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Fiscal Imbalance and Macroeconomic Instability in Nigeria: Implications for National Development

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Abstract: This paper sought to investigate the influence of fiscal imbalance on inflation and economic growth in Nigeria for the period 1981 to 2019. In this paper, we utilized the ordinary least squares (OLS) approach in achieving the set objective. The correlation analysis was also utilized to ascertain the nature of the relationship between fiscal imbalance and inflation and economic growth. The correlation analysis revealed that fiscal imbalance has a positive relationship with economic growth, but a negative relationship with inflation. From the regression analysis, it was discovered that fiscal imbalance has a positive and significant effect on economic growth. However, the effect of fiscal imbalance on inflation was negative and statistically significant. Though fiscal imbalance may propel economic growth, it tends to accelerate inflation in the Nigerian economy over the study period. The policy implication of these findings for national development is that fiscal imbalance should be augmented with the appropriate discretionary monetary policy to achieve economic growth and price stability simultaneously.

Keywords: macroeconomic management; budget deficit; fiscal policy; Olivera-Tanzi effect.

JEL Classification: C13; E31; E61; E62; H3; H61; H62

1. Introduction

Maintaining a sound fiscal policy action is desirable for maintaining macroeconomic stability and achieving sustainable national development. Fiscal imbalance can pose

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serious issues to the management of the overall economy at any point in time. In augmenting these fiscal imbalances, the government applies several policies towards financing them. Such financing can in Nigeria emanate from domestic debt, foreign debt, and the banking system (including the central bank, deposit money banks, non-bank public, and privatization proceeds).

In financing such imbalances, further problems are generated within the economy. The Traditionalists believe that an increased budget deficit poses serious harm to the economy while the Ricardians believe that public debt does not exert any harm on the economy. Such problems, as pointed out by Nayab (2015), include increased level of inflation, increased public debts in the economy, deficit of current account, and reduced economic growth. As pointed out by Boariu and Bilan (2007), inflation can also be seen as the outcome of debt bankrolling of the fiscal imbalance, when it incidentally embroils the proliferation in the quantity of money obtainable in the economy beyond what is essential".

From the above, theory has established that fiscally dominant nations that run persistent budget deficits will have to finance such through the creation of money (known as seigniorage), which is a driving force to inflation (Sargent and Wallace, 1981).

In some studies, fiscal imbalance has been regarded as an important variable that fuels inflation in an economy (Ljunqvist & Sargent, 2000; and Fisher, Sahay and Vegh, 2002). The fiscal view also recognizes that less effective tax collection, political uncertainty, and reduced access to borrowing threaten to lower the relative cost of seigniorage and increase reliance on the "inflation tax," as Catao and Terrones (2003) point out (Calvo & Vegh, 1999). A counter-argument on this has been that "a common criticism of this stress on the budget deficit is that the data rarely shows a strong positive association between the size of the budget deficit and the rate of inflation" (Blanchard & Fisher, 1989).

The financing of the fiscal imbalance can be either monetary financing or debt financing. Monetary financing entails issuing of new money in order to finance the surplus of public expenditures generating budget deficits (Boariu & Bilan, 2007). It has also been put forward that monetary financing is utilized to finance the budget deficit only when governments "force the issuing of money by putting into circulation more money that are normally necessary" (Filip, 2002). As governments mostly employ issuing new money to finance unproductive expenses, it is generalized that financing budget deficits by money issuing certainly conducts to inflation (Boariu & Bilan, 2007). In regards to debt financing, the government embarks on public borrowing to finance the budget deficit. Public loan can encompass many undesired effects. It results to "the amassing of public debt and to the increase in interest payments, which determines an increase in the budgetary expenses that states have to cover" (Boariu & Bilan, 2007).

Given that fiscal imbalance may generate macroeconomic instability such as fluctuations in output growth, rise in the price level, crowding out of private investment, and possibly tantamount to declining employment, studies have been conducted to ascertain the possibility of such scenarios. In regards to the effect of fiscal imbalance and economic growth, contrasting results have been reported in the literature. Some studies (Bose, 2007; Ahmad, 2013; Pelagidis & Desli, 2014) reported a positive effect of fiscal imbalance on economic growth; while studies like Karras (1994) Cebula (1995); Hassan et al. (2014); Ghura (1995); Augustt et al. (2015); Biza et al. (2015); Fatima et al. (2012); Van and Sudhipongpracha (2015); and Tung (2018) all reported a negative effect of fiscal imbalance on economic growth. Meanwhile, studies like Rahman (2012) Velnampy and Achchuthan (2013) have reported a neutral ground on the effect of fiscal imbalance on economic growth.

In regards to the linkages between inflation and fiscal imbalances, conflicting empirical results have also been reported irrespective of the fact that the direction of the connection is usually accepted to be from deficits to inflation (Ahking & Miller, 1985; Dwyer, 1982; Hondroyiannis & Papapetrou, 1997). Given these scenarios of conflicting findings, this paper, therefore, seeks to examine the influence of fiscal imbalance on macroeconomic stability in Nigeria. Specifically, the paper seeks to investigate the influence of fiscal imbalance on economic growth; and to ascertain the influence of fiscal imbalance on inflation in Nigeria. The study is conducted to cover the period 1981 to 2019, and the ordinary least squares (OLS) approach is employed in the methodology of the research.

This paper is structured in five sections. Section I is the introductory part of the study. Here, we briefly discuss what we intend to study and as well set the pace for further discussion in section II. In section II, both the theoretical and empirical literature are reviewed accordingly. The theoretical literature includes the monetarist view of inflation as well as the development theory of public expenditure. Meanwhile, the empirical literature reports the empirical evidence of earlier studies on the influence of fiscal imbalance on inflation and economic growth. such effects have also been pictured under positive, neutral, and negative effects. In section III, the methodology of the research is presented including the technique of analysis, model specification, and sources of data. Section IV presents the empirical findings and discussion; while section V, being the last section of the paper, presents the conclusion and recommendations from the study.

2. Literature Review

The literature review captures both the theoretical and empirical literature. The theoretical literature focuses on the monetarist view of inflation as well as the development theory of public expenditure. In the empirical literature, the empirical

findings of the study related to fiscal imbalance and inflation as well as fiscal imbalance and economic growth are considered.

2.1. Theoretical Literature

Money supply, according to monetarists, is what causes inflation. Money supply rises for a long time if fiscal policy is accommodating to a budget deficit. As a result of the deficit funding, aggregate demand rises, allowing production to rise past its normal level. Growing labour demand raises wages, which leads to a downward change in overall production. For a while, the economy returns to its normal productivity level. This, however, comes at the cost of ever-increasing inflation (Solomon & de Wet, 2004).

Budget deficits can cause inflation, according to monetarists, but only to the degree that they are monetized (Hamburger and Zwick, 1981). Changes in the money supply are closely related to changes in the inflation rate in monetarist (and neoclassical) models. In general, the budget deficit does not create inflationary pressures in and of itself; rather, it influences the price level through its effect on money aggregates and public perception, which in turn causes price movements. The money supply causality relation is based on Milton Friedman's popular money theory, which states that "inflation is a monetary phenomenon anywhere and at all times" (Solomon & de Wet, 2004). According to the theory, continued and continuous price increases must be followed or supplemented by a steady rise in the money supply. The inter-temporal budget constraint operates through the expectations relation of causality, which states that a government with a deficit must run potential budget surpluses in present value terms (Walsh, 1998).

Increased seignorage taxes may be one way to create surpluses, allowing the public to predict potential money growth. The related impact of inflation on unpaid loans, tax receipts, and expenses are often considered when discussing the deficit-inflation relationship. The complicated relationship between government deficits and inflation could go either way. Either the impact of inflation on reducing the actual value of loans dominates, or inflation worsens the government's fiscal situation due to collection lags, reducing the government's real revenue (Dornbusch, 1990). This decrease in income is acknowledged as a factor in the inflationary mechanism, as it increases the money supply to fund these inflation-induced deficits (Tanzi, 1991; Aghevli & Khan, 1978).

The role of government spending in the economy needs not to be overemphasized, though extravagant spending can also be detrimental to the economy. The development model of government expenditure is also explained as a theoretical basis for this study. This approach was developed by Musgrave and Roster. They claimed that in the early stage of economic development, the expenditure as

compared to other sectors of the economy would be high. The government takes responsibility for the provision of economic and social overheads, such as roads, hospitals, water, electricity, sanitation, etc. as well as directly involved in the production of goods and services. These expenditures are crucial to put the economy on the path of sustainable growth and development. In the middle stage of development, public expenditure will be much lower because public investment is complementary to private sector investment. In this stage, public investment will be restricted to the provision of infrastructures. It follows from this theory that the government can resort to a policy of deficit budget so as to spur development and economic progress when the need arises.

2.2. Empirical Evidence on Fiscal Imbalance and Inflation

The empirical research on the relationship between deficits and inflation has shown contradictory findings. While the trajectory of causation from deficits to inflation is widely agreed upon, empirical evidence on this unidirectional causation remains inconclusive (Ahking & Miller, 1985; Dwyer, 1982; Hondroyiannis & Papapetrou, 1997). While some surveys find data to support the idea that deficits fuel inflation, many others find no substantial evidence.

Aghevli and Khan (1978), Barnhart and Darrat (1988), and Hondroyiannis and Papapetrou (1997), however, "find a bidirectional relationship between deficits and inflation". The majority of empirical works have used 'adhoc methods based on econometric techniques'. The relationship has historically been studied through the lens of the "relationship between money growth and inflation". Many studies directly or indirectly hold the monetarist assumption, which holds that inflation is mostly caused by a rise in the money supply. Even some reports that challenge the unidirectional association between deficits and inflation assume a causal relationship between money growth and inflation (see De Haan & Zelhorst, 1990; Hondroyiannis & Papapetrou, 1997; Hamburger & Zwick, 1981; McMillin & Beard, 1982).

The most popular methodological approach for investigating the deficit-inflation relationship has been to use a single equation model for money growth or inflation, with deficits treated as an exogenous variable, among other things (Ahking & Miller, 1985; McMillin & Beard, 1982). These estimates were used to draw conclusions, and a favourable and statistically meaningful coefficient on the deficit variable was used to support the hypothesis that deficits cause money growth and/or inflation. The probability of a reverse causation from inflation to deficits is usually ruled out of such a single equation solution.

It seems that the "budget deficit-inflation" relation has a two-way relationship, that is, not only does "the budget deficit cause inflationary pressure by its effects on money and aspirations, but high inflation also has a feedback effect, driving up the

budget deficit" (Solomon & de Wet, 2004). Essentially, this procedure operates around large delays in tax collection. The issue is that the time of accrual of tax liabilities and the time of final payment do not correspond with payment made at a later date. As a result, high inflation over such a period gap lowers the actual tax burden. As a result, we may see the following self-reinforcing phenomenon: the continuation of the budget deficit supports inflation, which reduces real tax revenues; a decrease in real tax revenues necessitates more reductions in the budget deficit, and so on. This is known as the "Olivera-Tanzi effect" in economic literature (Solomon & de Wet, 2004).

According to Sachs and Larain (1993), data from the developing countries in the 1980s confirms the conclusion that this self-strengthening mechanism will destabilize an economy and lead to extremely high inflation. Some analysts still contend that "funding a fiscal shortfall by accumulating domestic debt seems to merely delay the inflation levy" (Solomon & de Wet, 2004). If the government covers the deficit by issuing money today, the cost of paying current government debt will be lighter in the future. Interest costs that would otherwise lead to government spending in subsequent years would not put extra strain on fiscal authority, and the deficit will not grow with time. According to Sachs and Larrain (1993), "borrowing today will defer inflation, but at the cost of much higher inflation in the future" (Solomon & de Wet, 2004).

Solomon and de Wet (2004) studied how budget deficit affects inflation in Tanzania. The paper reported that the country has experienced limited high rate of inflation in the face of high fiscal deficit. As such, the study was geared towards investigating the deficit-inflation linkages in the economy of Tanzania for the period 1967 to 2001. From their empirical findings through dynamic simulations, they reported significant inflationary effect of the budget deficit when it is being monetised.

In Nigeria, a study on the effect of fiscal deficit on inflation was being carried out by Ezeabasili, Mojekwu, and Herbert (2012). The study was conducted using time series data for the period 1970-2006. The technique of analysis was the cointegration approach. From the result, it was discovered that fiscal deficit exerted a positive, but insignificant, effect on the rate of inflation in Nigeria. Similar evidence was reported by Anayochukwu (2012) while attempting to examine if fiscal deficit triggers inflation in Nigeria.

Similarly, Awe and Shina (2012) conducted a study to investigate the linkages between fiscal deficit and inflation in Nigeria. The study covered the period of 1980 to 2009. With the Vector Error Correction Mechanism in use, it was reported that a significant unidirectional causation flows from budget deficit to inflationary pressures in the Nigerian economy.

Still, on the direction of causality between budget deficit and inflation in Nigeria, Onwioduokit (2005) reported that fiscal deficit cause inflation in Gambia; Oladipo

and Akinbobola (2011) also reported that causality flows from budget deficit to inflation in Nigeria; however, Ogunmuyiwa (2011) reported that causality flows from inflation to budget deficit in Nigeria. A study from Folorunso and Falade (2013) reported a two-way causality flowing between budget deficit and inflation. That is, budget deficit causes inflation and inflation, in turn, causes budget deficit.

2.3. Empirical Evidence on Fiscal Imbalance and Economic Growth

In examining the effect of budget deficit on economic growth, the empirical findings yielded both negative and positive results. The negative results are recorded in empirical studies such as Karras (1994), Cebula (1995), Hassan et al. (2014), Ghura (1995), Augustt et al. (2015), Biza et al. (2015), Fatima et al. (2012), Van and Sudhipongpracha (2015), and Tung (2018). Karras (1994) conducted a panel analysis to investigate the issue of budget deficit in 32 countries for the period 1950 – 1989. Evidence from the study revealed that budget deficit exerted a negative impact on the growth rate of real output of the economies. The study linked the negative impact to the fact that governments are likely to run a deficit in periods of sluggish growth than during booms.

In examining the effect of budget deficit on economic growth of the US economy, Cebula (1995) utilized quarterly data that covered the period 1955 – 1992. In his study, he realized that both budget deficits and personal income tax impede growth. Also, Hassan, Nassar and Liu (2014) examined the linkages between deficit spending and economic growth in the United States. Using time series data for the economy, the study also revealed that deficit spending had a detrimental effect on economic growth, but generated the desired negative effect on unemployment.

Similarly, same was conducted by Ghura (1995) on 33 Sub-Saharan African countries for the period 1970 – 1987. The study also affirmed that budget deficit had a devastating effect on economic growth of the countries under consideration. Meanwhile, Augustt, Adu and Frimpong (2015) conducted a similar study in Ghana using data from 1960 – 2012. In their study, they concentrated on tracing the direction of causality between fiscal deficit and economic growth. Their findings showcased that a bidirectional causality flows between fiscal deficit and economic growth of the country.

In South Africa, Biza, Kapingura and Tsegaye (2015) conducted a study to investigate the effect of budget deficit in influencing private investment. The study used quarterly data which spans through 1994 – 2009. Using the cointegration approach and vector auto-regression approach, it was realized that budget deficit truly crowds out private investment, which tantamounts to a negative impact of budget deficit on economic growth. such negative impact is adduced from the fact

that decline in investments culminates in a slowdown in economic growth and productivity.

In Pakistan, Fattima, Ahmed, and Rehman (2012) conducted similar study using time series data for the period 1978 to 2009. A similar negative effect of 'a negative effect of budget deficit on economic growth' was recorded. In Japan, Kameda (2014) examined the linkages between budget deficit and some macroeconomic variables in the economy as at 2008. The finding was that budget deficit generated about 0.39% - 0.63% decline in economic growth of the country.

Van and Sudhipongpracha (2015) investigated the effect of budget deficit Vietnamese economic growth. The study employed times series data for the period 1989 – 2011. It was realized that budget deficit does not have a direct relationship with productivity and growth of the economy of Vietnam. Meanwhile, foreign direct investment was being noted to be a growth-inducing variable.

In the same vein, in studying the effect of budget deficit on the growth potential of emerging economies with special emphasis on Vietnam, Tung (2018) gathered quarterly time series data for the period 2003 to 2018 to examine such effect. Using the error correction model, the study revealed the existence of a strong cointegration between fiscal deficit and economic growth of the Vietnamese economy. Meanwhile, fiscal deficit was reported to have a detrimental effect on economic growth over the study period. Fiscal deficit was also being reported to have a dangerous effect on key macroeconomic variables such as net exports, private domestic investments, and foreign direct investment. The paper calls for the need to reduce fiscal deficit if sustainable economic growth is to be achieved.

In Nigeria, Aero and Ogundipe (2018) examined the effect of fiscal deficit on the growth of Nigeria's economy. Time series data for the period 1981 to 2014 were utilized in the course of the study. The study revealed that fiscal deficit exerted a negative and significant effect on the growth of Nigeria's economy. The study recommended that a threshold level of 5% which is favourable for growth. Similarly, Sanya and Abiola (2015) examined the impact of budget deficit on the growth of Nigeria's economy. Using the ARDL approach, their study revealed that budget deficit is a key indicator of macroeconomic instability and its effect on growth is negative.

The positive effect and neutral effect of fiscal deficit on economic growth have also been recorded in empirical works like Bose (2007), Rahman (2012), Velnampy and Achchuthan (2013), Ahmad (2013), and Pelagidis and Desli (2014). In Malaysia, Rahman (2012) examined the relationship between budget deficit and economic growth. the study utilized quarterly data for the period 2000 to 2011. The result indicated that fiscal deficit and economic growth do not have any long-run relationship. In the economy of Sri Lanka, Velnampy and Achchuthan (2013) utilized time series data for the period 1970 to 2010 to examine the effect of fiscal

deficit on economic growth. the result of their findings indicated that no relationship existed between budget deficit and the growth of Sri Lankan economy.

In studying the effect of fiscal deficit on economic growth of developing economies, Bose (2007) established a positive relationship between budget deficit and economic growth. In examining the effect of fiscal deficit on Pakistan's economic growth for the period 1971 to 2007, Ahmad (2013) recorded a positive but insignificant effect of budget deficit on the growth of the economy of Pakistan. In the same vein, Pelagidis and Desli (2014) examined the potency of fiscal policy in catalysing growth in European countries. As argued by the authors, higher business profits are attributed to fiscal deficit and as such, it propels growth. in their empirical evidence, a positive relationship between fiscal deficit and the profitability of capital was recorded.

Also, Nayab (2015) studied the impact of fiscal deficit on the economic growth of Pakistan. The study covered the period 1976 to 2007. The methodology of the research follows the cointegration and VAR Granger causality test. From the result, it was revealed that budget deficit does not cause economic growth but that there is a positive effect of budget deficit on economic growth of Pakistan.

3. Methodology

3.1. Basic Study Design

This paper applies the Ordinary Least Squares (OLS) approach to ascertain the influence of fiscal imbalances on inflation and economic growth in Nigeria for the period 1981 to 2019. The OLS approach is utilized because of its BLUE properties (i.e., best, linear, unbiased estimate). Data were obtained from secondary sources which include the Central Bank of Nigeria statistical bulletin and the World Bank database on World Development Indicators. The data are analysed using Eviews 10 software package.

3.2. Model Specification

In specifying the model for the study, the objectives of the study are taken into consideration. In that way, we build two separate models so as to achieve them.

Model I: The model captures the influence of fiscal imbalance on economic growth in Nigeria. using the simple neoclassical growth model that output (Y) is a function of capital (K) and labour (L), the growth model is specified as follows:

$$Y = f(K, L) \quad (1)$$

Incorporating fiscal imbalance and other control variables, Equation (1) becomes:

GDP = *f*(CAP, LAB, FIM, MSS, EXR) (2)

Where:

GDP = real gross domestic product (aggregate output being a proxy for economic growth)

CAP = gross fixed capital formation (a proxy for capital input)

LAB = labour force (a proxy for labour input)

FIM = fiscal imbalance (measured as budget deficit and budget surplus)

MSS = broad money supply

EXR = exchange rate

Transforming Equation (20 into its estimable form gives rise to Equation (3) as follows:

$$GDP = \delta_0 + \delta_1 CAP + \delta_2 LAB + \delta_3 FIM + \delta_4 MSS + \delta_5 EXR + \mu_1 \quad (3)$$

Where δ_0 is the constant of the regression function; δ_1 to δ_5 are the parameters to be estimated (the slope coefficients); and μ_1 is the error term for Model I which is assumed to be white noise.

Model II: In the second model, the role of expectation, fiscal imbalance, and other control variables are captured while estimating the inflation function. The functional form of the model is expressed as:

INF = *f*(INF(-1), FIM, GMSS, EXR) (4)

Where:

INF = inflation rate

INF(-1) = lagged value of inflation

FIM = fiscal imbalance

GMSS = growth rate of broad money supply

EXR = exchange rate

Equation (4) is transformed into in its estimable form as follows:

$$INF = \vartheta_0 + \vartheta_1 INF(-1) + \vartheta_2 FIM + \vartheta_3 GMSS + \vartheta_4 EXR + \mu_2 \quad (5)$$

Where ϑ_0 is the constant; ϑ_1 to ϑ_4 are the parameter estimates; and μ_2 is the error term for Model II which is assumed to be normally distributed.

4. Empirical Findings and Discussion

The empirical analysis starts from the correlation analysis for both the variables in Mosel I and II, then progressing to the OLS estimation and necessary post estimation tests.

4.1. Correlation Analysis

The correlation analysis is conducted per model to ascertain any possibility of multicollinearity.

Table 1. Correlation Matrix for variables in Model I

Variables	GDP	LAB	CAP	FIM	MSS	EXR
GDP	1.000					
LAB	0.972	1.000				
CAP	0.369	0.296	1.000			
FIM	-0.407	-0.340	-0.259	1.000		
MSS	0.935	0.894	0.403	-0.665	1.000	
EXR	0.911	0.959	0.333	-0.554	0.892	1.000

From the correlation matrix in Table 1, it is observed that labour, capital, money supply and exchange rate have a positive form of association with economic growth. this implies that as these variables increases, economic growth also increases and vice versa. Meanwhile, labour force, broad money supply, and exchange rate have strong correlation with economic growth as indicated by their correlation coefficient of 0.972, 0.935 and 0.911 respectively. Also, capital has a weak positive correlation with economic growth as indicated by the correlation coefficient of 0.369. However, fiscal imbalance has a fairly high negative correlation with economic growth as shown by the correlation coefficient of -0.407. This means that as fiscal imbalance increases, economic growth decreases and vice versa.

Labour has strong positive correlations with broad money supply and exchange rate as portrayed by the correlation coefficient of 0.894 and 0.959 respectively. This means that as broad money supply and exchange rate increases, labour also increases. A weak positive correlation was observed to exist between labour and capital as indicated by the correlation coefficient of 0.296, implying that as labour increases, capital decreases and vice versa; while a weak negative correlation exists between labour and fiscal imbalance since the correlation coefficient is -0.340. Thus, labour declines given a rise in fiscal imbalance and vice versa.

Fiscal imbalance, broad money supply, and exchange rate all have weak correlation with capital. Fiscal imbalance has weak negative correlation with capital as indicated by the correlation coefficient of -0.259. This means that as fiscal imbalance

increases, capital decreases and vice versa. Meanwhile, broad money supply and exchange rate have weak positive correlation with capital as captured by their correlations coefficient of 0.403 and 0.333 respectively. This implies that as broad money supply and exchange rate rises, capital also increases and vice versa.

Fairly high negative correlations exist between fiscal imbalance and both broad money supply and exchange rate as shown by the correlations coefficients of -0.665 and -0.554 respectively. This implies that a rise in broad money supply and exchange rate will lead to a decline in fiscal imbalance and vice versa. In the same vein, a strong positive correlation exists between broad money supply and exchange rate as indicated by the correlation coefficient of 0.892. Thus, increase in broad money supply will cause exchange rate to rise and vice versa. All the variables correlate perfectly with themselves thus giving a perfect correlation coefficient of unity (1.00).

Table 2. Correlation Matrix for Variables In Model II

Variables	INF	INF(-1)	FIM	GMSS	EXR
INF	1.000				
INF(-1)	0.610	1.000			
FIM	-0.019	0.027	1.000		
GMSS	0.311	-0.019	0.335	1.000	
EXR	-0.305	-0.272	-0.554	-0.167	1.000

For model II, it is observed that the explanatory variables have weak correlations with inflation, except the lagged value of inflation itself. The lagged value of inflation has a high positive correlation with inflation. Thus, high previous period inflation leads to high inflation in the present period and vice versa. Fiscal imbalance and exchange rate was weak negative correlations with inflation as shown by the correlations coefficients of -0.019 and -0.305 respectively. Thus as they increase, inflation increase. In the same vein, growth rate of broad money supply has positive correlation with inflation. It follows that as the growth rate of broad money supply increases, inflation also increases. The lagged value of inflation correlates weakly in a negative manner with growth rate of broad money supply and exchange rate; but positively with fiscal imbalance.

Fiscal imbalance and growth rate of broad money supply exhibit a weak positive correlation given that their correlation coefficient is 0.335. This implies that as growth rate of broad money supply increases, fiscal imbalance also increases. However, fiscal imbalance correlates negatively in a fairly high manner with exchange rate given the correlation coefficient of -0.554. Thus, as exchange rate increases fiscal imbalance decreases. A weak negative correlation is also being reported to exists between exchange rate and growth rate of broad money supply, given the correlation coefficient of -0.167. The implication is that as the growth rate of broad money supply increases, exchange rate decreases, and vice versa.

4.2. Ordinary Least Squares (OLS) Estimation

The OLS estimation is carried out with respect to both Model I and Model II.

4.2.1. OLS Estimation for Model I

For Model I, the OLS result on the influence of fiscal imbalance on economic growth is presented in Table 3.

Table 3. OLS Result for Model I

Dependent Variable: GDP				
Variable	Coefficient	Standard Error	t-Statistic	Probability
C	-20295.96	6885.03	-2.947839	0.0058**
LAB	0.000725	0.000131	5.521621	0.0000***
CAP	5.71E-08	3.43E-08	1.662249	0.1059
FIM	4.723243	1.518584	3.110293	0.0038**
MSS	1.157959	0.161487	7.170608	0.0000***
EXR	-48.25001	22.84552	-2.112012	0.0423**
R-squared		0.987575	F-statistic	524.5948
Adjusted R-squared		0.985693	Prob(F-statistic)	0.0000

*** and **** denotes significance at 5% and 1% respectively*

From the OLS result in Table 3, it is observed that labour, fiscal imbalance, broad money supply, and exchange rate all have significant influence on economic growth. Exchange rate have a negative impact while labour, fiscal imbalance, and broad money supply all have a positive effect. Given the coefficients of the explanatory variables, unit increase in labour will lead to a 0.0007 units increase in economic growth ceteris paribus. Also, a unit increase in fiscal imbalance will increase economic growth by 4.723 units ceteris paribus. This shows that fiscal imbalance has significant positive effect on economic growth in Nigeria. Thus, a policy of budget deficit during recession and budget surplus during boom will ensure adequate macroeconomic stability. The positive effect of fiscal imbalance on economic growth is in line with the empirical findings of studies such as Bose (2007), Ahmad (2013), and Pelagidis and Desli (2014) but is against the findings of like Karras (1994) Cebula (1995); Hassan et al. (2014); Ghura (1995); Augustt et al. (2015); Biza et al. (2015); Fatima et al. (2012); Van and Sudhipongpracha (2015); and Tung (2018)

Broad money supply exerts positive and significant effect on economic growth at the 1% level of significance. Thus, a unit increase in broad money supply will lead to a 1.158 units increase in economic growth ceteris paribus. As broad money supply increases, interest rate declines which catalyse investments thereby leading to growth. However, exchange rate exerts a negative and significant impact on

economic growth. Thus, a unit increase in exchange rate will cause economic growth to decline by 48.25 units ceteris paribus.

The R-squared of 0.9876 implies that 98.76% of the total variations in economic growth is explained by variations in the explanatory variables. The F-statistic of 524.5948 which is statistically significant at the 1% level as shown by the probability of 0.0000 indicates that the overall model is significant.

To further show that the regression result presents a good fit, the graph of the actual and fitted line is presented in Figure 1.

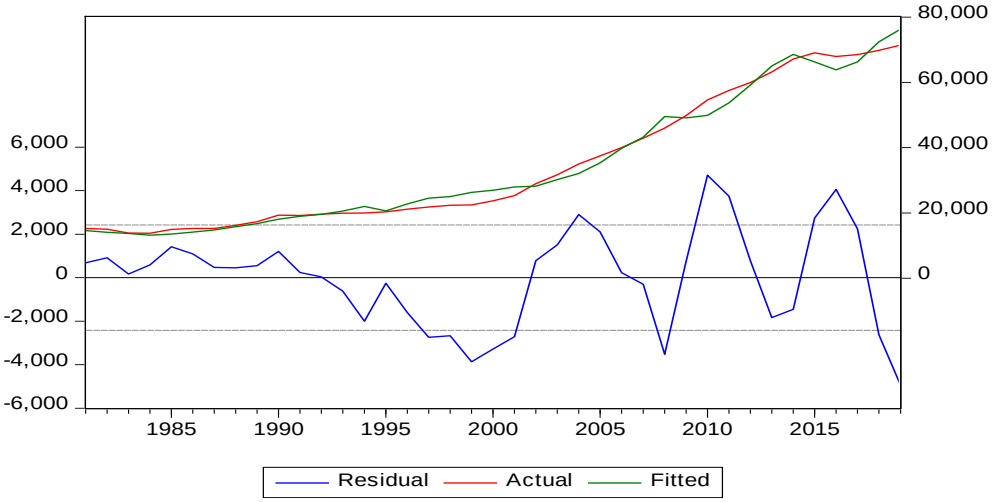

Figure 1. Actual and Fitted Lines of Regression

From Figure 1, the actual and fitted lines are quite close indicating that both the actual and the fitted regression lines have an insignificant error. Thus, the regression result exhibits a goodness of fit.

4.2.2. Post Diagnostic Test for Model I

The post diagnostic test includes Ramsey RESET test for specification error, leverage plots, and stability test.

Table 4. Ramsey RESET Test Result

	Value	degree of freedom	Probability
t-statistic	3.058228	32	0.0045
F-statistic	9.352761	(1, 32)	0.0045
Likelihood ratio	9.999728	1	0.0016

Given the fact that the t-statistic of 3.0582 and the F-statistic of 9.3528 are statistically significant at the 5% level given their respective probabilities of 0.0045

and 0.0045. Thus, the null hypothesis of specification error is rejected at the 5% level. This implies that our growth model is rightly specified and the data fits into the model.

The degree of influence of the explanatory variables in predicting GDP is captured by the leverage plots. This is reflected in Figure 2.

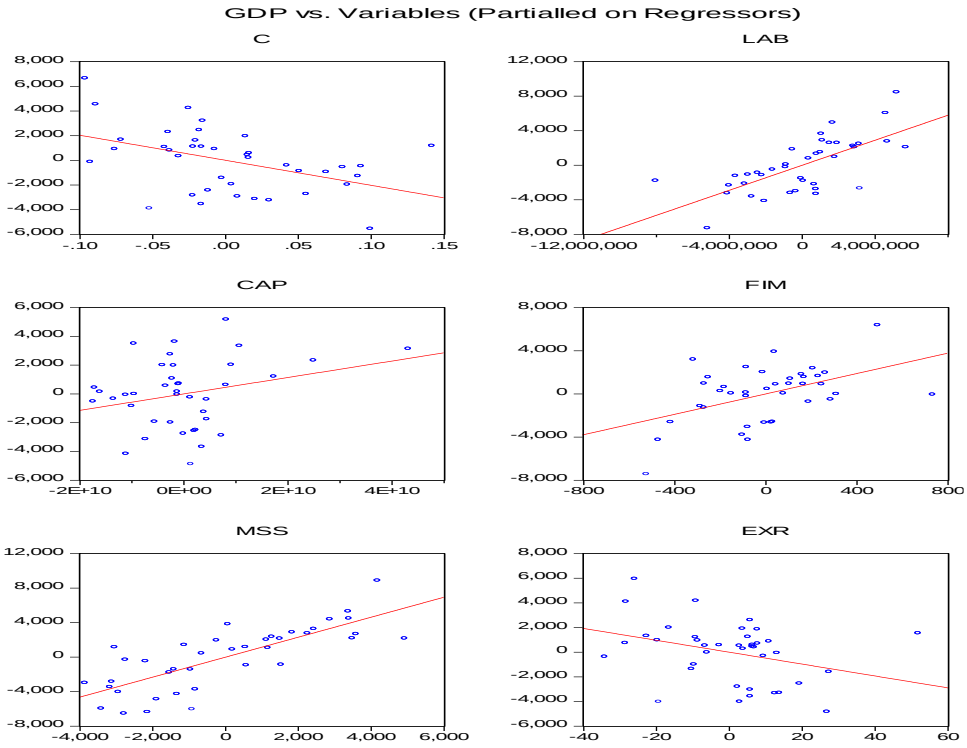

Figure 2. Leverage Plot

From the leverage plot in Figure 2, the downward sloping nature of the leverage plot for the constant term is portrayed in its negative coefficient in the OLS result. The positive effect of labour, capital, fiscal imbalance, and broad money supply is also reflected in the upward slopping nature of leverage plots of the respective variables.

The stability test is also conducted based on the cumulative sum (CUSUM) approach. The outcome is presented in Figure 3.

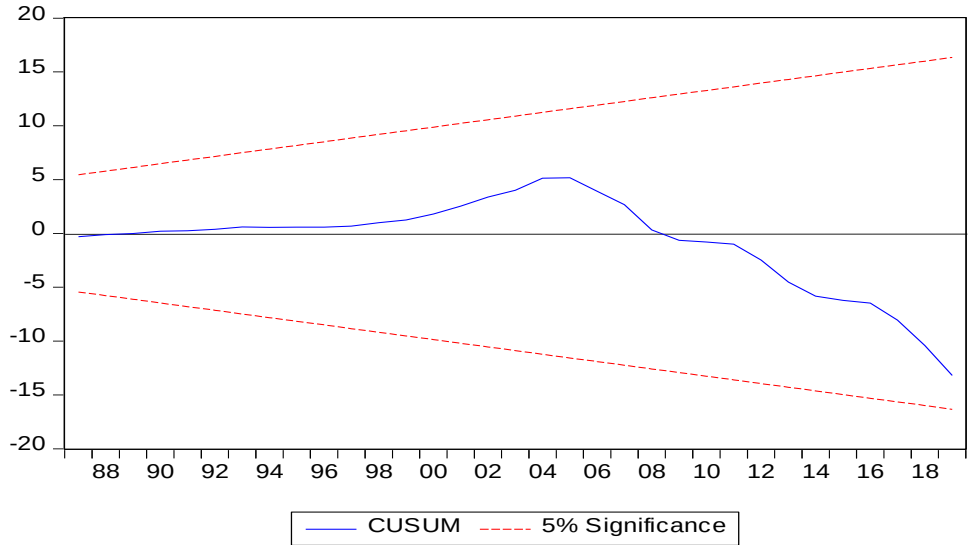

Figure 3. Stability Test

From Figure 3, the CUSUM line lies within the 5% upper and lower bounds. Therefore, the OLS estimated coefficients are stable and can be rightly used for inference.

4.3. OLS Estimate for Model II

The OLS result for Model II is presented in Table 5.

Table 5. OLS Result for Model II

Dependent Variable: INF

Variable	Coefficient	Standard Error	t-Statistic	Probability
C	3.96275	5.481698	0.722906	0.4747
INF(-1)	0.553105	0.12192	4.536601	0.0001***
FIM	-0.00827	0.003997	-2.068989	0.0462**
GMSS	0.404516	0.131123	3.085021	0.0040**
EXR	-0.047883	0.027021	-1.772096	0.0853*
R-squared	0.54147	F-statistic	10.03751	
Adjusted R-squared	0.487526	Prob(F-statistic)	0.000018	

, ** and * denotes significance at 10%, 5% and 1% respectively*

Given the OLS result in Table 5 which captures the influence of fiscal imbalance on inflation in Nigeria, it is observed that all the explanatory variables exert significant influence on inflation. The lagged value of inflation exerts a positive and significant effect on current inflation at the 1% level of significance. Thus, if the past period inflation was high, the present inflation will also be high and vice versa. Thus, the

past rate of inflation increases the current inflation by 0.553 percent. Also, fiscal imbalance possesses a negative and significant impact on inflation at the 5% level of significance. Thus, a unit increase in fiscal imbalance will lead to a 0.008 units decrease in inflation, while a unit decrease in fiscal deficit will call for a 0.008 unit increase in inflation. The implication of this is that budget deficit will be inflationary while budget surplus will be less inflationary in nature. The negative effect of fiscal imbalance on inflation contradicts with the findings of earlier studies such as Solomon and De Wet (2004) and Ezeabasili, Mojekwu, and Herbert (2012).

Growth rate of broad money supply exerts positive and significant effect on the rate of inflation in the economy at the 5% level of significance. Thus, a unit increase in the growth rate of broad money supply will lead to a 0.404 units increase in the rate of inflation and vice versa. The implication here is that as the growth rate of broad money supply increases, there will be too much money in circulation thereby prompting inflationary pressures in the economy. Exchange rate on the contrary exerts a negative and significant impact on inflation at the 10% level of significance. It therefore follows that a unit increase in exchange rate will lead to a 0.048 units decrease in inflation and vice versa.

The R-squared of 0.5415 signifies that 54.15% of the total variations in inflation is explained by the variations in the rate of inflation. The F-statistic (10.0375) is statistically significant at the 1% level as shown by the probability of 0.0000. This implies that the overall model is therefore significant.

The significance of the model can also be traced by looking at the Actual-Fitted lines. This is presented in Figure 4.

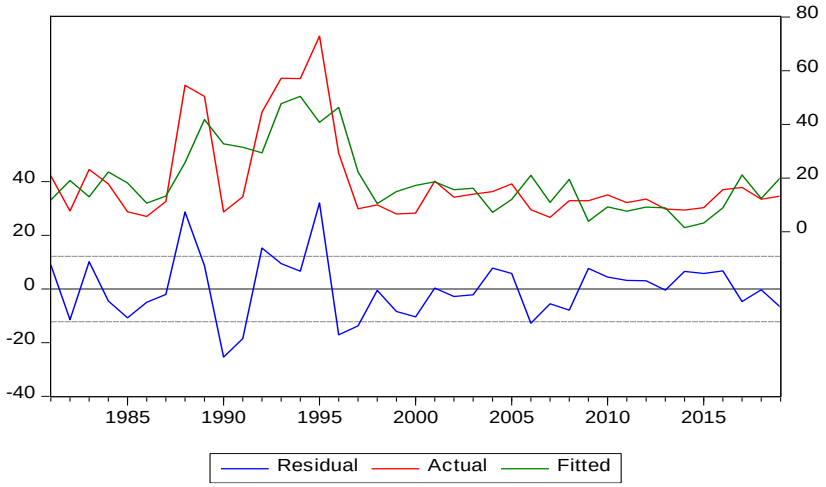

Figure 4. Actual-Fitted Regression Lines for Model II

It follows from Figure 4 that the lines were quite fluctuating in the 1980s up to 2000, giving some high degree of errors as captured by the residual line. But in the 2000 to 2019, there seems to be some degree of goodness of fit, giving rise to almost zero errors. Thus, there is some degree of goodness of fit in the estimated regression model.

Table 6. Ramsey RESET Test Result for Model II

	Value	degree of freedom	Probability
t-statistic	2.409530	33	0.0217
F-statistic	5.805835	(1, 33)	0.0217
Likelihood ratio	6.320460	1	0.0119

The t-statistic and the F-statistic are statistically significant at the 5% level of significance. This implies that the model is correctly specified and the data fits into the model. Therefore, the null hypothesis of specification error is rejected.

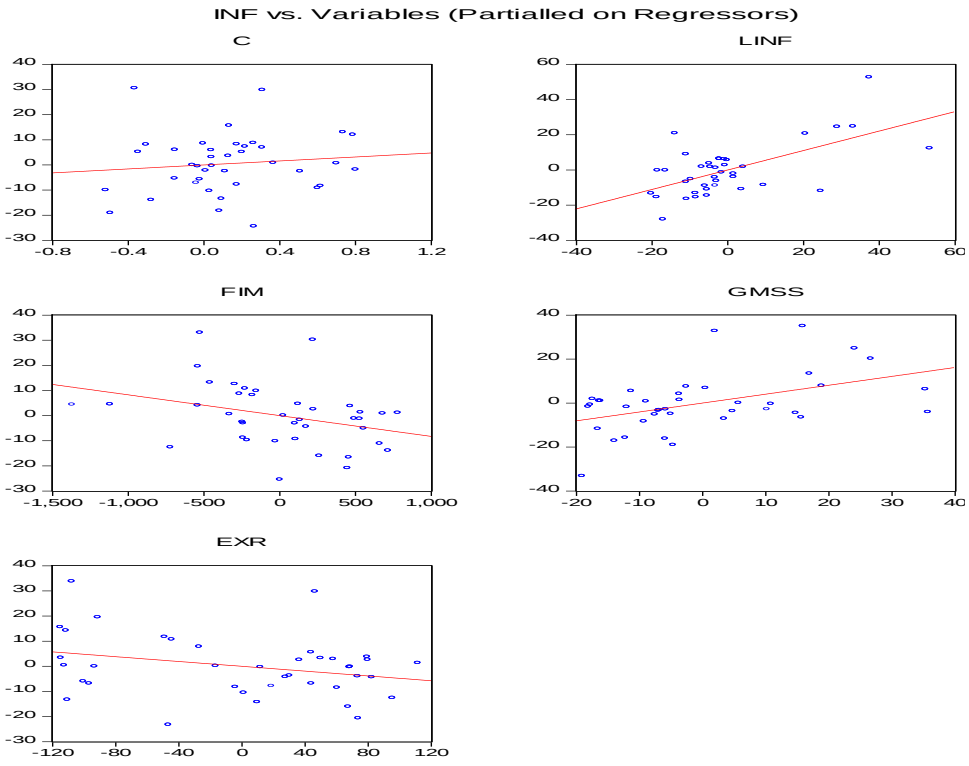

Figure 5. Leverage Plots for Model II

Given that fiscal imbalance and exchange rate both exert a negative impact on inflation, the corresponding leverage plots are also downward slopping in nature.

Meanwhile, lag of inflation, and growth rate of broad money supply both exerted a positive effect on inflation thereby giving rise to the upward slopping nature of their leverage plots.

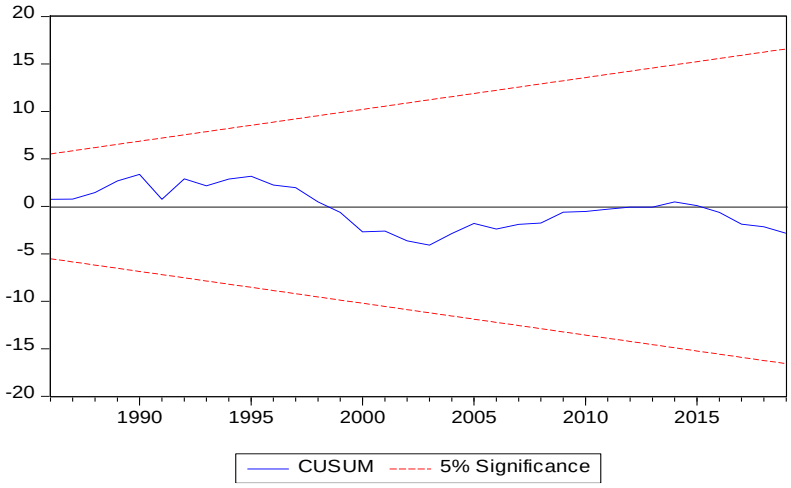

Figure 6. Stability Test for Model II

The CUSUM line lies within the 5% upper and lower bounds and as such, the coefficient of the estimated model is stable and can be used for inference.

5. Conclusion and Recommendation

Fiscal imbalance is an issue that many countries of the world are experiencing. The most dominant is the issue of fiscal deficit which has been on the rising trend as many countries tries to embark on an expansionary fiscal policy. In this regards, the need to manage the shortcomings of fiscal deficit that can arise in terms of macroeconomic instability. As pointed out by Friedman (1963), the quest of to offset fiscal deficit can also create undesired consequences in the economy (see Tung, 2018). The issue of fiscal imbalance and economic growth have yielded different results, as we have observed. Some studies reported evidence of positive, negative, or neutral effect of this linkages. In our paper, we utilized the ordinary least squares (OLS) approach to analyse the influence of fiscal imbalance on inflation and economic growth in Nigeria. We collected time series data for the period 1981 to 2019 with 39 observations for the study.

The correlation analysis employed in the study revealed that fiscal imbalance has a positive relationship with economic growth, but exerts a relationship with the rate of inflation. Further proceeding to OLS estimation reveals that fiscal imbalance exerts a positive and significant effect on economic growth; but its effect on inflation is

negative and statistically significant. The OLS estimates were also subjected to diagnostic test such as Ramsey RESET test and stability test. The stability test indicated that both estimates of both models were stable; while the Ramsey RESET test indicated that the model is correctly specified and the data fits into the model utilized in the study.

The policy implication of the findings is that fiscal policy actions (whether surplus or deficit) can have a serious macroeconomic implication on the stability of the economy and national development. a policy of budget deficit can foster economic growth but can also be a driver of inflation. similarly, a policy of budget surplus can hurt economic growth but can be helpful in tracking down inflationary pressures in the economy. Therefore, it is not a matter of reducing government expenditure or increasing government expenditure rather, it is a matter of striking a balance on the appropriate fiscal imbalance that can be beneficial to the economy. This therefore calls for the need to sustainably manage the excesses in government spending and to have a proper mix of monetary and fiscal policy so as to achieve the desired macroeconomic stability and to ensure sustainable national development.

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