies, this paper classifies the literature into three groups according to their conclusions. The first group shows evidence in favour of positive effect of fiscal deficit on economic growth, the second group are in support of negative effect, while the third group indicates no significant effect between fiscal deficit and economic growth. The rest of the paper is organised as follows: section 1.2 deals with the extensive review of the literature taking into cognisance the different school of thought on the relationship between fiscal deficit and economic growth; section 1.3 shows the trend of fiscal deficits in relation to economic growth of Nigeria covering the period of three decades; section 1.4 deals with the empirical results showing output from the estimated model; and finally section 1.5 deals with the general conclusion and policy recommendations to the government of Nigeria and other developing countries at large.

2. REVIEW OF THE LITERATURE

In the economic literature, several empirical studies exists on the relationship between the fiscal deficit and economic growth in both developed and developing countries. Although the literature is diverse in terms of findings. While some studies indicate a positive relationship between fiscal deficit and economic growth, others established an insignificant findings. The theoretical evidence of these submissions could be traced back to the epistemological propositions of

Keynesian, Neo-Classical and Ricardian-equivalence approach, respectively. In this study, enormous literature were reviewed covering both developed and developing countries, and are sub-divided according to their respective school of thoughts.

2.1 Evidenced towards positive effect

The Keynesian proposition that fiscal deficit has a positive effect on economic growth is support in the literature by many studies including Aslam (2016) who examines the dynamic relationship between budget deficit and economic growth in Sri Lanka for the period spanning 1959 to 2013 using the annual times series data. To estimate the empirical findings, Johansen cointegration test and vector error correction model are utilised with the view to identifying the possible existence of long-run and short-run relationship between the variables. The result shows that budget deficit has a positive and significant impact on economic growth.

In addition, Nayab (2015) adopts several estimation techniques including Vector Autoregression (VAR) analysis, Johansen cointegration technique, vector error correction model, and granger causality test to examine the possible relationship between budget deficit and economic growth in Pakistan. Using time series data covering the period of 1976 to 2007, estimated finding shows the positive effect of fiscal deficit on economic growth, hence consistent with the Keynesian argument. In addition, the granger causality test indicates that GDP cause investment while investment cause deficit. Moreover, Kalim and Hassan (2013) investigate the effects of fiscal deficit on economic growth in Pakistan covering the period of 1976 to 2010. The study adopts international trade, broad money supply, debt servicing as essential determinants and factors affecting the fiscal deficit in the economy of Pakistan. Empirical evidence from the estimated results show that no any significant effects between fiscal deficit and economic growth in the long-run although, it is negative in the short-run period. While further results reveal the existence of positive relationship between fiscal deficit and other examined variables under considerations.

Furthermore, Kameda (2014) analyses the relationship between budget deficits, public debt, and long-term interest rates in Japan using annual data obtained from the ministry of finance covering a 10-year period. By adopting a reduced-form regression, the study reveals that deficit has a long-term positive effects on real interest rates. In addition, public debt also shows an effects but not as high as that of the deficit. Notably, the percentage increase in the forecasted and current deficit-to-GDP ratio elevates the real interest rates by 26 and 27 basis points, respectively. In addition, Nowak and Bista (2014) empirically investigate the macroeconomic implication of fiscal deficits in Nepal using time series data. Error correction mechanism and ARDL are utilised for the estimation, and the result shows that GDP growth rate, fiscal deficit, investment and consumption are cointegrated. Furthermore, fiscal deficits and the level of investment establish a positive and significant effect on GDP growth rate, whereas consumption

is negatively related to GDP growth rate, which is not significant in the long run but significant in the short run.

Likewise, Ramzan, Saleem and Butt (2013) investigate the effects of budget deficit on economic growth in Pakistan using a time series data covering the period spanning 1980 to 2010. Various techniques were adopted to estimate the empirical model including OLS regression analysis and Pearson correlation test. Finding shows that fiscal deficit has a positive and significant impact on economic growth for the period under consideration. While there exists a linear relationship between GDP, fiscal deficit and domestic credit, a non-linear relationship occurs between GDP, inflation and investment.

Similarly, Antwi, Zhao and Mills (2013) employed the granger causality test, cointegration technique and the vector error correction model to examine the effects of budget deficit and its sustainability on economic growth in Ghana for the period of 1960-2010 using annual time series data. The estimated finding shows evidence in favour of the sustainability of budget deficit at 10%, hence in favour of the Keynesian viewpoint that fiscal deficit has a positive impact on output growth. In addition, Adam and Bevan (2001) examine the relationship between deficit and economic growth in 45 developing countries. Fixed and random effects methods are used to estimate OLS equations using a group of transformed data with the view to removing country-specific fixed effects. The study adopts a panel of 45 non-OECD countries spanning the period of 1970-1999 and computes based on 5-year average. Finding shows that a threshold level of 1.5% of the deficit is essential for economic growth. Also, there is evidence of growth payoff to reducing deficits to this level and the effects disappears within fiscal adjustment.

In another development, Maji and Achegbulu (2012) adopt the OLS estimation technique to examine the effects of fiscal deficit on economic growth in Nigeria from 1970 to 2009 covering a 29-year period. The technique is utilised to obtain the numerical estimates of the coefficients in the given equation. Using budget deficit, broad money supply and GDP as the examined variables, result shows that budget deficit has a positive effect on economic growth. This implies that, one percent increase in the fiscal deficit leads to 7.5% increase in output growth within the sample period. Furthermore, Odhiambo, Momanyi, Lucas and Aila (2012) examine the relationship between fiscal deficits and economic growth and further investigated the transmission mechanism in which fiscal deficits have effects on the growth and development of the Kenyan economy. The paper adopts the exploratory and causal research designs and employed time series annual data for a period covering 1970 to 2007 to estimate the equations using OLS regression analysis. The result shows the existence of positive relationship between budget deficits and economic growth within the sample period.

Furthermore, Umaru and Gatawa (2014) examine the effects of fiscal deficit and government expenditure on economic growth in Nigerian for the period covering 1970 to 2011, and further evaluates the nature and direction of causality between economic growth and other examined variables in the model. The paper utilised the annual data and employed the Autoregressive Distributed Lag (ARDL) model to run the estimation. The estimated result shows the absence of causality between fiscal deficit and economic growth, and between recurrent expenditure and output growth. While the ARDL estimate reveals the existence of positive impact between fiscal deficit and economic growth, hence in conformity with the Keynesian viewpoint. In the same vein, Maji, et al. (2012) examine the causal relationship between fiscal deficits, economic growth and money supply in Nigeria using a Granger Causality Test. Results show that there is a causal relationship between fiscal deficits and economic growth in Nigeria. This implies that government fiscal deficits contribute significantly to economic growth. The result further shows that fiscal deficits granger causes money supply in Nigeria.

However, Umeora (2013) study the relationship between fiscal deficits and macroeconomic variables in Nigeria using an OLS estimation technique on time series data. The study indicates that there is a significant and positive relationship between economic growth and government deficits in Nigeria. Meaning that government deficit spending contributes positively to output growth within the review period. Further estimates reveal by Evdoridis (2000) concludes that, using a production equation in a two-sector model based on US economy, government deficits increase further the profits of the private sector as well as its investment expenditure, and also enhance the realisation of a surplus in the public sector hence leading to the aggregate growth of output. Furthermore, Nelson and Singh (1994) examine the link between deficits and growth in seventy LDCs. A modified version of Harrod-Domar growth model is formulated and estimated using cross-sectional data from a group of 70 developing countries. The study establishes weak evidence on the detrimental effect of budget deficits on economic growth in LDCs. The estimated coefficient was statistically not far away from zero. The study, therefore, concludes that government deficits contribute significantly to output growth in all the study economies.

2.2 Evidenced towards negative effect

The epistemological justification of the negative relationship between fiscal deficit and economic growth is theoretically underpinned by the Neo-Classical school. Studies in favour of this argument includes: Kurantin (2017) utilised a panel dataset between 1994 and 2014 to examine the effects of budget deficit on economic growth in Ghana. The study evaluates the Ghanaian experience on fiscal deficit and its implications on sustainable growth and development. Using an OLS technique to run the estimation, finding reveals that budget deficit has a negative effect on economic growth while investment shows a positive impact. This is in accordance with the theoretical explanations of the Neo-classical school.

Moreover, Arjomand, Emami and Salimi (2016) examine the role of deficit in ten selected countries within the Middle East and North African (MENA) region with particular emphasis on its effects on growth and productivity. The paper utilised the Estimated Generalised Least Square (EGLS) technique on a panel data covering the period of 2000 to 2013 using two different models. Model one used deficit as the dependent variable while the second model employed economic growth as the regressand. The overall result shows the existence of negative relationship between deficit and economic growth particularly in the second model, and also a negative relationship between labour productivity and deficit in the first model.

Furthermore, Zoto and Berisha (2016) examine the short-run and long-run effects of budget deficit on the economic growth of Albania using a time series data covering the period of 1993 to 2014. The study adopts the cointegration approach and granger causality test to determine the direction of causality among the variables in the model. The estimated finding indicates the existence of unidirectional causality between economic growth and budget deficit and vice versa, and no causality between foreign direct investment and budget deficit. Other result shows that budget deficit has a negative effect on economic growth, hence it is growth retarding.

In addition, Nkrumah, Orkoh and Owusu (2016) examine the effects and relationship between budget deficit and economic growth in Ghana using an ARDL estimation technique and trend analysis. The study employed the use of quarterly data from 2000 to 2015 in order to run the estimation and further determine the relationship. Estimated findings from ARDL method indicate the existence of long-run relationship among the variables, and established a negative effect between budget deficit and economic growth for the period under consideration. The result is consistent with the Neo-classical arguments that budget deficit does not contributes to output growth.

Similarly, Zuze (2016) adopts the VAR model, impulse response function and variance decomposition to investigate the relationship between fiscal deficit and economic growth in Zimbabwe using annual data for the period of 1980 to 2015. The Johansen cointegration test is also utilised and the estimate shows evidence of no cointegration among the variables, hence the need to use the unrestricted VAR. The overall result from the regression analysis established a negative relationship between fiscal deficit and economic growth, hence consistent with the Neo-classical hypothesis. In another development, Paiko (2012) utilised econometric models to evaluate the relative impact of deficit financing on private investment in Nigeria. The result shows a negative relationship between deficit financing and private investment in the period under consideration. This implies that deficit financing crowds out private investment thereby lowering the volume of economic activities and grossly affects the aggregate output growth in the economy.

Likewise, Haddad and Shakhathreh (2015) investigate the effects of budget deficit on economic growth in Jordan for the period of 1990 and 2013. Using annual data collected from central bank of Jordan, a regression analysis is utilised to estimate the empirical findings. Result shows a negative relationship between budget deficit and economic growth. In other words, an increase of one unit in the fiscal deficit will generate a corresponding decrease in GDP for the period under review. Again, Gale and Orszag (2003) examine the economic effects of the sustained budget deficit in Nigeria using a conceptual approach. The study holds the view that, the majority of the empirical evidence from literature reveals that long-term budget deficits reduce government saving and inflict significant long-run costs on the economy, hence, affecting the desired growth rate.

In another development, Mohanty (2013) examine the short-run and long-run relationship between fiscal deficit and economic growth in India using a time series data spanning the period of 1970 to 2012. The paper adopted a Johansen cointegration technique, vector error correction model and Granger causality test to estimate the empirical findings. While the estimated findings from Johansen cointegration test affirm the existence of long-run relationship among the examined variables in the model, the overall result indicates a negative relationship between fiscal deficit and economic growth. In other words, one percent increase in deficit leads to a significant decrease in GDP by 21% in the long-run. Further evidence reveal that post-reform's deficit has more negative impact relative to the deficit in pre-reform period.

Moreover, Fatima (2011) evaluates the effects of fiscal deficit on private investment and GDP in Pakistan using a time series data spanning the period of 1980 to 2009 collected from various sources including Pakistan Economic Survey. A simultaneous equations model consisting of two equations is utilised to investigate the relationship among the examined variables in the model, hence such model is called the two-stage least squares method (2-SLS). Estimated findings reveal that fiscal deficit has a negative impact on economic growth while investment and export established a positive effects on output growth rate.

Also, Ezeabasili, Tsegba and Ezi-herber (2012) investigate the relationship between fiscal deficit and economic growth in Nigeria using annual time series data for the period of 1970 to 2006. The study employed modelling techniques including cointegration approach and structural analysis to estimate the empirical result. The finding reveals that fiscal deficit established a negative effect on economic growth with an adjustment lag in the system. This implies that one percent increase in fiscal deficit leads to a corresponding decrease of about 2.3% in economic growth. On the other hand, there exists a strong negative correlation between government consumption expenditure and economic growth in the model. Nevertheless, Fatima, Ahmed and Rehman (2012) investigate the effects of budget deficits on economic growth of Pakistan using an OLS estimation technique. Empirical results show a negative relationship between budget

deficit and economic growth. This implies that deficits have a retarding effect on growth because public savings as well as revenues are not sufficient to finance public sector expenditure.

2.3 Evidenced towards neutral effect

Enormous empirical studies in the literature established the existence of no significant effect between fiscal deficit and economic growth, hence consistent with the theoretical submission of the Ricardian-equivalence approach. Literature in favour of this school include: Bhoir and Dayre (2015) investigate the impacts of fiscal deficit on the economic growth of India spanning the period of 1991 to 2014. The paper adopts an OLS estimation technique using time series data to examine the relationship among the variables. Estimated findings show no evidence of significant relationship between fiscal deficit and economic growth of India for the period under review. Given this result, the study concludes on the need for public sector to concentrate on the development of human indicators with the view to ensuring societal welfare and sustainable development.

In addition, Edame and Okoi (2015) examine the relative impacts of fiscal deficits on economic growth in Nigeria taking into cognisance the military and the democratic regimes within the period of 1980 to 2013. An OLS regression analysis and the chow test are used as the techniques for estimating the relationship among the variables. The result shows that fiscal deficits and capital formation in pre-democratic regimes has a significant and positive impact on output growth, while interest rate is not significant. On the other hand, fiscal deficit and interest rate has no impact during the democratic regime, although fixed capital formation is significant.

Furthermore, Iya, Aminu and Gabdo (2014) employed the use of OLS regression analysis, granger causality test and Johansen cointegration technique to investigate the effects of fiscal deficit on economic growth in Nigeria. Annual time series data obtained from official publications were used for the period of 1981 to 2009 to run the estimation. The result from the granger causality test indicates one-way causation from fiscal deficit to real GDP, domestic investment to real GDP and exchange rate to real GDP. Although, Johansen cointegration test indicates the absence of long-run relationship among the examined variables. In addition, the overall result indicates that fiscal deficit has no significant implications on economic growth for the period under review.

Likewise, Ajlouni (2013) investigates the effects of fiscal deficit within the context of the Jordanian economy. The paper examines the relationship between, before and after grant fiscal deficits with economic growth. Time series data covering 1990 to 2009 were employed to run the estimation on simple linear regression model. Result established a weak and insignificant positive correlation between GDP growth and fiscal deficit before grants while negative after grant in the short-run and long-run period, respectively. The author concludes that the findings

could not be used to either support or against the argument that fiscal deficit has an effect on economic growth. Hence, the study remains neutral supporting the theoretical argument of the Neo-Ricardian school.

Moreover, Velnampy and Achchuthan (2013) examine the effects of fiscal deficit on the economic growth of Sri Lanka covering the period of 1970 to 2010. The study used the regression analysis, correlation approach and one-way ANOVA test to estimate the empirical findings. The result shows the existence of no significant impact of fiscal deficit on the economic growth. This implies that, the relationship between fiscal deficit and output growth in the economy of Sri Lanka has no any significant effects within the sample period under consideration.

Similarly, Abeng and Alehile (2012) empirically analyse the behaviour of fiscal deficits in Nigeria using error correction mechanism and variance decomposition. The study establishes that while the accumulation of deficit is neither harmful nor causes any negative effects on the economic growth, government should be rational and adopt viable financing decisions and most importantly, an appropriate application of such funds in economically-viable schemes that can generate future returns. Likewise, Rahman (2012) adopts the ARDL model to investigate the relationship between budget deficit and economic growth in Malaysia. The study utilised the quarterly data covering the period of 2000 to 2011 with the aim of identifying the long-run relationship among the variables under consideration. The result shows no evidence of long-run relationship between budget deficit and economic growth, hence consistent with the Ricardian-equivalence perspectives. Other findings indicate that productive expenditure has a positive and significant relationship with the economic growth of Malaysia.

3. THE TREND OF FISCAL DEFICITS AND ECONOMIC GROWTH IN NIGERIA

Macroeconomic disequilibrium and structural instabilities persisted in Nigeria for several decades. This is more evidenced given the rapid decline and fluctuation in key macroeconomic indicators. As argued by Ezeabasili, Tsegba and Ezi-herber (2012), the fiscal deficit established a negative effect on output productivity, hence it is growth regarding. Over the years, fiscal deficit continue to increase as revealed in the CBN bulletin (2015) that, as at 1980, the overall deficits stood at ₦1.98 billion which is an equivalent of 4% of the GDP in that year. A gradual increase was noticed in 1982 to 6% but later begins to fluctuate in a decreasing manner to an average of 2% in 1985. This may be explained by the outcome of Austerity measures which the federal government implemented during the given period. In 1986, the overall federal deficit stood begins to increase to an average of 6.13% to which, leadership transition and change of government is responsible for such increased. From 1986 to 1989, the percentage continues to fluctuate to an average of 3% and 4%, respectively. Although, it indicates a decreased percentage

in contrast to previous years. With the introduction of Structural Adjustment Programme (SAP) in 1986, the average percentage of fiscal deficit continue to increase in a fluctuating manner throughout the period between 4%, 5% and 6% up to 1994, respectively. Between 1995 and 1996, no deficit is realised in the Nigerian economy. This is regarded as the aftermath effects of the SAP policy. However, the issue is different between 1997 and 1999 as the value begin to increase rapidly to an average of 6% in 1999. During this period, there is a political tension within the domestic economy as the country is surrounded with enormous uncertainties given the acceptance of democratic system of government. Even with the adoption of fiscal rule, the increasing deficits continued to hamper macroeconomic growth in Nigeria. In the year 2000, the value stood at 1.5% but later increases to an average of 3% between 2001 and 2002 but decline to 2% in 2003. This situation has attracted the attention of policy makers and specialist on the need for a reliable alternative. As such, there is debt cancellation in 2003, this measure and other favourable economic policies has drastically reduced the value of deficit to less than 1% up to 2008. From 2009, the value of deficits grew to over 3%percent, but consistently begin to decline to an average of 1% within the years up to 2015. The rising trend and fluctuation of these deficits over the three decades has produced many macroeconomic instabilities in the economy including decline in the nation’s growth rate.

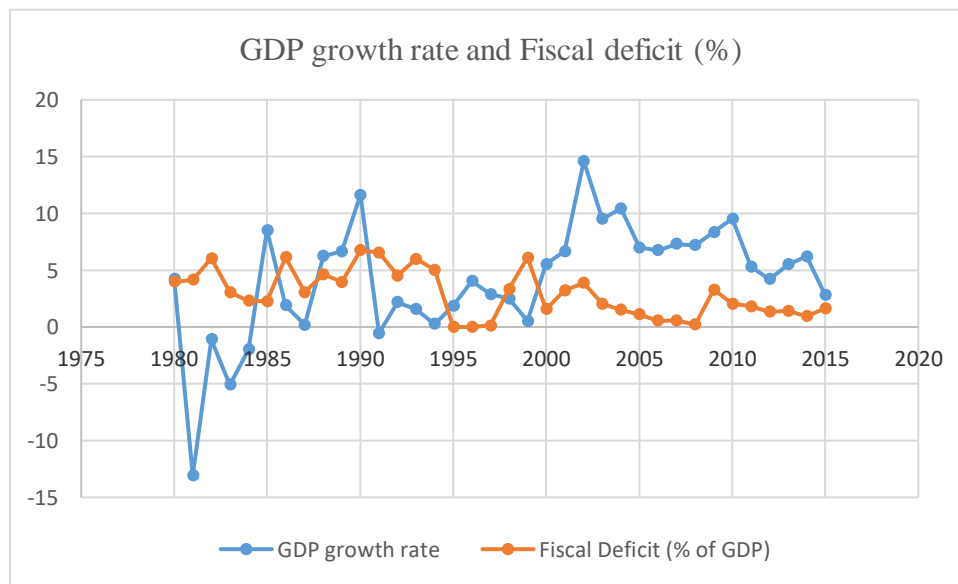


Figure 1: The trend of fiscal deficit and real GDP growth rate

By examining the trend of real GDP growth rate, the situation become more pronounced given the negative and decline percentage within the last three decades. An examination of the trend shows the value of growth rate in 1980 as 4.2%, but eventually begin to decrease to a negative percent of about -13.1% in 1981. This negative tendency continue to remain up to 1984 in which

similar scenario of negative growth rates of about -2.0% was realised. In 1985, the value stood at 8.5%, hence the outcome of economic stabilisation and austerity measures. By 1986, it was 1.90% but begin to decrease in an increasing manner from 0.17% in 1987 and speed up to about 11.63% in 1990. Even though situation is different in 1991, as the growth rate recorded yet another negative value of -0.55%, but later increases to an average of 2-3% until the year 2000 where the value stood at 5.5%. This increasing trend in growth rates continues to occur up to 2010 where it stood at 9.54%. However, from 2010 to 2015, the value shows a declining rate from 5.13% in 2011 to an average of 2.79% in 2015. This percentage represents the lowest rate ever attained within the transition period of sixteen years since the change in leadership style and governance from the military rule to a democratic system of government. This however, indicates the extent of inefficiency by the fiscal authorities to ensuring sustainable growth and development within the market-oriented economy.

4. DATA SOURCE AND METHODOLOGY

This study utilised the annual time series data obtained from the official publication of Central Bank of Nigeria (CBN) covering the sample period of 1980 to 2015. Two variables are employed for the analysis namely; Fiscal Deficit (FD) and Gross Domestic Product (GDP). In addition, all the values of the variables are given in constant prices of local currency in Nigeria using 2010 base year and are measured in real term using the GDP deflator. However, the values of GDP are later transformed into logarithm in order to ensure the existence of appropriate scaling among the variables. Several techniques in the literature are used to analyse the effects of fiscal deficits on economic growth in both developed and developing countries. For the purpose of this study, the Vector Autoregression (VAR) analysis is adopted to estimate the empirical findings. The VAR model, particularly in time series analysis might be more strategic than structural econometrics model because the latter is more appropriate for the analysis of propositions of economic theory and are featured by a smaller forecasting capacity (Chris, 2008; Gujarati & Porter, 2009). In structural modelling, models are designed according to economic theory, while various restrictions are imposed during the estimation of parameters. The foremost restriction is the elimination restriction, which implies that any variable which does not explain the predicted behaviour of an indicator must be removed from the model, even if it is statistically significant. Later, Sims (1980) criticised the structural models and argued that when predictions of trends are made particularly using an economic indicator, the accuracy of the estimates should be highly considered, not following the postulation of economic theory. In view of that, the VAR model is give as:

$$Y_t = \alpha + \sum_{j=1}^K \beta_j Y_{t-j} + \mu_t \dots\dots\dots (1.1)$$

Where, Y_t = endogenous variable at time t in the model; α = matrix of reduced form coefficients to be estimated; $\sum_{j=1}^k \beta_j$ = summation of endogenous variables; β_j = individual coefficient (endogenous variable; Y_{t-j} = lag value of endogenous variable; j = discrete values (1, 2, 3...n); k = number of lag values; μ_t = impulse, shocks, innovations or surprise.

To examine the relationship between fiscal deficit and economic growth, the model is specified taking into cognisance the two examined variables under consideration:

$$GDP = f(FD) \dots\dots\dots (1.2)$$

Where, GDP = economic growth; FD = fiscal deficits

However, equation (1.2) is transformed into algebraic model as:

$$GDP_t = \alpha_0 + \alpha_1 GDP_{t-j} + \alpha_2 FD_{t-j} + \mu_1 \dots\dots\dots (1.3)$$

Where, GDP_t = the value of GDP at time t ; α_0 = intercept; GDP_{t-j} = lag value of the GDP at time $t-1$; $j= 1, 2, 3 \dots n$; FD_{t-j} = fiscal deficit at time t ; μ_1 = error term.

5. EMPIRICAL RESULT

Since data stationarity is an integral components of time series analysis, Augmented Dickey Fuller (ADF) method and Phillips-Perron (PP) test are employed. Once there is an evidence of stationarity at first difference $I(1)$, the next step is to determine the lag length for examining the relationship between the examined variables in the model. Subsequently, the Vector Autoregression (VAR) analysis, the Johansen cointegration test, and Vector Error Correction Model (VECM) are applied to determine the existence of short-run and long-run relationship between fiscal deficit and economic growth.

5.1 Unit root testing

In this study, the stationarity property of the variables is tested using the ADF and PP tests. The rationale for using the two approaches is to get rid of the random walk which exists in the error terms. In addition, The ADF approach for unit root test is adopted because it controls for possible higher order serial correlation in the error terms by adding lagged difference terms on the right-hand side of the regression. While the PP test measures the possible existence of unit root in a sample of time series data which allows for autocorrelated residuals. However, the test controls the serial correlation and heteroscedasticity in the error terms without adding lagged difference terms. The PP test tends to be more powerful than the ADF test because it is more sensitive to

model misspecification. But, it has severe size distortions, especially when autocorrelations of white noise (ϵ_t) are negative. The estimated results are shown below:

Table 1.1: Estimated results of the ADF unit root test

Variables	Level	First difference	Result
GDP	-2.241612 p-value 0.4527	-5.114670* p-value 0.0000	Stationary at 1(1)
FD	-3.103538 p-value 0.1040	-7.323499* p-value 0.0000	Stationary at 1(1)

Note: *indicates stationary at all levels of significance

Table 1.2: Results of the PP unit root test

Variables	Level	First difference	Result
GDP	-2.692271 p-value 0.1342	-4.101292* p-value 0.0000	Stationary at 1(1)
FD	-3.000956 p-value 0.1079	-5.101262* p-value 0.0000	Stationary at 1(1)

Note: *indicates stationary at all levels of significance

The result in Tables 1.1 and 1.2 show the estimated outcome of the unit root tests based on the ADF and PP approaches. It can be observed from the aforementioned Tables that all variables have unit root (nonstationary) in their levels form but integrated at the same order 1(1). In other words, the result from both the ADF and PP tests indicate stationary at first difference 1(1) hence, all respective t-statistics are greater than their corresponding critical values at 1%, 5% and 10% levels of significance. This therefore establishes the finding that the time series properties of GDP and FD as used in this study are all first difference stationary. This result, allows for the estimation of Johansen cointegration test with the view to determining the existence of long-run relationship among the variables.

5.2 Lag order selection

In this section, estimated output for the chosen lag order according to the model selection criteria shall be presented. In this study, lag order 1 to 8 is used with the view to determining an optimal model such that the residuals generated by model at such given lag are normally distributed and free from serial correlation. The estimated results for the model selection are given in Table 1.3 as shown below:

Table 1.3: Optimal lag length

Lag order	LogL	LR	FPE	AIC	SC	HQ
0	-73.91158	NA	0.776128	5.422256	5.517413	5.451346
1	3.883259	138.9194*	0.003994*	0.151196*	0.436668*	0.238468*
2	7.597612	6.102151	0.004101	0.171599	0.647386	0.317052
3	8.538413	1.411202	0.005175	0.390113	1.056216	0.593747
4	10.923014	3.236281	0.005958	0.505497	1.361914	0.767312
5	16.59094	6.882449	0.005516	0.386361	1.433093	0.706358
6	19.84212	3.483411	0.006207	0.439848	1.676895	0.818026
7	26.96661	6.615598	0.005465	0.216670	1.644032*	0.653029
8	30.07645	2.443440	0.006694	0.280254*	1.897931	0.774794

Note: * indicates lag order selected by the criterion

Result from Table 1.3 shows the estimated findings from the model selection criteria at 5% level of significance. As it can be observed from the Table, all the selection criteria indicate lag at order 2 except the LogL. But at this lag, the model fails to satisfy the result of diagnostic test. However, at lag order 7 and 8, both the SIC and AIC show the presence of lag, respectively. For the purpose of this study, lag order 8 as chosen by the AIC is selected because it satisfies the requirement of a good model since there is absence of serial correlation, heteroskedasticity, and the residuals are normally distributed. Also, it is the only lag that indicates cointegrating equations in both the trace statistics and maximum Eigen value as against the other lags that indicates no cointegration relations.

5.3 The results of cointegration test and error correction term

Given that the variables are first difference stationary, Johansen cointegration test becomes appropriate for this study to determine the existence of long-run relationship among the variables in the model, as such, both the trace statistics and the maximum Eigen value test are explored. The result is presented as shown below:

Table 1.4: Johansen cointegration test (Trace statistic)

Hypothesized number of cointegrating equations	Eigen Value	Trace statistic	Critical value (5%)	Probability**
None*	0.808783	63.68686	25.87211	0.0000
At most 1*	0.505608	19.01950	12.51798	0.0036

Note: Trace statistic indicates 2 cointegrating equations at 5% level of significance

*denotes rejection of the hypothesis at the 5% level of significance

**MacKinnon-Haug-Michelis (1999) p-values

Table 1.5: Johansen cointegration test (Maximum Eigen value)

Hypothesized number of cointegrating equations	Eigen Value	Max-Eigen Statistic	Critical value 5%	Probability**
None*	0.808783	44.66736	19.38704	0.0000
At most 1*	0.505608	19.01950	12.51798	0.0036

Note: Max-eigenvalue test indicates 2 cointegrating equations at 5% level of significance

*denotes rejection of the hypothesis at the 5% level of significance

**MacKinnon-Haug-Michelis (1999) p-values

Result from Tables 1.4 and 1.5 show the estimated findings from the cointegration test. In Table 1.4, findings indicate that two cointegrating relationships as evidenced by the trace statistics of 63.68 and 19.01 which are found to be greater than their corresponding critical values of 25.87 and 12.51, respectively. In addition, all their probability values are found to be statistically significant at 5% levels. On the other hand, Table 1.5 shows evidence of 2 cointegrating equations as revealed by the maximum eigen value statistics of 44.66 and 19.01 which are greater than their critical values of 19.38 and 12.51, respectively. Interestingly, all their p-values are significant at 5% level. This indicates the existence of long-run relationship between fiscal deficit and economic growth within the sample period under consideration, and also necessitates the rejection of the null hypothesis that there is no cointegrating relationship among the examined variables in the model. However, this result has paved the way for the estimation of VECM in the study.

Table 1.6: Vector Error Correction model

Error correction	Variables	
	D(REAL GDP)	D (DEFICITS)
CointEq1	-0.186037 (0.07412) [-2.51003]	-7.940614 (5.49496) [-1.44507]
D(REAL GDP(-1))	-0.010353 (0.29616) [-0.03496]	-0.596295 (21.9572) [-0.02716]
D(REAL GDP(-2))	0.212000 (0.28426) [0.74579]	-22.85815 (21.0746) [-1.08463]
D(DEFICIT(-1))	0.059287 (0.02694) [2.20074]	2.513610 (1.99725) [1.25854]

D(DEFICIT(-2))	0.0525335 (0.02260) [2.32414]	2.037973 (1.67584) [1.21609]
C	0.041562 (0.01902) [2.18473]	0.809003 (1.41039) [0.57360]

Note: () indicates the values of standard errors while [] shows the values of t-statistics

Table 1.6 shows the result of error correction estimates based on the associated log-run coefficients. In the estimation process, lag order 8 is used to conduct the analysis but only reports lag order 2 in the aforementioned table. As can be observed, the value of ECM_{-1} is negative and statistically significant in the estimation, hence desirable. Though the value of the coefficient shows a low (18%) convergence, it validates the possible return to the long-run equilibrium in the present period. A critical discussion of the error term is high essential in the analysis of cointegration. The degree of the coefficient confirms the absence of redundant regression, hence the coefficients are well determined given the significance of the t-test.

Table 1.7: The estimated model

Dependent Variable: REAL GDP				
Method: Least Square				
Included observations: 36				
Variables	Coefficient	Std. Error	t-Statistic	Probability
Deficit	-0.181140	0.098785	-1.833678	0.0075
C	10.53386	0.350212	30.07853	0.0000
<i>R-squared: 0.89</i>				
<i>Adj. R²: 0.63</i>				

The result in Table 1.7 shows the impact of the variables which are further measured using the Ordinary Least Square (OLS) estimation technique. The coefficient of deficit is significant at 5% level with a given p-value of 0.0075 and the constant is also significant with a corresponding p-value of 0.0000 at 5% level indicating that there are other variables that affect real GDP in Nigeria apart from the fiscal deficit. The overall finding indicates that fiscal deficit has a negative relationship with economic growth. In other words, one percent unit increase in fiscal deficit leads to a corresponding decrease in GDP by 18% within the sample period. The value of R^2 is found to be 0.89 indicating that 89% of the changes in GDP is explained by the explanatory variable in the model, while the goodness of fit of the regression model is also high after adjusting for the degree of freedom as revealed by the adjusted R^2 value of 63%. This result is

also consistent with the theoretical proposition of the Neo-classical school of thought and supported in the literature by Ezeabasili, Tsegba and Ezi-herber (2012) who maintained that deficit inflicts a negative effect on output growth in Nigeria.

5.4 The result of Impulse Response Function (IRF) and the Variance Decomposition (VD)

In order to generate further information on the causal impacts of fiscal deficits on economic growth, the analysis of IRF and its corresponding VD of the error correction term are utilised. Given this situation, a shock in either of the variables in error term affects not only the variables directly but it is transmitted to other endogenous variables in the model through the dynamic lag structure of the error term. As such, the VD provides information on the relative significance of each of the random shock to the endogenous variables in the error term. Within the system of VAR, shocks to an individual variables can generate variations in itself and other variables while the IRF traces the dynamic response of the variables due to this shock in the estimated model.

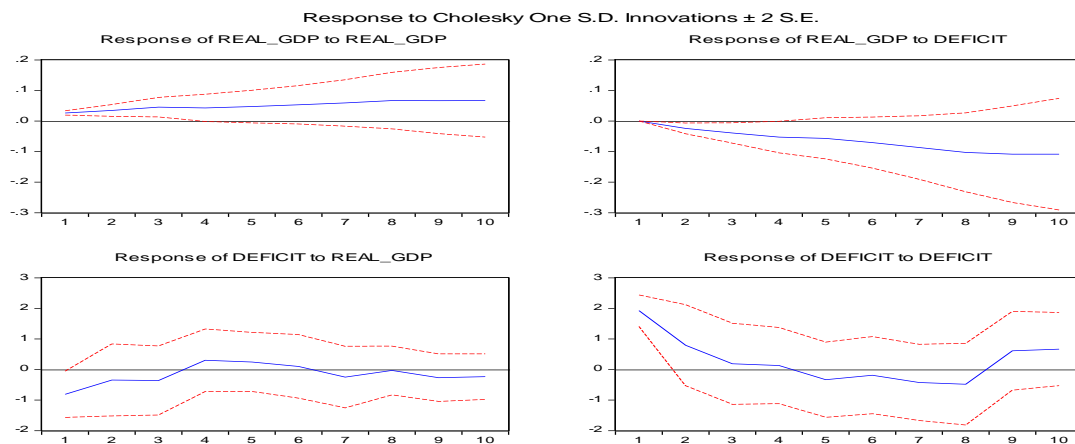


Figure 2: The result of impulse response function

The output in figure 2 shows the result of impulse response function generated from its corresponding variance decomposition. With this result, it is possible to see whether an impulse in a particular variable leads to a decrease or increase in another variables of the same model. In the entire 10-year horizon, one-standard deviation positive shock in GDP affects itself throughout the period with a positive response indicating its own effects in the model. On the other hand, the coefficient of fiscal deficit generates a negative response in the entire horizon showing its inverse relationship with the economic growth. This result therefore, has provides further evidence and confirms the negative effect of fiscal deficits on economic growth in Nigeria for the sample period under consideration. In addition, further estimates are provided by the VD analysis as shown below:

Table 1.8: The result of Variance Decomposition (VD)

Variance Decomposition of REAL_GDP:			
Period	S.E.	REAL_GDP	DEFICIT
1	0.026445	100.0000	0.000000
2	0.049835	76.54559	23.45441
3	0.077868	65.31905	34.68095
4	0.103240	54.49215	45.50785
5	0.126960	49.91188	50.08812
6	0.154638	45.46813	54.53187
7	0.186885	41.13547	58.86453
8	0.223442	37.75506	62.24494
9	0.257209	35.22871	64.77129
10	0.287104	33.72598	66.27402

Table 1.8 shows the result of VD for GDP and deficit using the GDP model. The analysis is based on 10-year period, hence the last value for each variable considered as long-run effect is the basis of this analysis. In the second period, the GDP (economic growth) explained its own shock with high error variance (76%) even though the other variable in the system will be affected by the shock. As can be observed from the aforementioned Table, fiscal deficit explained more than 66% of the variations in economic growth during the long-run period (10th-year) implying the strong effects of deficit on output growth, while GDP explained its own variations to about 34% of future changes in the long-run period. Therefore, fiscal deficit is an essential determinant of economic growth. Since the VD only shows the relative importance of a variable to movement in another variables of the model, it is the IRF that shows the direction of these movement.

5.5 Result of the diagnostic tests

In order to ensure validity of these findings, several diagnostic tests are conducted in this study including serial correlation test, heteroskedasticity test, normality test and VAR stability check. This is relevant in the analysis of time series otherwise the properties or status of the residuals generated by the model will be unidentified to the estimation. For this given reason, the VAR residual serial correlation LM test is conducted and the result shows no evidence of serial correlation as the p-values are all insignificant in the estimation, hence an essential condition. In addition, VAR residual heteroskedasticity test indicates the absence of heteroskedasticity as the

p-value is found to be 0.2834, hence insignificant. Furthermore, VAR residual normality test shows that the model is normally distributed since the joint probability and the Jarque-Bera statistics are all found to be insignificant in the estimation, while the VAR stability check indicates that all roots have modulus less than one and no root lies outside the unit circle.

6. CONCLUSION AND RECOMMENDATIONS

The effects of fiscal deficit on economic growth is among the deliberated thought both in theory and in the developing countries including Nigeria. This is because, fiscal deficit has a serious implications on the aggregate economic and social welfare of a given economy. In theory, the Keynesian school of thought advocates for the positive effects of fiscal deficit on economic growth, the Neo-classical shows evidence in favour of negative effects between the concepts, while the Ricardian-equivalence establish no effect between the two variables. In Nigeria, the issue of fiscal balance remain a prime macroeconomic objective of the economy. It is in view of this scenario that, this study examines whether fiscal deficits have significant impacts on the Nigerian economy. The study explore the trend of fiscal deficits over the three decades from 1980 to 2015 and showcase its implications on output growth and other macroeconomic indicators. Estimated result from the Johansen cointegration test indicates two cointegrating relations between the variables as revealed by both the trace statistics and the maximum eigen value, while the error term is found to be negative and significant indicating a moderate convergence to the long-run equilibrium. It is established by the trend analysis that fiscal deficit adversely affects output growth rates and this situation has been prominent in the domestic economy from the last three decades. Other empirical results show evidence in favour of the negative effect of deficits on economic growth within the sample period. This result is consistent with the epistemological approach of Neo-classical theory who established that deficit has growth-retarding effects on the economy. There is need for appropriate accountability in the public sector such that all spending are justified, and government activities are directed in accordance with the principles of equity and efficiency. The public sector should adopts feasible policies both monetary and financial in order to realise a balanced budget and encourage the national economy with the view to achieving social and economic welfare.

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