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Nexus between Fiscal Discipline and the Budget Process in Africa: Evidence from Nigeria

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Abstract

This paper examined the nexus between fiscal discipline and the budget process in Nigeria over the period from 1990 to 2020. Findings showed that the level of fiscal discipline in Nigeria as measured by two proxies of fiscal deficit gap and public debt gap is more enhanced under zero-based budgeting than under current incremental budgeting system. The study also established that civilian administrations are more prone to fiscal indiscipline relative to military dispensations. The paper also revealed the significant role of net foreign aid receipts in significantly narrowing fiscal deficit and public debt gaps in the short-run and long-run, as well as, the significant widening impact of an increasing government size on public debt in the long run. The study recommends, among others, the increasing need to restore fiscal discipline in public affairs through reversion to zero-based budgeting system.

1. Introduction

1.1 Background to the Study and Problem Statement

Deficit bias, unsustainable debt, and a dreadful condition of budget process have enslaved the fiscal structure of various countries, including Nigeria, during the last three decades, thereby necessitating implementing a more effective resources management plan. Nigerians and the government face numerous obstacles as a result of the nation's building process. In the assertion of Sunday (2016), to strengthen the mechanics of governance, the Nigerian government has embarked on several fiscal reforms, ranging from the 2010 Monetization Policy, the 2007 Fiscal Responsibility Act with a GDP of 3%, the Treasury Single Account (TSA) to mention but few. With all sense of fairness, the core objective of these reforms are however yet to be realized till date. This problem of gross fiscal indiscipline is never a Nigerian problem. For instance, in most OECD countries, high and rising public debts and substantial and chronic government deficits are sources of concern to many. Deficits and debt levels in some of these countries at the detriment of currency and overall macroeconomic stability. The government's ability to meet more critical social needs has been hampered by debt servicing responsibilities (Jurgen von Hagen *et al.,* 1996).

Every government faces budget constraints, which necessitates fiscal discipline. These constraints are about long-term governmental debt, not only short-term fiscal deficits. It is not even about the debt's magnitude in a given year; it is also about how it changes over time. Financial discipline is consistent with a significant debt that is on its way down, but not with a debt that continues to clinch upwards. In the specific case of Nigeria, the country's fiscal space is constrained by factors including but not limited to: dwindling of foreign exchange rates and oil export earnings; free fall of external reserves, and the annual budget usually tied to global oil revenue benchmarks in terms of global oil pricing and domestic production. In a bid to instill fiscal discipline, the Nigerian government enacted that Fiscal Responsibility Act (FRA, subsequently) which stipulates that fiscal deficit is maintained at 3% of GDP per annum. The FRA provides for effective budgeting and budgetary control, effective revenue sourcing and generation, debt management, and expenditure control, emphasizing the need for prudence, transparency, and accountability as cornerstones of responsible accounting (Olehinwa and James, 2012). According to Olurankinse (2012), the budget in the public sector of Nigeria has almost become an annual ritual with good content but without noticeable results. Olaoye (2014) asserted that legislative barriers in the Nigerian budget process are emerging challenges causing budgeting failure in Nigeria. The author noted the abuse by the legislature to include: tempering with benchmarks, victimization, the inclusion of foreign projects and delayed budget passage. To this end, it is considered imperative that a study is conducted to investigate the key determinants of fiscal discipline in Nigeria. This is actually the main thrust of the present study.

1.3 Research Questions

In light of the issues above, this study seeks to proffer answers to the following questions:

1. Does Nigeria instill fiscal discipline in public affairs?
2. What is the impact of the budget process on fiscal discipline in Nigeria?
3. What other factors that significantly explain the level of fiscal discipline in Nigeria?

1.4 Research Objectives

The broad objective of this study is to examine the nexus between fiscal discipline and the budget process in Africa with special reference to Nigeria. However, the specific objectives are to:

1. determine if Nigeria instills fiscal discipline in public affairs.
2. estimate the impact of the budget process on fiscal discipline in Nigeria.
3. determine other factors driving the level of fiscal discipline in Nigeria.

1.5 Significance of the study

Seemingly, budgets should be handled within clear, credible and predictable fiscal policy boundaries, and that budgets should tightly associate with the government's medium-term strategic aims, and budget documents and data should be opened, transparent and accessible. With this in mind, this paper offers evidence-based approach to suggesting useful ways to instill and enhance fiscal discipline and financial transparency in public affairs.

1.6 Plan of the Study

Following the introduction section, the rest of the paper proceeds as follows. Section 2 contains the materials and methods with sub-sections including a review of relevant concepts, theories and empirics, theoretical framework, empirical model specification, estimation procedure, and data description and sources. Section 3 entails the results and discussion with sub-sections including preliminary analysis (graphical representation, descriptive statistics, the results of unit root and cointegration tests), as well as, the discussion of regression estimates and post-estimation test results. Section 4 concludes the paper.

2. Materials and Methods

2.1 Conceptual Review: Fiscal Discipline and Budgeting Process

Fiscal discipline can be defined as the standpoint that allows for the government to maintain fiscal positions that do not create macroeconomic imbalances and supports stability and economic growth (Hemming, Kell, and Mahfouz, 2002). Given this, the government must avoid the accumulation of debts and indiscriminate utilization of funds meant for designated institutions or projects. Rubin (2007) defines the breakdown of fiscal discipline in terms of political, process and institutional components of public budgeting at different levels of government. Political unwillingness causes delay and an inability to reach consensus. Process problems include hidden spending (black budgets and off-budget) and re-budgeting schemes. Institutional problems include an inability to meet resolution deadlines and inappropriate use of supplemental appropriations. The crux of fiscal discipline rests on the central governmental

financial activities, which in itself differs from budget discipline as both terms have been misconstrued to imply the same thing, as the latter is part of the former. Budget discipline considers both rules and sanction which further entails balanced budget rules, deficit ceiling, accounting and reporting requirements, instruments of budget administrative control (Dafflon, 2012), while fiscal discipline encompasses budget discipline with planning, balancing and execution activities to sustain all government operations (Hou and Willoughby, 2010).

On the other hand, budgeting relates to other governmental actions, and it is interrelated with many governmental concepts. A good budget reflects various pillars of public governance: integrity, openness, participation, accountability, and a strategic approach to planning and achieving national objectives. Budgeting constitutes a mutually binding trust between states and their citizens. The pattern of budgeting in Africa between 1970-1980, according to Gyimah-Brempong (1998), prioritized defense, education and economic initiatives while other projects were sidelined. The financial allocation process in Africa was best characterized in terms of political and social constraints exerted on policymakers by diverse interest groups. Advanced countries like the United States have seen budgeting shift from the conventional congressional debates and final policy statements to a closed stream of thought informed by the presidents and his advisors (Khan and Hildreth, 2002).

A good budget reflects elements of excellent public government, which are integrity, openness, engagement, accountability and a strategic approach to planning and attaining national objectives. Oyeleke and Ajilore (2014) found that fiscal policy in Nigeria was weakly sustainable for the period 1980-2010, implying that the Nigerian budget has been placed outside the nation's constraint and solvency. Budget padding is another idea ingrained in the Nigerian budgeting process, and it has been identified as a crucial component in creating bloated and wasteful budgets (Theophilus and Perpetual, 2016). Poor budget conceptualization, the inadequacy of implementation plans, non-release or late release of budgeted funds, a lack of budget performance monitoring, a lack of technical capacity among MDAs, and delays in budget passage and enactment are some of the challenges that have contributed to the poor performance in the Low budget of Nigeria (Kingsley and Ehigiamusoe, 2014).

In addition, development and the expansion of populations and costs gave rise to planned spending to control fiscal balance. A Budget is a numerical plan for allocating resources to specific activities. It includes the money that will be spent and when it will be spent. Asides from expenses, a budget can also include income. Budgets are typically prepared for revenues (income or earnings), recurring expenditures, and large capital expenditures such as land, equipment, furniture. Budget estimates must be made for daily, weekly, or monthly activities and expenses and annual estimates (Ray, 2020). It has been opined that lack of cost, time and knowledge are determinants of the budgeting process (Alles et al., 2021). Evidence-based budgeting has been earmarked as a means to budget allocation efficiency (Long et al., 2021).

2.2 Theoretical Review
2.2.1 Maximum Social Advantage
The use of an economic method to discover the component of government budgeting and expenditure is recommended in this approach. The government uses this strategy to spend its limited resources on alternative amenities, ensuring that the marginal benefit is equal across all products purchased. In other words, spending should be spread in such a way that the final monetary unit spent has the same level as the first. The basic premise of public finance is Dalton's concept of Maximum Social Advantage, which states that "economic welfare is achieved when the ensuing gains from marginal utility on expenditure equals the marginal dis-utility enforced by taxation". This elucidates the terrain of how the fiscal policy affects the nation's economic budget process. As a result of this, the government is only obligated to spend to the degree that the marginal social advantage of all spending equals the marginal social detriment of alternative measures of obtaining additional public revenue (see Periola, 2019).

2.2.2 Public Choice Approach
Essentially, the government's role is to cater for its citizens and not their individual welfare. Public Choice Approach (PCA) is a collection of theories that acknowledge the importance of political process in forming popular choices. Duncan (1948) was the first to write on public choice, and his work was further expanded upon by the works of Buchanan and Gordon (1962); Buchanan (1967); Kenneth (1963). According to the PCA theory, government spending is dictated by self-interest rather than public interest in democratic countries. Governments manage their spending and earnings to increased their chances of winning their elections. As a result, planning the spending of a nation, is defined by series of discrete policy outcomes based on the assessment of votes losses and gains. Furthermore, special interest coalitions pressing the government for wealth transfers tends to raise the size of government authorized expenditure people are more likely to campaign for government, spending that benefits them, with concentrated interest triumphing over the dispensed common interest (see Periola, 2019).

2.2.3 The Common Pool Resource (CPR) Problem
Fiscal indiscipline is deeply rooted in poor governance over the use of common pool resources (see Kontopoulos and Perotti, 1999; von Hagen and Harden, 1995; Weingast et al., 1981; Wyplosz and Kostrup, 2010; and Hallerberg et al., 2009). The common pool resource problem is the consequence of rent-seeking behaviour of some industry players and the elite which comes in the form of tax rebates, subsidies; whereby, those enjoying the marginal benefits from additional public spending are not almost the same as those that bear the marginal cost of contributing to the common pool resource. If the beneficiaries of rent seeking are same as the cost bearers, they would have chosen the level of spending that ultimately equates the marginal benefit and marginal cost associated with the common pool resource use. But since this may not necessarily be the case most of the times, the beneficiaries tend to ask for more government spending and even favour widening budget deficits and public debt accumulation. This, therefore, reflects the

fact that the beneficiaries of public spending fail to fully internalize the costs that taxpayers must assume in contributing to the nation's treasury – the common pool resource (see Periola, 2019).

2.3 Empirical Review

Tapsoba et al. (2019) analyzed the role of African regional economic communities in the convergence of fiscal policies from 1990-2015. However, both the current and future determinants of the nation's fiscal discipline hinge on the socio-economic conditions in low income countries, which then constitute the key determinants of fiscal discipline in these countries (see Fagbemi, 2020). Moral persuasion has been found to benefit the budgetary framework in incentivizing a coordinated response through coordinating organizations. In a study involving more than 200 US cities, Moore (1980) concluded that budgeting formats are determined by each region's perception of budgeting problems. The budgeting types identified are line-item budgeting, reform budgeting, planning and programming budgeting. Gyimah-Brempong, (1998) found that the budgeting pattern in Africa during the 1970s and 1980s prioritized defense, education and economic programs while other programs were marginalized. It was concluded that the budgetary allocation process in Africa could best be explained in terms of the political and social pressures invoked on policymakers by various interest groups. Advanced countries like the United States have seen budgeting shift from traditional congressional debates and definitive policy statements to a closed line of thought informed by the presidents and his aides (Khan and Hildreth, 2002).

A large quantum of the literature has paid a quantum leap on the impact of declining/weak revenue and poor real GDP growth on developing countries' fiscal situation (Bevan, 2010). It has also been noted that the depreciation of the Naira powers the growth of government expenditure over total revenue. This expands the budget deficit or can generate a budget deficit over time (Egwaikhide et al., 1994). The determinants of budget deficit are location-specific, and they are economic growth, debt, unemployment rates, GDP per capita, level of urbanization, climate variability, national account balances, inflation, aid, military spending, as well as political factors, and quality of budgetary institutions (Mawejje and Odhiambo, 2020). The government's provision of public goods was significant to widening the fiscal deficits in Ivory Coast (Kouassy and Bohoun, 1993). More recently, Ejiogu et al. (2020) explored the Nigerian government's budgetary response to the COVID-19 pandemic and found that increased borrowing to fund COVID-19 related economic and social interventions have significantly squeezed Nigeria's fiscal space, thus highlighting a budget with low resilience. It was also averred that while some interventions provided short-term economic relief, other interventions have potentially significant adverse effects on businesses and households.

There are pieces of evidence linking poor budget institutions and processes to the budget deficit in Zimbabwe. Adopting the fiscal illusion theory and the formative fiscal federalism theory, Machinjike and Bonga (2021) discovered that fiscal indiscipline promotes budget deficits. It was

further explained that fiscal indiscipline is driven by weak budget institutional frameworks, party institutionalization and economic sanctions while strengthening and implementing existing fiscal institutional frameworks, savings during the boom for economic shocks and engagement of the international community on sanctions were suggested as frameworks towards financial discipline. This is in line with evidence from Gollwitzer (2011) in respect to African countries. Between 1984-2016, results showed improved governance and accountability had the highest effect on decreasing budget deficits in 12 West African Countries. It was subsequently suggested that creating incentives for building sound institutions and securing enabling governance would enhance fiscal prudence and sustainability in West Africa (Fagbemi, 2020). According to Periola (2019), there are pointers that fiscal discipline was lacking in Nigeria from 1980 to 2015, as primary balance, debt sustainability, expenditure variance, and revenue variance indicated fiscal indiscipline. The author argued further that the level of fiscal discipline is significantly driven by key factors including the number of spending units, government size, and regime type, election period, foreign capital flows (FDI, aids and grants).

Membership variables such as cooperation between regional communities could also be a tool against fiscal divergence among countries (Tapsoba et al., 2019). Fiscal rules such as benchmarks and performance cuts are often portrayed as guides to fiscal discipline; however, fiscal rules without political backing or central or decentralized government's will would be ineffective (Schick, 2003; Ter-Minassian, 2007). In contrast, fiscal transparency does not necessarily translate to improved fiscal outcomes. It has been noted that the budget information for many African countries is not available; in others, it is available but not credible. Evidence has also shown that many countries have credible information available but decide not to publish them (Folscher and Emile G, 2012). On investigating the sustainability of fiscal policy in Nigeria over the period 1980-2010, Oyeleke and Ajilore (2014) revealed that fiscal policy was weakly sustainable in the economy of Nigeria, suggesting that the Nigerian budget has been placed outside the constraints and solvency of the nation. Another concept entrenched in the Nigerian budgeting process is budget padding, and this has been adjudged a critical factor in the formation of large and inefficient budgets (Theophilus and Perpetua, 2016).

Moreover, the poor budget performance in Nigeria is attributable to the nature of budgetary process which is in turn marred by key challenges including: (1) poor conceptualization of the budget; (2) inadequacy of implementation plans; (3) the non-release or late release of funds; (4) lack of effective monitoring and evaluation procedures; (5) dearth of technical capacity among MDAs, and (6) delays in the passage of the appropriation bill into law (Kingsley and Ehigiamusoe, 2014). Nwaorgu and Alozie (2017) described Nigeria's budget performance as sub-optimal but fairly satisfactory. Following the poor budget processes and fiscal indiscipline across the African continent, there have been calls for budget reforms. However, the African Development Bank opined that it might be challenging to identify ready-made alternatives that can engender improved budget practices across the continent, as improvements will depend on

tailor-made approaches that are fitted to address specific issues within each country's budget system (AfDB, 2008). To this end, the current study contributes to the debate on the nexus between fiscal discipline and the budget process in Africa and Nigeria in particular while offering significant innovations, which are discussed in next section.

2.4 Methodology and Analysis
2.4.1 Theoretical Framework
In line with the works of Periola (2019), this study adopts the theory of common pool resource problem as it clearly shows the relationship between the level of fiscal discipline and the transparency of the budget process, amongst other key determinants of fiscal discipline. Following Treisman (2008), local authorities see the central budget or spending plan as a common pool from which diverse groups (neighbourhood government in Triesman model) draw large transfers for their own districts. The central government is assumed to care only for being in power and not for the policy per se. It is thus pre-committed to implement whichever policy promised. This ensures that the central government can credibly commit to a predetermined expenditure level. Treisman assumes that local governments can persuade the central government to satisfy their demands. Local government in Treisman's model can be substituted by spending units such as ministries, departments and agencies (MDAs) responsible for the budget execution. The basic assumptions of the Treisman's (2008) model include: (1) The central government is driven by self-interest; (2) A finite number of spending units (MDAs); (3) Only the central government taxes the citizens, and (4) Identical spending units (MDAs).

Given that a country is divided into $n = 1, 2, …, N$ MDAs, each collecting an income y and paying a lump-sum tax T. Let the statutory allocations to the MDAs from the Central government be represented as r_n and are assumed to fund the activities of MDAs, where spending is denoted by g_n. Assume that the statutory transfers were pooled from taxpayers' funds. Now, in this case, the common pool resource is mobilized by the Central government through taxation and the funds realized are redistributed as transfers to the MDAs in a particular fiscal year. Budgeting consists of choosing the expenditure levels for MDAs given the budget constraint (which in this case, are tax revenues). Consider a budget process where each MDA chooses the expenditure level given the choices of other MDAs and the Central government's common resource pool.

Each MDA thus optimizes a payoff function:
$$V_n = h(g_n) + y - T \tag{1}$$
Where;
$h'(.) > 0; h''(.) < 0;$ and invoking the Inada condition that: $h(0) = 0; \lim_{g_n} h'(g_n) = \infty$

Subject to the Central government budget constraint as follows:
$$\sum n g_n = \sum n r_n = nT \tag{2}$$

Equilibrium spending by each MDA is then determined by the first order condition that:

$$h'(g_n^*) = \frac{1}{n} \tag{3}$$

Where $h'(g_n^*)$ is the marginal cost of spending and $\frac{1}{n}$ is the perceived price for a rise in an MDA's expenditure level.

Since the MDAs are homogeneous and identical, they select a similar expenditure level. If each MDA had to bear the full cost of its spending plan and fund it with a lump-sum tax, there would be no reallocation of funds from taxpayers' funds and each MDA would be maximizing their payoff (see Eq. 1) subject to the MDA's budget constraint as follows:

$$g_n = T \tag{4}$$

For the nth MDA, the equilibrium condition implies that:

$$h'(g_n^*) = 1 \tag{5}$$

Each MDA pays $\frac{1}{n}$ of a dollar expended, whereas in the second occurrence, each MDA endured the total cost of its spending by repaying the genuine price of a rise in its spending level. Hence, the marginal cost of the spending is lower in eq. 3 - where redistribution of common pool resource is possible - than in eq. 5 - which allows each MDA to bear the full cost of their additional spending plan. Finally, the Common Pool Resource problem emanated from the inability of policy makers to coordinate the activities and spending pattern of the spending units (that is, the MDAs) since the MDAs do not bear the full cost of their spending plan (see Periola, 2019).

2.4.2 Empirical Model Specification

The extant literature has measured fiscal discipline, most especially, in diverse ways. Fiscal discipline has been measured in terms of the variance between actual and budgeted expenditure and revenue, as well as, the budget adoption time (Hou and Willoughby, 2010; Periola, 2019); in terms of debt sustainability level (see, Acosta and Coppedge, 2001; Freitag and Vatter, 2008; Hitaj and Onder, 2013), and the ratio of primary balance to GDP (Ardagna, 2004 and Branch and Adderley, 2009). In terms of the determinants of fiscal discipline, the literature has identified factors including: election period, foreign capital inflows (aids and grants, FDI), trade openness, external reserves, political regime, government size, transparency index, number of spending units, and a measure of persistence effects to reflect the dynamic nature of fiscal discipline (see Ames, 1987; Altman, 2001; Persson and Tabellini, 2001; El-Shagi, 2010; Puonti, 2010; Neyapti, 2013; Periola, 2019).

To differ from past works, the current study measures fiscal discipline and the budget process in line with the peculiarities of the Nigerian economy. Fiscal discipline is defined as the difference between the actual fiscal deficit (% of GDP) and the 3% target stipulated in the 2007 Fiscal Responsibility Act. Fiscal discipline is also measured as the gap between the actual public debt (%

of GDP) and the level that is considered sustainable as stipulated by the Joint Sustainability Results of the IMF and the World Bank. The present study also employs from the control variables established in the empirical literature. Particularly, this study employs the budgeting types as the proxy for the budget process.

Overtime, Nigeria has operated two budgeting types, namely, the zero-based and incremental budgeting. Zero-based budgeting is a budgeting process that allocates funding based on program efficiency and necessity rather than budget history. It sets the tone to review every program and expenditure at the beginning of each budget cycle and must justify each line item in order to receive funding (Deloitte, 2015; Beredugo, 2019). This budgeting method utilizes much more details and holds the MDAs more accountable. Conversely, incremental budgeting begins with the budget from the last period. Once there is an established starting point, if a department needs more money than the previous budget, they have to be able to justify the extra expenses (Beredugo, 2019). Also, if you do not use your budget, then the next period's budget will be reduced. In 2016 the Federal Government of Nigeria shifted from the incremental budgeting to the zero-based budgeting method (Beredugo, 2019).

In light of the aforementioned, this study specifies the dynamic model of fiscal discipline in line with the original developers of the autoregressive distributed lag (ARDL) model, namely Pesaran et al. (2001), as follows:

$$\Delta FSD_t = \alpha_1 FSD_{t-1} + \alpha_2 AIDS_{t-1} + \alpha_3 GOVS_{t-1} + \gamma BDP + \theta POLR + \sum_{i=1}^{p-1} \delta_i \Delta FSD_{t-i} + \sum_{j=0}^{q_3-1} \mu_j \Delta AIDS_{t-j} + \sum_{j=0}^{q_3-1} \rho_j \Delta GOVS_{t-j} + \epsilon_t \tag{6}$$

The error correction representation of eq. 6 is derived as follows:
$$\Delta FSD_t = \alpha_1 \left(FSD_{t-1} - \left[-\frac{\alpha_2}{\alpha_1} AIDS_{t-1} - \frac{\alpha_3}{\alpha_1} GOVS_{t-1} \right] \right) + \gamma BDP + \theta POLR + \sum_{i=1}^{p-1} \delta_i \Delta FSD_{t-i} + \sum_{j=0}^{q_3-1} \mu_j \Delta AIDS_{t-j} + \sum_{j=0}^{q_3-1} \rho_j \Delta GOVS_{t-j} + \epsilon_t \tag{7}$$
By letting,
$$ECT = FSD_{t-1} - \beta_1 AIDS_{t-1} - \beta_2 GOVS_{t-1} \tag{8}$$
Where: $\beta_1 = -\frac{\alpha_2}{\alpha_1}, \quad \beta_2 = -\frac{\alpha_3}{\alpha_1}$ \tag{9}
Eq. 7 therefore becomes:
$$\Delta FSD_t = \alpha_1 ECT + \sum_{j=0}^{q_3-1} \mu_j \Delta AIDS_{t-j} + \sum_{j=0}^{q_3-1} \rho_j \Delta GOVS_{t-j} + \epsilon_t \tag{10}$$

Description of Terms
ECT is the error correction term, with its associated coefficient (α_1) being the adjustment parameter. It measures the speed at which the dependent variable (which in this case is Nigeria's fiscal discipline indicator) adjusts from its short-run fluctuations to its long-run equilibrium value. The convergence criteria hold that the adjustment parameter is negative, less than 1 in

absolute value, and statistically significant at any of the conventional levels; Fiscal discipline (FSD) is measured using two proxies: the deviation of fiscal deficit from the 3% Fiscal Responsibility Act 2007 (FSD_F) (fiscal gap, subsequently) and the deviation of public debt from the IMF's minimum debt burden threshold/distress point of 35% (FSD_P) (public debt gap, subsequently). BDP is the proxy for the budget process, which in this case are the budgeting types/practice, which is a dummy variable that takes the value of 1 for the period of zero-based budgeting and 0 otherwise (incremental budgeting era); $POLR$ is the dummy variable for political regime which takes the value of 1 for democratic system and 0 for military regime; Both budget process and political regime are classified as fixed regressors. $AIDS$ is net foreign aids received (% of GNI); $GOVS$ is government size, proxied by total government spending (% of GDP); Δ is the first difference operator, $\delta_i, \gamma, \theta, \mu_j, \rho_j$ are short-run parameters while β_1, β_2 are long-run parameters, $p - 1$ is the maximum lag length for the dependent variable whereas $q_j - 1$ for $j = 1,2,3,4$ are the maximum lag lengths for the explanatory variables, and ϵ_t is the error term, and "t" stands for time. The A priori expectation goes thus: $\delta_i >$ or $< 0; \gamma >$ or $< 0; \theta >$ or $< 0; \mu_j < 0; \rho_j < 0$ and $\beta_1 < 0; \beta_2 < 0$.

2.4.3 Estimation Procedure
The study adopts the framework of autoregressive distributed lag model (ARDL) for the following reasons. *First*, ARDL model allows for both the static and dynamic effect(s) of the independent variable(s) on the dependent variable unlike a static model that accounts for static or fixed effect(s) only. *Second*, ARDL framework offers a technique for checking the existence of a long-run relationship between variables, and that is referred to as the *Bounds test*. Bounds test is flexible as it accommodates both stationary and integrated series unlike other tests of cointegration, such as, Engle-Granger and Johansen tests, which considers only non-stationary series that are integrated of the same order. Before model estimation, it is important to check the time-series properties such as unit root and cointegration to avoid the estimation of spurious regression. To achieve this, the present study adopts the Augmented Dickey-Fuller (ADF) test and the Bounds test for cointegration.

The ADF unit root test is conducted to check if series are stationary or not. The null hypothesis is that a series has a unit root or is nonstationary. If the ADF tau stat is greater, in absolute terms, than the MacKinnon critical values at any chosen level of significance, the null hypothesis is rejected, otherwise, we will fail to reject the null hypothesis of a unit root. Following Nelson and Plosser (1982), macroeconomic variables (nominal and real) have two components including, a secular (or growth) component and a cyclical component. This therefore calls for the distinction between deterministic trend and stochastic trend. The distinction between stationary and non-stationary stochastic process (or time series) has a crucial bearing on whether the trend (the slow long-run evolution of the time series under consideration) observed in actual economic time series is deterministic or stochastic (see Adekunle, 2021). Generally, if the trend in a time series is a deterministic function of time, such as time, time-squared, and so on (that is, completely

predictable trend), it is called a deterministic trend, whereas if the trend is not predictable, it is called a stochastic trend (Gujarati and Porter, 2009: pp. 745).

Similarly, the Bounds test for cointegration tests the null hypothesis that there is no cointegration between fiscal deficit and its determinants (that is, other macroeconomic indicators). To conclude the presence or absence of cointegration, there is need to compare the computed F-stat with the critical bound values, that is, I0 bound (the lower bound) and I1 bound (the upper bound) at any chosen level of significance. If the F-stat is less than the I0 critical value at any chosen level of significance, then there is no cointegration. However, if the F-stat is greater than the I1 critical value at any chosen level of significance, then there is cointegration. However, if the F-stat lies between the I0 and I1 critical values at all levels of significance, then the test result is inconclusive. when there is cointegration between the explanatory variables (X's) and the dependent variable (y), both the short-run model with error correction term (ECT) as in Eq. 10 and the long-run model as in Eq. 8 would be estimated. However, if the X's and y are not cointegrated, then only the short-run model without ECT as in Eq. 6 which is the original ARDL model would be estimated.

2.4.4 Data Description and Sources
The study is conducted for the Nigerian economy, upon which secondary data on variables of interest are drawn from the World Bank's World Development Indicator, the IMF's International Financial Statistics (IFS) and the Central Bank of Nigeria Statistical Bulletin. Data were collected for total government expenditure (% of GDP), fiscal deficit (% of GDP), public debt (% of GDP) and net foreign aid received (% of GNI) were collected over the period of 1990 to 2020. The binary values assumed by the dummy variables for political regime and budgeting practice were determined by the author. The study also adopted the 2007 Fiscal Responsibility Act fiscal deficit target of 3% of GDP and the IMF's minimum debt burden threshold of 35%.

3. Results and Discussion
3.1 Graphical Representation of Fiscal Discipline Indicators
Figures 1 and 2 show the trends of fiscal and public gaps, respectively, over the period from 1990 to 2020. In terms of fiscal deficit measure of fiscal discipline, post-2007, Nigeria was able to operate below the 3% fiscal deficit target in three years: 2017, 2019 and 2020. The remaining period of 2008-2016 and 2018 were marred with over-bloated public spending such that the country exceeded the 3% target. Notably, the period encapsulates two election years of 2011 and 2015, where the fiscal gap stood at 1.18 and 1.36 percentage points, respectively. This result is in line with the findings and assertions of Ames (1987); Altman (2001), and Periola (2019) that amid election period, government authorities have little scope to oblige to fiscal discipline, as they stay suspend or even reduce taxes in order to win a re-election bid. The outbreak of the coronavirus pandemic in 2019 and continued spread in 2020 constrained public finances and ultimately reflected in improved government's compliance to the 3% fiscal deficit target.

In April 2005, the IMF introduced the Debt Sustainability Analysis for its Low Income Member Countries. This period coincided with the era of debt forgiveness enjoyed by these countries, including Nigeria, when the country's public debt stock fell sharply from US$36 billion in 2004 to US$4 billion in 2006 (see Jarju et al., 2016 and Adekunle et al., 2021). Correspondingly, public debt-GDP ratio plunged from 35.5% to 9.4% over a similar period. Meanwhile, public debt profile has continuously followed an upward trend since 2014 when public debt stock stood at US$100 billion and rising by 50% to climax at US150 billion in 2020, at the height of the COVID-19 crisis (see, IMF, 2021a). Over a similar period, Nigeria's public debt stock rose from 17.5% of GDP to 35.1% (see IMF, 2021b). This however threatens the country's debt sustainability and put her at high risk of debt default as the current public debt-to-GDP ratio is just 10 basis points above the IMF's minimum debt burden target of 35%. This ultimately reflects the gross fiscal indiscipline on the Nigerian government which has taken on debt accumulation as a habit, particularly from 2014 till date.

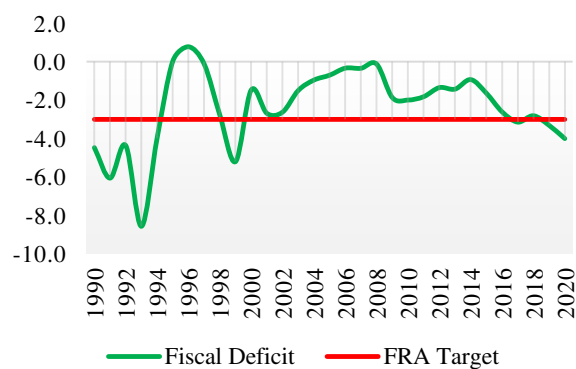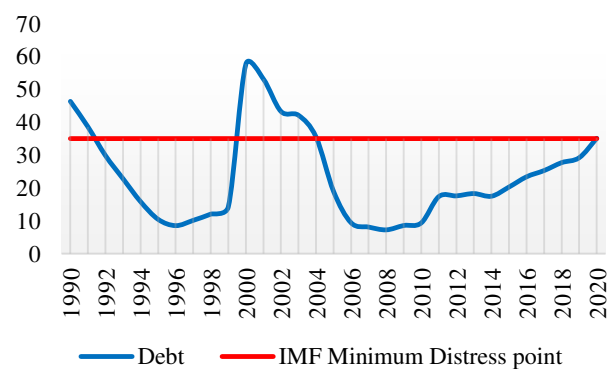**Figure 1**: Fiscal Deficit (% of GDP) and 3% Fiscal Responsibility Act Target

Figure 2: Public Debt (% of GDP) and 35% IMF's Minimum Threshold/Distress Point

Source: Based on Data from CBN Statistical Bulletin and IMF's Statistics.

3.2 Descriptive Statistics

The summary statistics for the quantitative economic indicators including the two measures of fiscal discipline (fiscal gap and public debt gap), net foreign aids received (% of GNI) and a measure of government size (total public spending, % of GDP) are presented in Table 1. Nigeria could be said to be financially undisciplined in terms of the fiscal deficit gap, which averaged 0.67 percentage points between 1990 and 2020. However, public debt gap averaged -11.32 percentage points; implying historical improvement of Nigeria at satisfying the IMF's minimum debt burden threshold, until more recently when there is weak compliance. Nigeria is indeed a net receiver and beneficiary of foreign aid flows as her net official development assistance (ODA) receipts averaged 0.79% of Gross National Income (GNI). Government size as measured by total public spending averaged 8.6% of Gross Domestic Product (GDP). In terms of volatility as measured by standard deviation, public debt gap is the most volatile series while net foreign

aids received is the least volatile series. The Jarque-Bera statistics shows that only public debt gap follows a normal distribution while other quantitative variables do not.

Table 1: Summary Statistics

Variable	No. of Observation	Mean	Std. Deviation	Jarque-Bera Stat [prob.]
FSD_F	**31**	**0.6679**	**2.0125**	**7.9094[0.0192]**
FSD_D	**31**	**-11.3244**	**14.1718**	**3.4682[0.1766]**
AIDS	**31**	**0.7914**	**1.0024**	**200.6814[0.0000]**
GOVS	**31**	**8.6034**	**2.8085**	**13.2061[0.0014]**

Source: Authors' computation.

3.3 The Unit Root Test Result

The result of the conventional ADF unit test based on three possible test regressions is presented in Table 2. It can be observed that all variables, except government size indicator (public spending), are stationary at levels and are said to be integrated of order zero (that is, I(0)). The implication of this result is that utilizing a combination of stationary and non-stationary series without running a cointegration test would only lead to estimating a spurious regression in the words of Granger and Newbold (1974).

Table 2: Result of the ADF Unit Root Test

Variable	Level	First Difference	Order of integration
FSD_F	**-3.0867**[**b]**	**-------------†**	**I(0)**
FSD_P	**-1.8117*[c]**	**-------------**	**I(0)**
AIDS	**-3.9873***[**b]**	**-------------**	**I(0)**
GOVS	**-2.8599[a]**	**-4.6242***[**a]**	**I(1)**

Note: ***, **,* indicate the rejection of the null hypothesis of a unit root at 1%, 5% and 10%, respectively; I(d) is the order of integration and it refers to the number of differencing required for a series to become stationary; †implies that a series that is stationary at levels does not require its first difference being reported; a, b and c denote models with intercept and trend, with intercept only and with none, respectively.
Source: Authors' computation.

3.4 The Cointegration Test Result

Since the unit test root result has confirmed that the quantitative variables employed in this study are a combination of different orders of integration, the ARDL Bounds test for cointegration becomes plausible. Result of the Bounds test (see Table 3) shows that irrespective of the measure of fiscal discipline, there is a long-run equilibrium relationship between fiscal discipline and its probable determinants including the key explanatory variable (the budget process), as well as, the control variables including political regime, net foreign aids received and government size. This conclusion is based on the fact that the F-statistics associated with both specifications are greater than the upper critical bounds at 1% level of significance.

Table 3: Result of Bounds cointegration Test

	Model I		Model II	
F-statistic	**20.5758**		**11.9028**	
	Critical values		Critical values	
Significance level	I(0) Bound	I(1) Bound	I(0) Bound	I(1) Bound
10%	**4.19**	**5.06**	**3.17**	**4.14**
5%	**4.87**	**5.85**	**3.79**	**4.85**
2.5%	**5.79**	**6.59**	**4.41**	**5.52**
1%	**6.34**	**7.52**	**5.15**	**6.36**

Note: Models I and II utilize the fiscal deficit gap and public debt gap as proxies for fiscal discipline, respectively.
Source: Authors' computation.

3.5 The Regression Result

The validation of the existence of cointegration between fiscal discipline indicators and its probable determinants suggests the need to present the short-run and long-run estimates (see Table 4). With respect to the key explanatory variable - the budget process (measured in terms of budgeting type/practice), the associated coefficients suggest zero-based budgeting narrows fiscal deficit gap and public debt gap than the alternative incremental budgeting. The coefficients -0.1343 and -9.4263, respectively, indicate that the gaps in fiscal deficit and public debt stock narrow under zero-based budgeting relative to incremental budgeting by 0.13 and 9.42 percentage points. By implication, zero-based budgeting instills greater fiscal and financial discipline than does incremental budgeting. This result parallels the findings of Deloitte (2015) and Beredugo (2019) that zero-based budgeting offers more transparency and accountability among public officials than incremental budgeting. This study also established that the gaps in fiscal deficit and public debt stock are wider under a civilian regime compared to a military dispensation. The associated coefficients, 2.5865 and 10.3376 implies that fiscal deficit and public debt gaps are 2.59 and 10.34 percentage points narrower under military rule relative to the respective gaps under civilian administration. This is one major reason for military take-over of government in Nigeria's history. The result however contradicts the conventional wisdom or ideal case that democracy improves fiscal discipline while a dictatorial type is usually less disciplined (see Persson and Tabellini, 2001).

Foreign aids, like any other forms of foreign capital flows, helps to circumvent weak domestic resource mobilization to meet a country's development needs, thereby offering less scope for additional borrowing. The current study established the validity of this assertion as fiscal deficit gap and public debt gap narrow on average by 0.18 and 2.78 percentage points for every 1 percentage point increase in net foreign aid received. The impact is significant only for the public debt gap proxy of fiscal discipline both in the short run and the long run. This result is in consonance with the findings and assertions of Puonti (2010) and Periola (2019) that foreign aids that is tied to budget support strengthens the transparency of the budget process and instills

greater fiscal discipline. The fiscal discipline impact of an increasing government size is sensitive to the indicators of fiscal discipline. This parallels with the findings of Periola (2019) where government size exerts positive and negative effects on fiscal discipline measured in terms of fiscal balance (% of GDP) and debt sustainability level/public debt (% of GDP), respectively. Notwithstanding, this study establishes the reverse case of Periola (2019)'s findings; as 1 percentage point increase in government size (public spending) would on average significantly narrow fiscal deficit gap by 0.74 and 1.52 percentage points over the short-term and the long-term horizons, respectively. Conversely, an increasing government size significantly translates to gross fiscal indiscipline by widening public debt gap by 2.28 percentage points in the long run.

Moreover, the coefficient on the error correction term or the adjustment parameter is correctly signed and is statistically significant at the 1% level irrespective of the measure of fiscal discipline. The coefficients -0.4896 and 0.4239 implies the past disequilibrium errors are corrected per annum at the rate of 48.9% and 42.4% for fiscal deficit gap and public debt gap, respectively. This study also establishes that fiscal deficit gap exhibits some form of historical downward trend as earlier confirmed from the graphical representation of the two measures of fiscal discipline employed in this paper. The coefficient of determination for both models showed that all the explanatory variables (budget process indicator, political regime indicator, net ODA receipts government size and the trend variable) explains about 69% of the total variation in fiscal discipline (fiscal gap) and about 64% in the case of the public debt gap proxy. This claim is supported by the large F-statistics that imply the overall significance of both models at 1% level of significance. We further justify the findings that socio-economic factors significantly explain the level of fiscal discipline in Nigeria than does the time-series forecast models including AR(1), MA(1) and ARMA(1,1) specifications (Refer to Figures A1 and A2 in the **Appendix**). Lastly, the post-estimation diagnostics performed on both specifications suggest that the models do not suffer from problems, such as, misspecification error, non-normality of the residuals, autocorrelation in residuals and ARCH effects in residuals, as we could not reject the null hypothesis that these problems are absent at 10% level of significance ($p > 0.1$).

Table 4: Short-run and Long-run ARDL Estimates of the Determinants of Fiscal Discipline in Nigeria

	Model I	Model II
Dependent variable	FSD_F_t	FSD_P_t
Short-run Estimates		
ECT	-0.4896***(0.0059)	-0.4239***(0.0679)
BDP_t	-0.1343(0.7392)	-9.4263***(3.1832)
$POLR_t$	2.5865***(0.7945)	10.3376***(2.6928)
$\Delta AIDS_t$	-0.1779(0.2041)	-2.7824**(1.0609)
$\Delta GOVS_t$	-0.7421***(0.1202)	-0.2881(0.4466)
$TREND$	-0.2597***(0.0778)	-
C	9.0489***(2.1855)	-21.8451
Long-run Estimates		
$AIDS_t$	-0.3634(0.3188)	-3.7669**(1.3592)
$GOVS_t$	-1.5156***(0.4973)	2.2767***(0.6197)
Adjusted R^2	0.6912	0.6379
F-statistic	17.2262[0.0000]	11.2189[0.0000]
Ramsey RESET: F-stat	0.6744[0.4208]	0.1086[0.7448]
Autocorrelation test: LM stat	2.9959[0.2236]	2.9467[0.2292]
Heteroscedasticity test: ARCH LM stat	0.0033[0.9542]	0.0074[0.9314]
Normality test: Jarque-Bera stat	0.8006[0.6701]	3.5597[0.1687]

Note: ***, **, * indicate the statistical significance of coefficients at 1%, 5% and 10% respectively; the values in parentheses and block brackets are, respectively, the standard errors and the probabilities. LM implies Lagrangian multiplier. ARCH stands for Autocorrelation conditional heteroscedasticity, while RESET means Regression Error Specification Test.

Source: Authors' computation.

4. Conclusion and Policy Recommendation

This study investigated the nexus between fiscal discipline and the budget process with reference to Africa's largest economy, Nigeria over the period of 1990 to 2020. The overall results revealed that the level of fiscal discipline as measured by two proxies of fiscal deficit gap and public debt gap is more enhanced under zero-based budgeting system than under the current incremental budgeting technique. The study also established that the era of civilian administrations is more prone to fiscal indiscipline relative to military dispensations. Moreover, the study offered evidence of the significant widening effects of an increasing government size in the long run, while it established a significant narrowing effects in the case of net foreign aid receipts over the short-term and long-term horizons. These findings ultimately birth key action points for the Nigerian government including: (1) the need to revert to zero-based budgeting to entrench transparency in public budgeting process; (2) the need to strengthen anti-graft at all levels of government since the current realities have shown that corrupt practices exist top-down, bottom-up, irrespective of political regime; (3) foreign aids tied to budget support should be well managed to avoid expending realized funds on frivolities and misplaced priorities at all levels of government in Nigeria; (4) there is an urgent to reduce government size as there are valid claims that Nigeria runs one of the most expensive government and public affairs globally.

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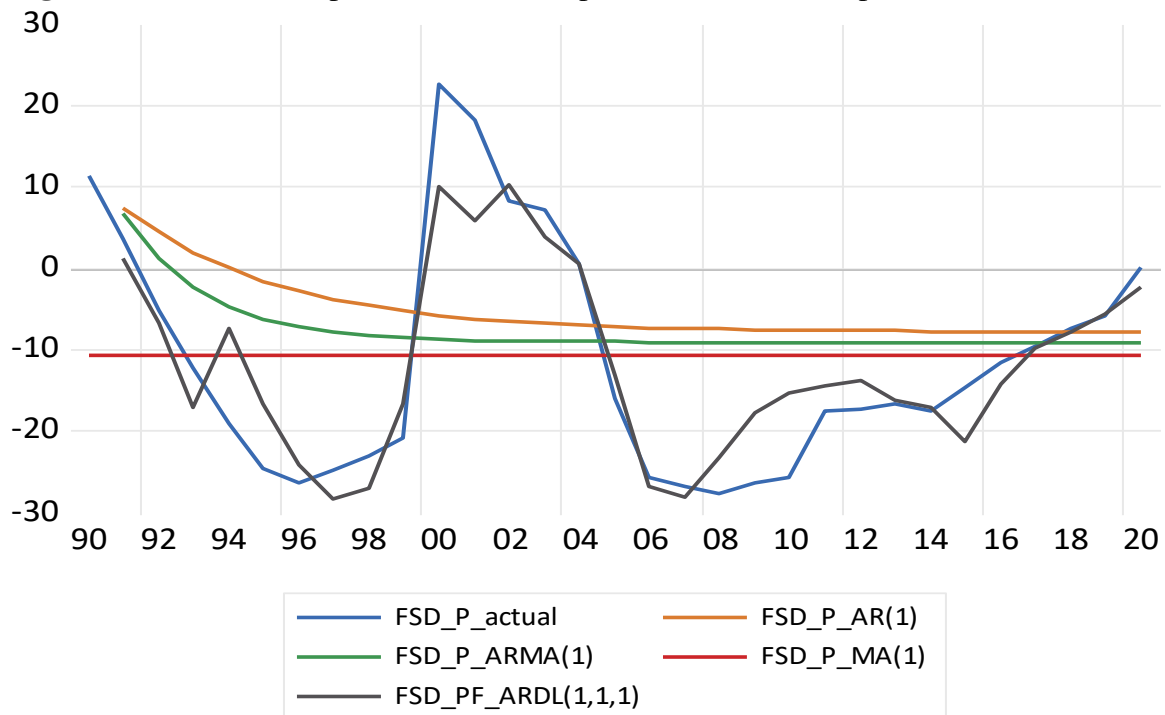
Appendix

Figure A1: Forecast Graphs for Fiscal Discipline (Fiscal Deficit Gap)
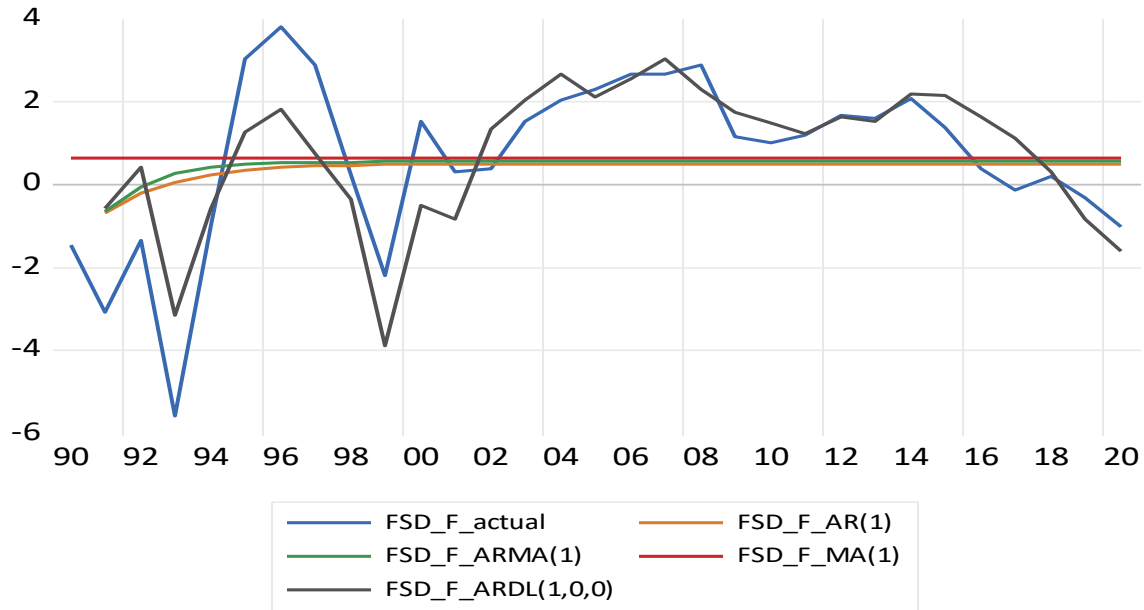
Source: E-views 12 Output.

Figure A2: Forecast Graphs for Fiscal Discipline (Public Debt Gap)

Source: E-views 12 Output.