

Fiscal Dominance and Monetary Policy Efficacy in Nigeria

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ABSTRACT

This study examines the effects of fiscal dominance on monetary policy efficacy in Nigeria. Specifically, it examines the extent to which fiscal deficits influenced the growth of money supply and inflation in Nigeria. It utilizes money growth accounting as the framework, and it is estimated through the Autoregressive Distributed Lag (ARDL) Model to achieve the objectives of the study. The results show that fiscal deficit has a positive and significant relationship with the inflation rate in Nigeria. This indicates evidence of fiscal dominance for Nigeria and that fractions of Nigerian inflationary pressures emanate from fiscal deficits, thus, hampering the efficacy of monetary policy. The study, therefore, suggests that policy attempts to stabilize prices in Nigeria must not only be monetary in nature but must also take cognizance of fiscal actions into considerations. Hence, there is need for continuous fiscal-monetary policy coordination to ensure a delicate balance between the duo in achieving key macroeconomic objectives.

Keywords: fiscal dominance, monetary policy, ARDL, Nigeria,

INTRODUCTION

Modern consensus in central banking contends that the primary mandate of monetary policy is to ensure price stability that is conducive to economic growth and development as well as ensure internal and external balance. In other words, it is believed that focusing on the price stability objective will ultimately result in greater economic growth, increase employment opportunities, and reduce poverty. To achieve these mandates, the monetary authority is required to regulate the quantity of money in circulation.

However, this objective of controlling the money supply is often not in tandem with that of the fiscal authority requires spending more to achieve its growth objectives. In this regard, fiscal authority regularly has incentives to seek cheaper sources of finance and is often tempted to depend on the printing of money as a way of gaining “free” resources through seigniorage revenue to finance its activities. Hence, it is traditional for the monetary authority to always be willing to control the supply of money to ensure price stability and fight inflation; however, money creation allows the fiscal authority to get additional finance without the hassle of imposing tax (Oyejide, 2003). Hence, monetary authority may be required to accommodate the fiscal deficits of the government, to achieve stated key macroeconomic objectives (Sanusi and Akinlo, 2016). That is, monetary policy may operate in such a way to facilitate funds for the government as against the objectives of price stability.

Therefore, this study seeks to investigate the effects of fiscal dominance on monetary policy efficacy in Nigeria. Specifically, it would examine the extent to which government deficits (and borrowing) have influenced the growth of the money supply (as well as other price stability objectives) in Nigeria. It would also attempt to establish a threshold level of fiscal deficit that would not hamper the efficacy of monetary policy in Nigeria. Hence, suggesting a possible way forward of minimizing this practice (otherwise it exists) to achieve this delicate balance between fiscal and monetary policies.

To achieve the objectives of this study, we follow the existing studies by using the framework of money growth accounting, which would help us to test the hypothesis of fiscal dominance for Nigeria (see Fratianni and Spinelli, 2001). This framework would be estimated through the Autoregressive Distributed Lag

(ARDL) model as well as the threshold regression method to analyze the inter-relationships between fiscal dominance measures and monetary policy efficacy in Nigeria.

The rest of the paper is organized into five sections. Section 2 presents the stylized facts on fiscal dominance and monetary policy in Nigeria and attempts to show empirical evidence and the relationship between fiscal dominance and monetary policy in Nigeria. Section 3 deals with empirical and theoretical literature while section 4 describes the methodology adopted. Section 5 discusses the empirical results. Finally, some concluding remarks and suggestions for further studies are summarized in section 6.

STYLIZED FACTS ON FISCAL DOMINANCE, FISCAL DEFICITS, AND MONETARY MANAGEMENT IN NIGERIA

Figure 1

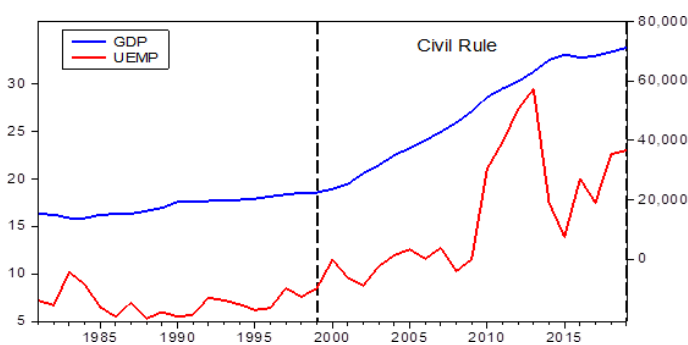


Figure 1 shows the movement of the gross domestic product (GDP) and unemployment rate (UEMP) on a two-dimensional graph. It reveals that Nigeria has continually witnessed an increase in output from 1985 to 2019, with few slow growth experiences, particularly in 2016 when the total output contract resulted in the economy slipping into recession. In the face of these persistent increases in total output and the reiteration conveyed by most disciples of Keynes that growth has the potential of creating employment opportunities and tackling the unemployment situation, unemployment in Nigeria has been persistent over the decades and high. The situation is less desirable during the civil rule which began in 1999. The chart shows that unemployment rose steadily during these periods, reaching a peak of 29.5 percent in 2013 from 21.1 percent in 2010, even as output rose to N63,219 billion in 2013 from N54,612 billion in 2010.

It would also be interesting to discuss fiscal performance in terms of government revenue, expenditure, deficit, and borrowing among other key performance indicators.

Figure 2

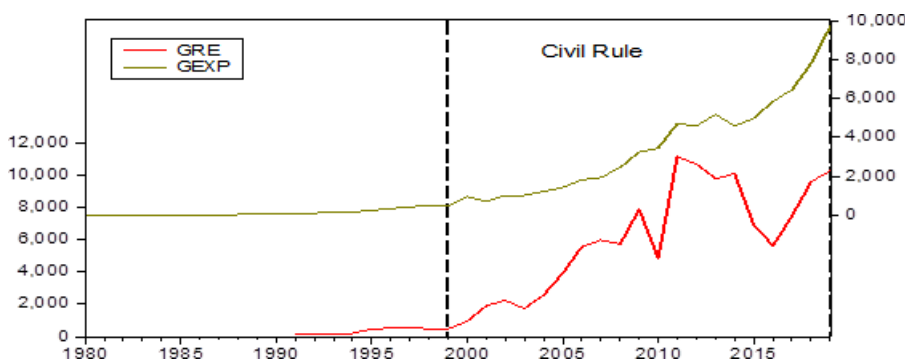
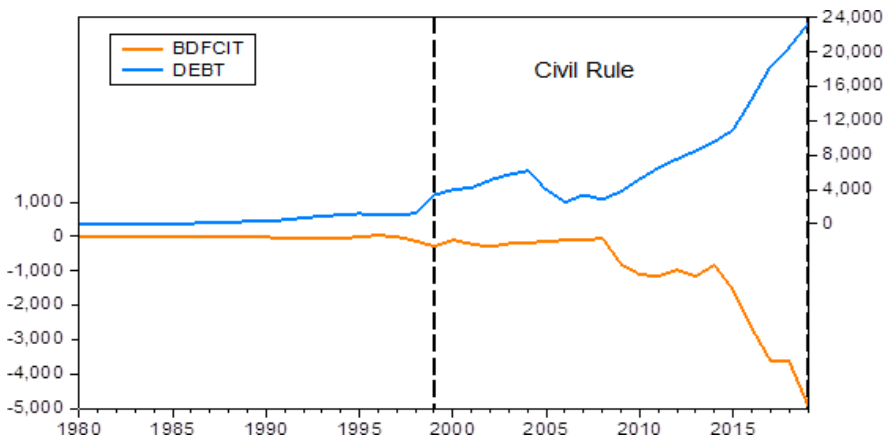


Figure 2 indicates the movement of government revenue and government expenditure over time from 1980 to 2019. We observe a permanent and consistent increase in government expenditure over time. Whilst government expenditure has been on the ascendancy, the revenue earned by the federal government has

been fluctuating over time. A critical assessment of the trend movement shows a widening gap between government expenditure and revenue, signaling that total government revenue is inadequate to sustain the growing government expenditure over the observed period. The implication of this is that, over the years, the Nigerian government has been running a budget deficit as revenue earned falls short of government expenditure, prompting the financing of government spending through external and domestic borrowing. This gives credence to the growing debt profile of the Nigerian State which is put at around N31 trillion (DMO, 2020).

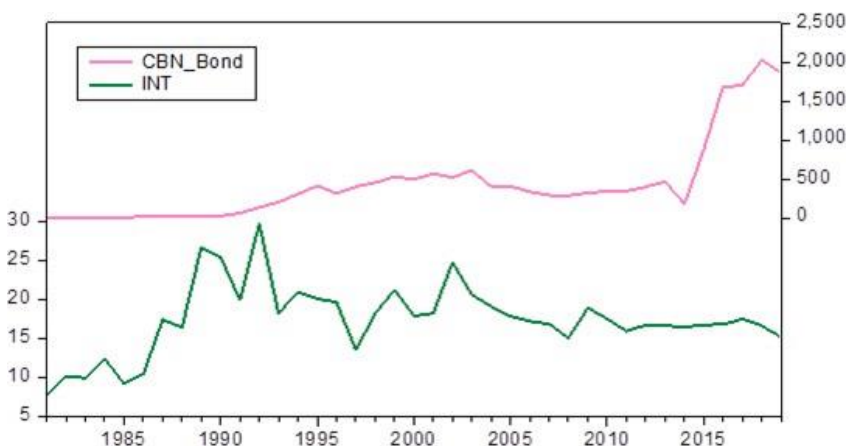
Figure 3



The trend analysis of Nigeria’s budget shows a growing budget deficit from 1981 to 2019. The increase has been persistent since the return to civil rule as a marginal increase was observed during the pre-civil rule era. The average budget deficit for the nineteen (19) years pre-civil rule period was N21.1 billion with the average debt stock during the same period hovering around N467.2768 billion. During the civil rule era, both the fiscal deficit and public debt have leapfrogged to an average of N1149.326 billion and N8102.422 billion respectively. As shown in the figure above, Nigeria’s public debt stock increases with fiscal imbalances. The financing of government expenditure through borrowing has far-reaching implications for tax revenue, as it crowds out private spending, which reduces the output and profitability of firms, putting a strain on the much-needed revenue to prosecute developmental projects (Blanchard, 2017).

This subsection of the paper would examine key monetary indicators such as interest rate, exchange Rate, and trend in Central Bank Bonds, which may point to an extent of central bank financing the activities of the fiscal authorities.

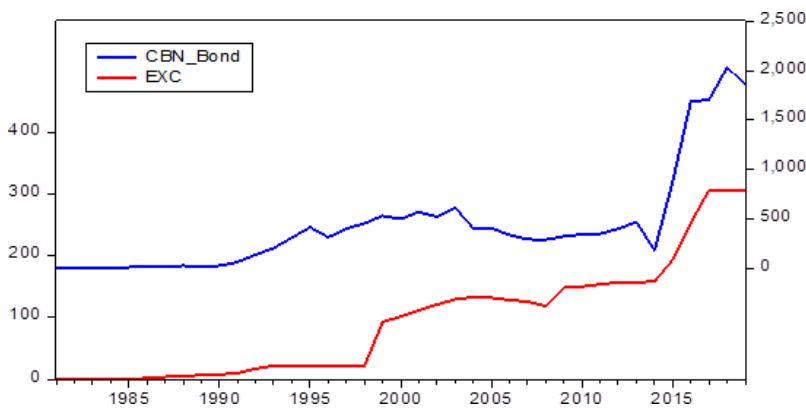
Figure 4



The speculative money demand hypothesis argues an inverse relationship between interest rate and bond

holding as increases in interest rate depress the price of the bond, making them less attractive. However, government bonds are perceived by investors to be devoid of interest rate risk as they believe that default on interest and principal payment by the government is unlikely. From the figure above, we observed that CBN bond holdings increased marginally with upward fluctuation in interest rate, showing that rising interest rates depress the value of the bond. With the continual decline in the interest rate from 24.9 percent in 2002 to 16.7 percent in 2018, CBN bonds rose from N520 billion in 2002 to N2032 billion in 2018.

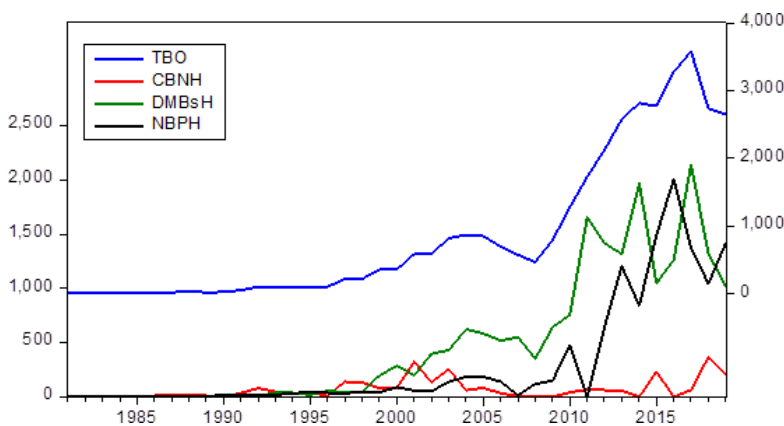
Figure 5



The modern monetarist theory argues that money supply has far-reaching implications for the exchange rate, consumption and investment, and asset price. They posit that increase in money supply by purchasing government securities leads to a fall in interest rates. Due to the fall in domestic interest rates, investors channel their funds to high-interest securities abroad. This they do by supplying the naira and demanding foreign currency-denominated financial assets. This weakens the naira against the denominated foreign currency. As observed in the chart above, the increase in CBN bonds causes the naira to depreciate against the dollar over time. An increase in CBN bonds from N180 billion in 2014 to N2032 billion in 2018 resulted in the free fall of the naira against the dollar from N159/\$ in 2014 to N306/\$ in 2018.

We also analyze the various sources of financing fiscal deficits in Nigeria, such as Treasury Bills, banking system holding of public debt instruments, and other government bonds and financing instruments.

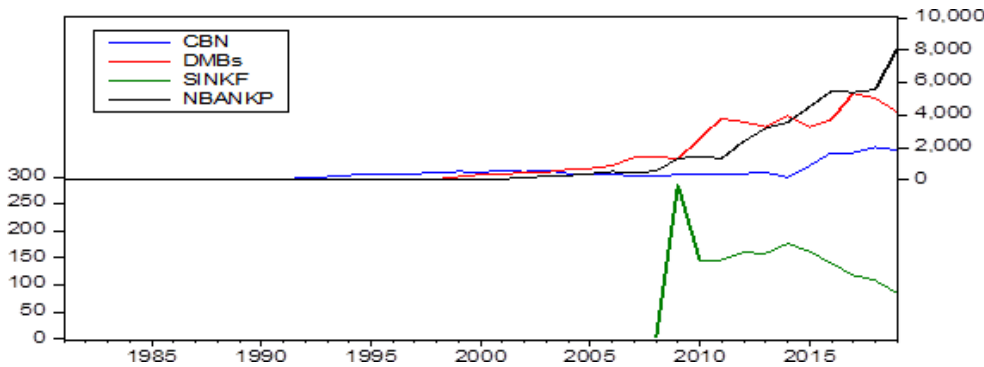
Figure 6



The widening gap between government expenditure and government revenue, which has metamorphosed into rising fiscal deficits, has led to an increase in the issue of government-backed securities to finance its deficits. To achieve this, the Nigerian government through the Central Bank of Nigeria periodically issues treasury bills to raise funds to undertake its activities. From the figure above, government treasury bills have been on the increase coinciding with the widening budget deficits. The stock of treasury bills rose from

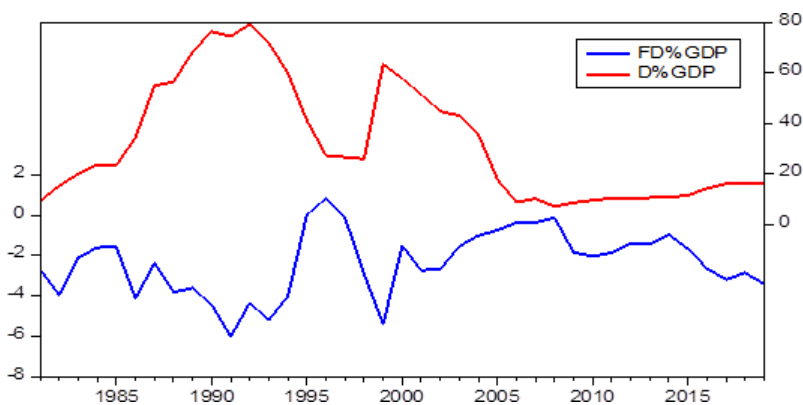
N362 billion in 1999 to N3580 billion in 2017. An analysis of the holders of the Treasury bills revealed that deposit money banks are the major holders of treasury bills with an average of N487.5993 billion, followed closely by the non-bank public with an average of N307.4916 billion.

Figure 7



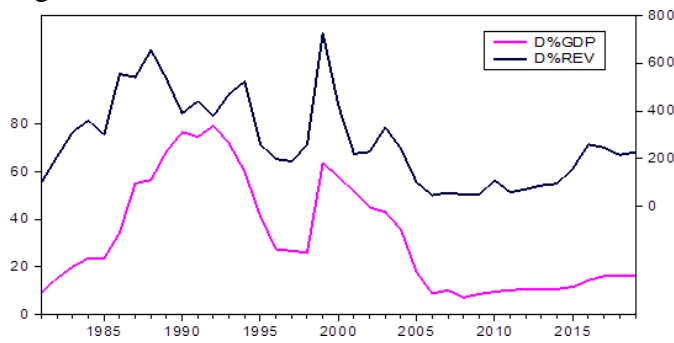
Evidence reveals slow growth in government revenue with a significant increase in fiscal spending, observation from both the pre-civil rule and civil rule shows. To finance these growing deficits, the Nigerian government relies solely on both external and domestic sources to acquire the needed finance. This policy direction of running a primary deficit was glamorized by the writings of Keynes as it argues that the reduction of taxes is growth inducing. We chart the holders of government public debts in the figure above and observe that between 2003 and 2014, deposit money banks were the highest holders of government public with an average of N2016.520 billion, as non-bank public play second fiddle with an average of N1313.013 billion. The least was the sinking fund with an average of N89.2715 billion. However, from 2015, the majority of government public debt was concentrated in non-bank public.

Figure 8



In a similar vein, public debt as a percentage of gross domestic product (GDP) and the share of fiscal deficit to the gross domestic product has been presented in the figure above. Before the return to civil rule in 1999, Nigeria's debt-to-GDP ratio had been astronomically high, peaking at 79 percent in 1992. Since the return to civilian rule, Nigeria has witnessed a steady decline in its debt-to-GDP ratio from 64 percent in 1999 to 16 percent in 2019, with an average of 22.65 percent. The decline in the debt-to-GDP ratio could be attributed to debt relief negotiated by former President Obasanjo in 2005 as the debt-to-GDP ratio declined substantially from 64 percent in 1999 to 9 percent in 2006. The movement in Nigeria's consolidated fiscal imbalance (fiscal deficit to GDP) coincides with movements in her debt-to-GDP ratio. Increases in fiscal deficit to GDP ratio worsened her debt-to-GDP ratio. During the pre-civilian era, the share of fiscal deficit to GDP increased, and in 1991, it stood at 6.0 percent of GDP. This raised the debt-to-GDP ratio to 75 percent in the corresponding period. With the decline in fiscal deficit to GDP ratio, during the civil rule, to 0.9 percent of GDP, the debt-to-GDP ratio has been in descending.

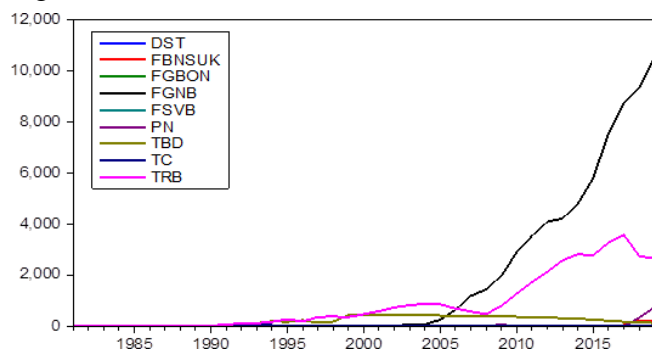
Figure 9



The objective of stabilizing the debt-to-GDP ratio has always been more reasonable than the policy objective of stabilizing the debt-to-revenue ratio. The ability to do so lies in growing the domestic economy as the debt-to-GDP ratio will ultimately fall as the economy expands and the country can grow itself out of debt, even without raising taxes or contending with any fiscal cost. As the above figure indicates, both the rising debt-to-GDP ratio and the debt-to-revenue ratio are a matter of concern. We observe that both ratios were dangerously high before the return to civil rule in 1999 and during the civil rule as the debt to revenue ratio and debt to GDP ratio averaged 190.24 percent and 22.65 respectively. We observed similar behavior in both ratios as the revenue-to-debt ratio declined with a decrease in the debt-to-GDP ratio. The decline in both ratios could be attributed to the steady growth in output achieved during most of the civilian rule.

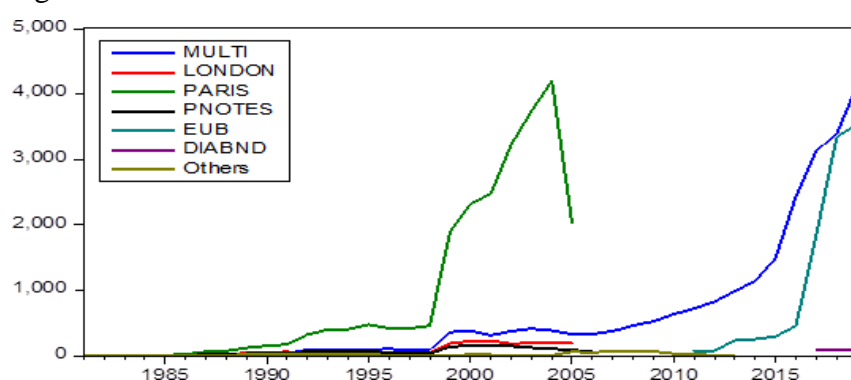
It is also important to analyze the components of Domestic Vs Components of Foreign debt, as this will help in examining the country's exposure to external shocks.

Figure 10



The figure above shows the components of Nigeria's domestic debt from 1981 to 2019. We observed from the trend analysis that, the majority of government domestic debt was in the form of issued Federal Government of Nigeria (FGN) bonds with an average of N1721.321 billion. Treasury bills with an average of N888.0003 followed this closely billion during the period under review. What could be gleaned from this trend analysis is the preference for FGN bonds by the government of Nigeria to source funds from the domestic loanable fund market to finance its fiscal deficits.

Figure 11



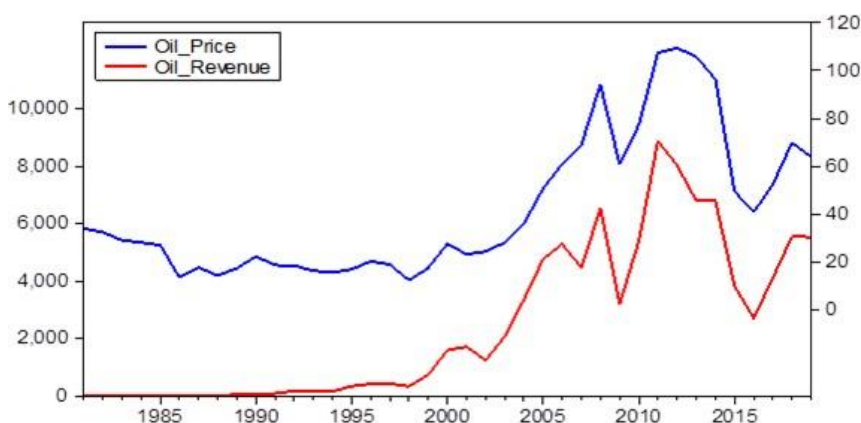
We used figure 11 above to show the trend in externally sourced loans acquired by the Federal Government of Nigeria to complement finances gotten from the domestic loanable fund market and money market. We observed that from 1981 to 2005, which coincides with the period Nigeria got its debt relief, the majority of Nigeria’s external loans were sourced from the Paris club. With the debt relief granted to Nigeria by the Paris club creditors, the multilateral creditors became the next destination for Nigeria’s external loans as loans obtained from multilateral sources rose from N331 billion in 2005 to N4127 billion in 2019. We also observed a rise in external loans obtained using the Euro bond from N79 billion in 2011 to N3543 billion in 2019.

We also attempted to show empirical evidence for fiscal or monetary dominance in Nigeria. The use and dominance of fiscal policy in Nigeria have been less effective and under par. The policy instrument of the fiscal policy has been the budget, which is an annual instrument that is predicated on the crude oil price. This has resulted in fluctuations in revenue needed to match its expenditure. Due to swings in the oil market, revenue from oil which accounts for about 83 percent of Nigeria’s revenue has been volatile over the years (see figure 12). Over the past decade, the Nigerian government has been running on a deficit that has been expanding. The fiscal imbalances for 2010, 2011, and 2013 were N1105.4 billion, N1158.52 billion, and N1153.49 billion respectively. This rose to N3609.37 billion, N3628.1 billion, and N4913.82 billion in 2017, 2018, and 2019 respectively. In a bid to trim down this growing deficit, the Federal Government raise value-added tax (VAT) from 5 percent to 7.5 percent, a policy decision that became counterproductive as inflation rose to 12.82 percent in July 2020. The unemployment rate rose to 27.1 percent in the second quarter of 2020, data from the National Bureau of Statistics (NBS) shows.

Monetary policy that is within the purview of the Central Bank of Nigeria has been at the forefront of ensuring price stability, output growth, and management of the exchange rate. In its bi-monthly monetary policy committee (MPC) meeting, the Central Bank of Nigeria periodically adjusts the monetary policy rate (MPR), cash reserve ratio (CRR), and liquidity ratio (LR) in line with policy objectives. To aid economic growth and address unemployment, the Central Bank of Nigeria reduced its monetary policy from 14.00 percent in 2018 to 13.5 percent, 12.5 percent, and 11.5 percent in March 2020, August 2020, and September 2020 respectively. By reducing the MPR, the Central Bank of Nigeria indirectly made funds cheaper for investment expenditure as interest rates dropped from 16.65 percent in 2018 to 14.99 percent, 14.73 percent, and 11.76 percent in December 2019, May 2020, and August 2020 respectively.

In ensuring finances are available to ensure the Federal government prosecutes its expenditure, the Central Bank of Nigeria using its policy tools has consistently raised needed funds through the issuance and management of government bonds and treasury bills. The total subscription to treasury bills rose from N7,573.45 billion in 2013 to N8,677.69 and N9,608.87 billion in 2016 and 2019 respectively.

Figure 12



LITERATURE REVIEW

• Theoretical Review

The writings of the classical economist ascribed a limited role to government in the operations of the economy. They favored a laissez-faire system where government intervention in how the economy functions are unwarranted. They reasoned that, government involvement in how the economy functions create distortions or disequilibrium and prescribed that government should limit its role to providing security.

The argument of the traditional monetary policy is traced back to the quantity theory of money as conveyed in Fisher's equation of exchange. Traditional economists held the opinion that the fundamental role of money is for transaction purposes. Put properly, money served the purpose of being a medium of exchange. As opined by Gwartney, et al., (2015), a proportional direct relationship was predicted by the quantity theory of money. The hypothesis states that an increase in money supply generates a symmetric proportionate effect on the price level. Fisher's equation that captures this relationship is given thus;

$$MV=PY \quad (1)$$

Where; M = money supply; V = velocity of money; P = Price level and T = transaction performed by money (see Stiglitz & Walsh, 2006; Baumol & Blinder, 2016). The traditional economist assumes that V and Y are constant and M is exogenously determined. This by implication suggests a proportional relationship exists between money supply and price level. Hence, equation 1 becomes;

$$\% \Delta M = \% \Delta P \quad (2)$$

Keynes (1936) in his infamous book *General Theory of Employment, Money, and Interest* theorized the fundamentality of government spending in stimulating economic growth. According to Keynes, government spending seen in the context of fiscal policy is a veritable tool for achieving short-term stability in the economy. Keynes's (1936) argument for public expenditure was contained in his absolute income hypothesis (AIH) which is a psychological law stipulating the existence of a non-proportionate increase in consumption as income increases. The logic behind their policy recommendation of Keynes is entangled in a web of an easy but ruminating line of thought.

A cardinal feature of the functional relationship between consumption and income is the introduction of the concept of average propensity to consume (APC) and marginal propensity to consume (MPC). According to Keynes (1936), at all levels of income, MPC will be less than APC, suggesting that, if disposable income falls, individuals protect their living standard by reducing their consumption expenditure proportionately to the fall in income. This brings to bear the stimulus of Keynes' policy proposition. Aggregate demand tends to fall, arising from the relative decline in consumption, due to the fall in APC as income grows (Ohale & Onyema, 2002). Strengthened by assumptions that investment and trade are unlikely to compensate for the fall in consumption, Keynes proposed that the government steps in through increased spending to boost economic growth. Increased government spending on capital projects and recurrent items like social welfare packages and safety nets are a catalyst of growth through the multiplier.

Keynesian economists criticize heavily the traditional monetary policy and provide a variant position on the role of monetary policy. The hypothesis was that the first impact of the increased money supply is not price, but rather interest rate. Following an increase in money supply, the interest rate falls as funds become readily available, thus stimulating investment demand. The increased demand for investment causes output to increase as the economy operates at less than full employment level (Stiglitz & Walsh, 2006). Price only rises with an increase in money supply, though not proportionately, only when the economy operates at full

employment level.

Fiscal Theory of the Price Level

The apex bank is traditionally assigned the function of price control. This role draws naturally from the quantity theory of money, publicized by Friedman's famous proclamation of inflation being a monetary phenomenon. The fiscal theory of the price level (FTPL) opposes this, arguing in favor of price level varying with fiscal authority's budgetary policies (Woodford, 1998; Sims, 1994). The FTPL presents its attack on two frontiers – the weak and strong-form fiscal theory.

The weak version of the theory concentrates on the link visible between fiscal and monetary policy. This version opined that, since money creation, which generates revenue, can be termed a revenue source, fiscal budget constraints determine both fiscal and monetary policy in the long run. The source of influence on price is predicated on whether the fiscal authority or apex bank takes the first initiative. The position canvassed by the weak form is that the fiscal authority takes the first initiative either by running a primary deficit or surplus, thus compelling the apex bank to ensure solvency by generating the needed seigniorage (money created revenue) (Schabert, A. (2010). Where neither the fiscal nor monetary authorities fail to come up with the required seigniorage, the country will witness a surge in her debt-to-GDP ratio, which would require a continuous increase in interest rate to make government debt instruments more attractive. The weak form proposes that the needed seigniorage will be generated by the apex bank. The strong form argues that fiscal policy, independently of future growth in the money stock, determines the future price level. In contrast to the weak form where the traditional monetary hypothesis holds, the modern version conveys that, the general price level is influenced by fiscal independence of changes in money supply (Cochrane, 2000; Eusepi & Preston, 2011).

The FTPL is expressed using the equation below;

$$B/P = PVFS \quad (3)$$

Where; B = outstanding nominal government debt; P = price level; and PVFS = present value of future surpluses. The view expressed by this theory is that equation (3) is constrained by the tax and expenditure policy of the government. Where distortion arises, an adjustment in government taxes or expenditures is required to restore parity.

• Empirical Review

We would begin the empirical review with the relationship between fiscal and monetary authorities in developed and emerging Economies. For instance, Neaime (2015) used the present value constraint (PVC) framework to determine if the budget deficits and public debts of some selected European countries are sustainable. The study period examined was from 1977 to 2013. The countries examined were Spain, Portugal, Italy, Ireland, France, Germany, and Greece. The cointegration tests divulged that the fiscal policies of Germany and France are highly sustainable. Those of Portugal, Ireland, Spain, Italy, and Spain were sustainable only during the 1970s and 1980s.

In terms of panel framework, Bénétrix & Lane (2013) utilized the panel vector auto-regression (PVAR) technique to probe the effect of government spending shocks on the real effective exchange rate of eleven (11) European Monetary Union (EMU) countries. The study found that real exchange rates appreciate following unexpected government absorption shock. Government fixed investment was found to produce the largest appreciation in the real exchange rate.

Using annual series for Lebanon, covering the period from 1970 to 2013, Neaime (2015) examined the

sustainability of the external public debt, internal public debt, and exchange rate policies. The result of the unit roots and co-integration exposed the unsustainability of Lebanon's debt and exchange rate policies. The outcome of the granger causality shows that rising fiscal deficits compound the woes of its current account.

Narayan, Narayan & Prasad (2019) analyzed the relationship between budget deficits, money supply, and inflation in Fiji from 1970 to 2004. The robustness of the deficit-inflation relationship was not confirmed as government deficits exert a significant positive impact on inflation in two out of the four estimators. Inflation responds positively to fluctuations in the money supply. The result shows both the deficit and money supply, granger, causing inflation.

Employing the autoregressive distributed lag (ARDL) estimator, the work by Jalil, Tariq & Bibi (2014) investigated the fiscal theory of price level. The study was carried out in Pakistan and covered the period from 1972 through 2012. They show that the fiscal deficit has been responsible for the inflationary pressures in Pakistan as the impact is positive and significant.

Maitra (2019) employing the autoregressive distributed lag (ARDL) econometric technique examined the interaction between public debt, foreign debt, and certain macroeconomic variables. The study used annual series on Sri Lanka for the sample range of 1977 to 2016. From the empirical result, it was revealed that public debt and foreign aid failed to raise income, but causes an increase in the price level and interest rate.

Utilizing quarterly data covering the period from the first quarter of 1970 to the second quarter of 2009, Shetta & Kamaly (2014), in a vector autoregressive framework, examined the crowding-out effect of budget deficit on private credit from the Egyptian Banking Sector. From the estimates, government borrowing from the domestic bank has a crowding-out effect on private credit. The willingness of the bank to extend credit is significantly influenced by output growth, the result shows. Observing from 1970 to 2012, Mwigeka (2015) employing the vector error correction model (VEC) conclude that budget deficits crowd out private investment in Tanzania.

Lin & Chu (2013) who utilized annual data for 91 OECD and non-OECD countries from 1960 to 2006, showed in a panel framework using the dynamic panel quantile regression (DPQR) and dynamic generalized method of moments (GMM) estimator that, fiscal deficit exert high impact on the level of inflation during high-inflation episodes as the impact during low-inflation episodes is weak.

Habibullah, Cheah & Baharom (2011) used annual data covering the period from 1950 to 1999 for thirteen (13) Asian developing countries to test the association between budget deficit and inflation. The error correction mechanism and granger causality techniques were deployed in analyzing the relationship. They found budget deficits and money as the major cause of inflation in the long run. The study found evidence of causation running from budget deficits to inflation in the short run mainly in the cases of South Korea, Bangladesh, and Sri Lanka.

The work by Aisen & Hauner (2013) which relied on observations for 60 advanced and emerging countries from 1970 to 2006 and the panel estimation technique of the system generalized method of moments (GMM) contends that interest rates impact budget deficits are positive and significant. They also discovered a high impact on the interest rate when the deficits are financed from domestic sources.

Van Bon (2015) studied empirically the implication of government debt on inflation. The paper studied 15 Asian countries observed from 1990 to 2012, measuring public debt using debt as a share of gross domestic product. The relationship was analyzed using pooled mean group (PMG) estimator and differenced generalized method of moments (GMM). From the result, public debt exacerbates the inflation level in the sample countries.

Studied in the vector autoregressive (VAR) framework, Georgantopoulos & Tsamis (2011) showed based

on the vector error correction model estimates the absence of significant influence of budget deficits on inflation in Greece. From their study, they established uni-directional causation from nominal effective exchange rate to budget deficit and budget deficit to gross domestic product. A bidirectional link was found between the nominal exchange rate and the consumer price index.

Relying on the result of the ordinary least squares (OLS) estimator, Matandare & Tito (2018) in their work contend that external borrowing hampers economic growth in Zimbabwe as observed from 1980 to 2016. Similarly, their results leaned toward exchange rate and inflation having a contractionary effect on output. They however found that external debt servicing can boost the Zimbabwean economy.

In Pakistan, Mughal & Khan (2011) argued, using a series of data from 1960 to 2010, that the unsustainable fiscal deficit fuels domestic inflation. The granger causality test buttresses or reinforced this position as results show that growth in deficits causes inflation. Ahmad, Sheikh & Tariq (2012) estimation results also show domestic debt and domestic debt servicing as having inflationary tendencies in Pakistan. The work by Muhammad, Zafar, Noman & Arfeen (2016) corroborated earlier studies in Pakistan as they found, using the autoregressive distributed lag (ARDL) technique, fiscal imbalances responsible for a price increase. The findings by Tiwari & Tiwari (2011) deviate from this stance as the result obtained using the ordinary least square shows that inflation in India is not caused by fiscal deficit. Audu & Apere (2013) in their investigation studied a panel of 15 ECOWAS countries estimated from 1980 to 2011 using panel cointegration and found evidence of no significant relationship between budget deficit and inflation.

The paper by Sandica (2013) which critically examined the sustainability of the fiscal finance of CEE countries comprising of Czech Republic, Hungary, Poland, and Romania from 2000Q1 to 2011Q4 found evidence of bi-directional causation between government revenue and expenditure.

Abu & Abd Karim (2015) adopted the generalized method of moments (GMM) technique to probe the non-linear nexus between fiscal deficit and inflation in 51 African economies. Studies from 1999 to 2011, found evidence of non-linearity in the impact of fiscal deficit on inflation. In a panel of 52 African economies observed for the period 1950 to 2012, Lopes da Veiga, Ferreira-Lopes & Sequeira (2016) provided evidence supporting the inverted U hypothesis and the existence of a significant positive relationship between public debt and inflation.

In Nigeria, several other studies have attempted to address this issue. For instance, Essien, Agboegbulem, Mba & Onumonu (2016) in a vector autoregressive framework attempted to examine the macroeconomic impact of public debt using annual data on Nigeria for the period 1970 to 2014. Results of the granger causality reveal the absence of causation between either domestic debt or external debt and real gross domestic product. They found real gross domestic product unresponsive to either domestic or external debt shocks. Evidence abounds that the prime lending rate and consumer price index respond positively and negatively to external and domestic debt shocks respectively. Isibor, Babajide, Akinjare, Oladeji & Osuma (2018) provided a contrary position. With the aid of the two-stage least square (2SLS) to correct for heterogeneity, the result showed, have examined the relationship from 1982 to 2017, that domestic debt spurs the growth of the Nigerian economy. They found that external debt has a contracting effect on the domestic economy.

Ezeanyeji, Priscilla & Ugochukwu (2019) employed co-integration and error correction model (ECM) techniques to analyze the impact of public debt on inflation in Nigeria. Their study which observed the variables of public debt as a percentage of GDP, inflation rate, money supply as a percentage of GDP, and exchange rate from 1981 to 2017, found public debt, exchange rate, and money supply significantly affected inflation positively.

In a No-Ponzi-Game (NPG) framework, Medee, Dewi, Ikue-John & Sodipo (2020) using the tripartite econometric techniques of unit root, co-integration and granger causality examined the sustainability of

Nigeria's public debt from 1960 to 2019. They found that the public debt policies in Nigeria are unsustainable. Results from the granger test provided evidence of bidirectional causation between the twin macroeconomic deficits. For the period 1997 to 2017, Ene (2018) studied the nexus between budget deficit and unemployment in Nigeria. The relationship was examined in the vector autoregressive (VAR) framework. The findings of the study based on the estimates from the Vector Error Correction Model (VECM) did not align with Keynesian teaching as unemployment increases with a growing fiscal deficit.

Disaggregating public debt into domestic and external debt, Folorunso & Falade (2013) using the error correction mechanism and granger causality technique x-rayed the association between fiscal deficit and public debt in Nigeria. The result provided evidence of bi-directional causation between fiscal balance and public debt. Uni-directional causation from external debt to fiscal balance was confirmed. The domestic and external debt impact on fiscal deficit was estimated to be positive and significant.

Using the ordinary least squares (OLS) estimator on annual series covering from 1981 to 2013, Saheed, Sani & Idakwoji (2015) probed the exchange rate effect of public debt in Nigeria. They found that external debt, debt service payment, and foreign reserves statistically cause fluctuation in the exchange rate.

Ezeabasili, Mojekwu & Herbert (2012) in their paper dissects the relationship between fiscal deficits and inflation in Nigeria using the sample range of 1970 to 2006. Analyzed using the vector error correction econometric technique, it was found that the effect of fiscal deficits on inflation is positive and insignificant. Their study provided evidence of the positive impact of money supply on inflation over the investigation period.

Favoring the empirical approach of autoregressive distributed lag (ARDL), Ogonna, Idenyi, Ifeyinwa & Gabriel (2016) provided evidence showing that the unemployment situation in Nigeria worsens with increasing public debt. Their paper shows a decreasing effect of growth on unemployment in Nigeria.

The work of Akinola (2017) focused on the economic performance effect of the budget deficit in Nigeria. The investigation, which covered from 1970 to 2013, adopted the ordinary least squares (OLS) estimator. From empirical results, budget deficits, bank rates, and money supply were found to be the prime cause of price instability in Nigeria. The estimates show budget deficits and bank reserves wielding positive and significant influence on per capita income, as money supply and bank rate failed to impact significantly on per capita income.

In sum, a deep dive into the empirical works reviewed opens up uncharted territory for empirical investigation. The studies reviewed considered the inflation and exchange rate impact of financial debt and deficit without recourse to how the monetary authority adjusts money supply and other tools in their toolbox to variations in fiscal deficits and borrowing. This study steps in to fill this void in the literature by empirically examining how fiscal deficits and borrowing affect the growth of the money supply in Nigeria.

METHODOLOGY

To achieve the objectives of the study, we follow the work of Fratianni and Spinelli (2001) to test fiscal dominance in three distinct stages. First, we assess the quantitative effect of the treasury component of the monetary base, MBTR, on money growth utilizing the methodology of money growth accounting, then we focus on the connection between budget deficits and the growth of the treasury component of the monetary base (MBTR). Lastly, we check the connection between the growth of the total monetary base and budget deficits. The first stage provides a useful benchmark for the subsequent stages. The second stage points at precluding the likelihood that a positive correlation between the growth of the monetary base and budget deficits may occur in the absence of fiscal dominance, and the last stage is the test of fiscal dominance. These three stages ought to be viewed as a major aspect of a unified research strategy.

We would begin with the money growth accounting model where the money stock is characterized by the aggregate of the monetary base held by the public and all bank deposits, whether they are on demand or at term.

Hence, we define the money stock, M , as the monetary base, MB , times the money multiplier, m . The multiplier, thus, relies upon three behavioral proportions: k , which reflects decisions of the non-bank public to apportion money-like resources between monetary base, BP , and bank deposits, D ; rr , which reflects decisions of the monetary authorities to impose monetary base requirements, BR , on bank deposit liabilities; and re , reflects decisions of the banks concerning their liquidity, BE , according to bank deposits.

$$M_t = m_t MB_t,$$

$$m_t = (1 + kt) / (kt + rrt + ret),$$

$$kt = BP_t / D_t,$$

$$rrt = BR_t / D_t,$$

$$ret = BE_t / D_t.$$

The relatively simple equations above provide the basis for money growth accounting (Friedman and Schwartz 1963, pp. 794-97; Brunner and Meltzer 1964; Cagan 1965). In essence, the rate of growth of M can be broken down into the growth of the monetary base and the growth of the multiplier, thus, these can be shown in respect of the contributions of $MBTR$, BF , $MBOT$, re , rr , and k and their connections.

$$(MBTR_t + MBOT_t + BF_t + TR_t) = MB_t + (1 + it - 1) (MBTR + MBOT + BF)_{t-1}$$

This equation shows the treasury component of the monetary base and the variable of special interest for our fiscal dominance hypothesis. $MBOT$, incorporates, in addition to other things, discounts and advances to banks, and BF is the foreign part of the monetary base.

The second stage of the fiscal dominance test there includes the relation between the change in the treasury component of the monetary base and budget deficits. The reason behind verifying such a relation is to preclude a potential connection between the growth of the monetary base and government deficits that may happen autonomously of fiscal dominance. The scenario hypothesized by Barro has already been discussed: government targets real government deficits and adjusts nominal deficits to the advancement of the price level, to the degree that price level changes are correlated with changes in the monetary base, a positive correlation between government deficits and growth of the monetary base would be observed, in the absence of any effects of fiscal dominance. In any case, there is another chance, which is that monetary authorities can react to an assortment of factors in the economy, including government deficits.

The conventional view, on the other hand, allows considerable independence to monetary policy, permitting a wide variety of relations to arise between deficits and the revenues from money creation. Monetary policy might have the revenue from money creation at a date to respond to economic activity, to any deficit measure, or it might follow a constant growth rate scheme.

A precondition for fiscal dominance is a positive relationship between government deficits and the treasury component of the monetary base. The presence of this correlation shows that monetary authorities monetize part of the government budget deficits either because they have (institutional dependence) or want to (policy inference). The relationship cannot, by itself, set up fiscal dominance because the monetary authorities can always balance changes in the treasury component of the monetary by inverse movements in other

components of the base. To corroborate fiscal dominance, we also need to confirm the connection between government deficits and changes in the total monetary base, which is the third stage of the hypothesis. Yet, on the off chance that a positive connection between government deficits and the treasury component of the money is not checked, at that point, the presence of a positive effect of government deficits on the growth of the total monetary base is more consistent with what King and Plosser (1985) call the conventional view than with fiscal dominance.

The third and last stage of the fiscal dominance test includes the connection between the relative change of the monetary base and the government deficit. If we recall the definition of the sources of the monetary base, $MB = MBTR + MBOT + BF$, we supplant each of the three source components by its determinants. The determinants of DMBTR are acquired from the equation above. Relative changes in MBOT are dictated by those that influence the demand for earning assets by banks. These variables are relative changes in nominal income, DY , and the distinction between the yield on assets and the cost of borrowing at the central bank. $idiff$. The determinants of the relative changes of the foreign component of the base are the current-account balance as a proportion of lagged national income, CAB , and the difference between the Nigerian and foreign real interest rates, $rdiff$.

Model specification

To evaluate the relationship between fiscal dominance and monetary policy efficacy, as noted above and following the work of Fratianni and Spinelli (2001), the hypothetical model to be estimated is:

$$MS = f(INF, PLR, FD, CPS, GE)$$

$$MS = \beta_0 + \beta_1 INF + \beta_2 PLR + \beta_3 FD + \beta_4 CPS + \beta_5 GE + \varepsilon$$

Where:

MS: Money Supply (M2)

INF: Inflation (CPI)

PLR: Prime Lending Rate

FD: Fiscal Deficit

CPS: Credit to Private Sector

GE: Government Expenditure

ε : Error Term

This equation would be estimated using the Autoregressive distributed lag (ARDL) method. Before estimating it, necessary tests would be carried out which include both unit root and cointegration tests to justify the appropriateness of ARDL which is an additional contribution to the work of Fratianni and Spinelli (2001).

Sources of data

The source of data utilized for the study are from the Central bank of Nigeria; National Bureau of statistics; Economic and Financial Review and Annual reports; World Bank and IMF International and Financial statistics; other Economic indicators were likewise utilized.

Table 1

	LMS	LGE	LFD	LCPS	INF	PLR
Mean	7.263312	5.625626	5.759142	7.066813	1.783536	16.87778
Median	7.274257	5.628604	5.814153	7.116814	1.588429	16.75337
Maximum	7.511757	6.035424	6.044474	7.274571	5.310495	31.09000
Minimum	7.031785	4.536065	3.524266	6.818625	-0.640000	14.71000
Std. Dev.	0.135427	0.223139	0.248847	0.135575	1.091584	1.990857
Skewness	-0.095991	-1.226636	-5.976160	-0.240809	0.595710	5.650684
Kurtosis	1.862035	6.964395	53.27316	1.518996	3.068050	40.68921
Jarque-Bera	6.936573	113.2030	13907.55	12.63192	7.417245	8063.530
Probability	0.031170	0.000000	0.000000	0.001807	0.024511	0.000000
Sum	907.9140	703.2032	719.8928	883.3516	222.9420	2109.723
Sum Sq. Dev.	2.274207	6.174102	7.678703	2.279197	147.7528	491.4753
Observations	125	125	125	125	125	125

Table 2

	LMS	LGE	LFD	LCPS	INF	PLR
LMS	1	0.59	-0.38	0.93	0.65	0.01
LGE	0.59	1	-0.56	0.55	0.43	-0.03
LFD	-0.38	-0.56	1	-0.38	-0.34	0.04
LCPS	0.93	0.55	-0.38	1	0.63	0.06
INF	0.65	0.43	-0.34	0.63	1	-0.01
PLR	0.01	-0.03	0.04	0.06	-0.01	1

Plots

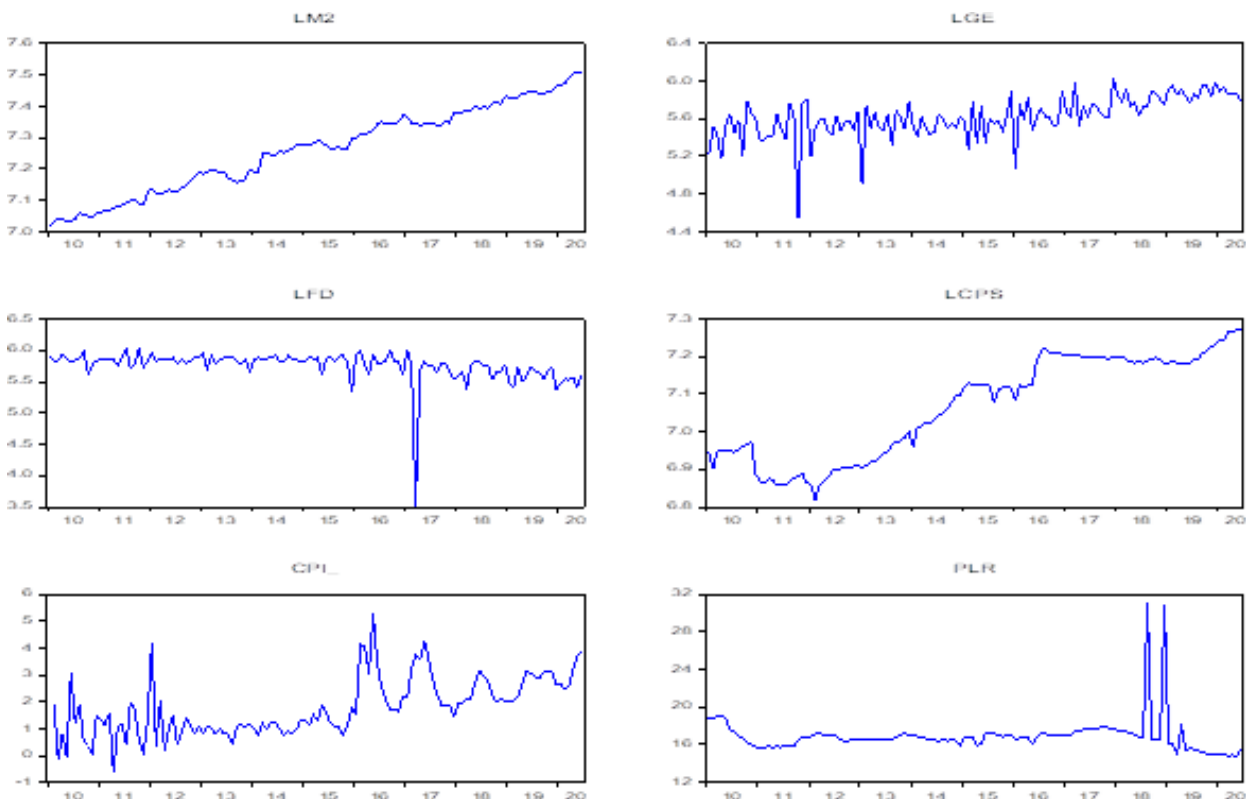


Table 3

Variables	Augmented Dickey-Fuller	Phillips-Perron	Order of integration (ADF)	Order of Integration (PP)
LMS	-11.86601	-11.86601	I (1)	I (1)
INF	-2.901543	-4.721769	I (0)	I (0)
PLR	-18.46933	-10.55139	I (1)	I (0)
FD	-9.405923	-9.711198	I (0)	I (0)
CPS	-12.69077	-12.59950	I (1)	I (1)
GE	-7.516281	-10.81508	I (1)	I (0)

Following the unit-root test, the ADF shows that only two of the variables were stationary at levels while the other variables were stationary at first difference. The PP test results contradict that of the ADF showing four of the variables were stationary at levels while the other two were stationary at first difference. This finding suggests that the variables could be cointegrated. Therefore, the Johansen cointegration test would be employed to confirm the existence of cointegration among the variables. Hence, our adjusted model can be specified below:

$$\Delta MS = \beta_0 + \beta_1 INF + \beta_2 \Delta PLR + \beta_3 FD + \beta_4 \Delta CPS + \beta_5 \Delta GE + \varepsilon$$

Using the Schwarz information criterion, the lag length of one (1) was selected after the lag length selection test was conducted and was applied to the model.

Johansen cointegration test

The Johanssen cointegration test is employed to determine the number of cointegrating vectors in the model. The maximum Eigenvalue and Trace tests are used to determine the cointegrating vectors in the model. The results are shown below.

Table 4

Null Hypothesis	Trace Statistic	Probability	Max-Eigen statistic	Probability
NONE	106.2085	0.0079	33.68417	0.2196
At most 1	72.52433	0.0299	30.60758	0.1170
At most 2	41.91675	0.1611	23.99746	0.1348
At most 3	17.91929	0.5721	11.83215	0.5643
At most 4	6.087147	0.6852	5.988080	0.6147
At most 5	0.099067	0.7529	0.099067	0.7529

Table 5

F-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic:n=1000	
F-statistic	4.599128	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Actual Sample Size	124		Finite Sample: n=80	
		10%	2.303	3.154
		5%	2.55	3.606
		1%	3.351	4.587

The Johansen Cointegration and Long run form and bound test show that there is evidence of cointegration based on the result of the bound test showing that a linear combination exists among the variables which fulfils the necessary condition for an ARDL.

Table 6

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LMS (-1)	0.969404	0.020856	46.48131	0.0000
LGE	0.022458	0.006033	3.722515	0.0003
LFD	0.002833	0.004790	0.591431	0.5554
LCPS	0.008598	0.019917	0.431678	0.6668
INF	0.002335	0.001303	1.791882	0.0758
INF (-1)	-0.002162	0.001310	-1.650528	0.1015
PLR	0.000448	0.000495	0.903596	0.3681
C	0.014684	0.084957	0.172843	0.8631

The estimated ARDL results show that both Government Expenditure (GE) and inflation INF has a significant positive relationship with Money Supply (MS) whereas all other variables in the model turn out to also have a positive but statistically insignificant effect on Money Supply (MS). This indicates evidence of fiscal dominance for Nigeria and those fractions of Nigerian inflationary pressures emanating from fiscal deficits, thus, hampering the efficacy of monetary policy.

Table 7

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INF)	0.002335	0.001060	2.201822	0.0297
CointEq (-1) *	-0.030596	0.005258	-5.818857	0.0000
R-squared	0.169392	Mean dependent var		0.003856
Adjusted R-squared	0.162583	S.D. dependent var		0.011487
S.E. of regression	0.010512	Akaike info criterion		-6.256577
Sum squared resid	0.013482	Schwarz criterion		-6.211089
Log-likelihood	389.9078	Hannan-Quinn criter.		-6.238099
Durbin-Watson stat	1.975305			

* p-value incompatible with the t-bounds distribution.

Table 8

F-Bounds Test		Null Hypothesis: No levels of relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.599128	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Model Stability Diagnostics

The Cusums test below shows the stability of the model.

CONCLUSION AND POLICY IMPLICATIONS

The purpose of this study is to examine the extent to which government deficits and borrowing have influenced the growth of the money supply (as well as other price stability objectives) in Nigeria. Given the properties of the data generation process and the structural changes experienced during the period, the money growth accounting which helps us to test the hypothesis of fiscal dominance for Nigeria is adopted. We also utilized the Autoregressive Distributed Lag (ARDL) Model to achieve the objectives of the study. The empirical result indicates that monetary policy was affected by fiscal dominance in most of the sub-periods. In other words, monetary policy was constrained by substantial fiscal dominance, as the estimated results show that fiscal deficit has a positive and significant relationship with the inflation rate in Nigeria. This indicated evidence of fiscal dominance for Nigeria and that fractions of Nigerian inflationary pressures emanate from fiscal deficits, thus, hampering the efficacy of monetary policy.

The study, therefore, suggests that policy attempts to stabilize prices in Nigeria must not only be monetary but must also take cognizance of fiscal actions. Hence, the independence of the two policies calls for strong coordination of fiscal and monetary policies to attain efficient outcomes in the management of monetary policy and achievement of key macroeconomic objectives in Nigeria.

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Figure 1: Gross domestic product (GDP) and Unemployment rate (UEMP)

Figure 2: Government revenue and Government expenditure

Figure 3: Budget Deficit and Debt

Figure 4: CBN Bond and Interest rate

Figure 5: CBN Bond and Exchange rate

Figure 6: Treasury bills

Figure 7: Holders of government public debts

Figure 8: Public debt as a percentage of GDP, share of fiscal deficit to GDP

Figure 9: Debt-to-GDP ratio and the debt-to-revenue ratio

Figure 10: Components of Nigeria's domestic debt

Figure 11: External loans acquired by the Federal Government of Nigeria

Figure 12: Oil price and Oil revenue

Table 1: Descriptive Statistics Results

Table 2: Correlation Analysis Table

Table 3: Unit-root test

Table 4: COINTEGRATION TEST

Table 5: Long run Form and Bound Test

Table 6: Estimated ARDL Results

Table 7: Estimated ARDL Error Correction Model

Table 8: Form and Bound Test