

An Appraisal of the Impact of Public Debt Management on the Performance of Nigeria's Economy

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Abstract

The study analysed the impact of public debt management on the performance of the Nigerian economy. The ex post facto research design was adopted in the study and data were gathered from secondary sources. These data were time series data obtained from Central Bank of Nigeria (CBN) Statistical Bulletin, the Debt Management Office (DMO) Annual Debt Reports, and World Bank Database. The researchers employed different econometric tools to analyze the data. These include ADF unit root test, Johansen co-integration test, Bivariate multicollinearity analysis and regression analysis, with the use of the Generalized Method of Moments (GMM) technique. The empirical results indicated that external debt and debt service payments negatively affected both economic growth and development in Nigeria while domestic debt had positive effect. Therefore, the researchers recommended that the Federal Government of Nigeria should encourage fiscal reforms that boost domestic revenue generation by broadening the revenue base, improving the capacity to tax, and curtailing unproductive government expenditures, as this will help curtail the government's propensity to borrow and reduce the ever increasing debt profile of Nigeria.

Keywords: *Public debt management, Economic growth and development, External debt stock, Domestic debt stock, Debt service payment.*

1. INTRODUCTION

Every year, governments of most countries usually draw up a financial plan regarding the country's estimated income and expenditure for that fiscal year. Such financial plan is referred to as "budget". In most cases, especially as it relates to Less Developed Countries (LDCs), of which Nigeria is a part, the estimated expenditure tends to exceed the estimated revenue by a significant margin,

resulting in a deficit. In such situations, the governments of these countries resort to borrowing from both domestic and foreign sources to finance such deficit. These borrowings give rise to domestic and external debt, which is collectively known as "Public Debt". Funds borrowed within the country is known as domestic debt. It is usually through bonds and treasury bills which are purchased by Nigerian banks, local pension funds, and other domestic and foreign investors. On the other hand, funds borrowed from international markets or organizations which include multilateral agencies such as the World Bank, Africa Development Bank, among others, is known as external debt. Anyanwu (1993) defined public debt as all claims against government in the economy, either by her citizens or by foreigners, whether interest bearing or not.

The Debt Management Office (DMO), which was established on 4th October, 2000 is saddled with the management of Nigeria's debt. The body is also charged with the responsibility of ensuring efficient public debt management in terms of a comprehensive well diversified and sustainable portfolio, supportive of Government and Private Sector needs. Despite the government conscious efforts in managing the nation's debt, debts burden still bedevils the Nigerian economy. As noted by Abdulkarim and Saidatulakmal (2021), Nigeria is presently ranked among African countries that are debt ridden, with stunted GDP growth rate, retarded export growth rate, a fast dwindling income per capita and an increasing poverty level. The economy is, therefore, over-burdened with massive government debt and debt service costs that consume about 100% of government revenue, narrowing down the fiscal space for government to invest in critical infrastructure that supports private investment and sustainable growth.

In similar vein, Ogbonna *et al.* (2019) noted that the ever rising global interest rates and the increasing debt burden of Nigeria point towards another debt crisis in the near future. It is pertinent to note that the ever increasing Nigerian public debt profile and debt service payments amidst the recent declining growth rate and rising poverty levels in the country have become of particular interest to researchers and policy analysts alike. On this note, this research paper is undertaken to examine, whether an escalating debt profile and debt service payments have an effect on economic growth and development in Nigeria, as measured by Gross Domestic Product (GDP), Per Capita Income (PCI) and Human Development Index (HDI), using data that spans 26 years between 1996 and 2021.

2. LITERATURE REVIEW

The literature review comprises the conceptual review, theoretical review and empirical review of works related to public debt management and the performance of Nigeria's economy.

2.1 Conceptual Review of Literature

Related literatures on the key concepts and variables that make up the research problem were reviewed under this sub-section.

2.1.1 The Concept of Public Debt

Public debt, also known as government borrowings has over the years received much attention as a crucial component of a country's macroeconomic policy framework. Debt management is an important factor that underpins the credibility and reputation of nations and ensures the stability of the capital markets as well as the financial institutions that hold public debt (Audu, 2004). There is already a widespread recognition however in the international community that excessive foreign indebtedness of many developing countries remains a major impediment to their growth and stability.

Public debt is thus a critical tool for governments to fund public spending, particularly when it is difficult to raise taxes and reduce public expenditure. Over the years, this process has left most governments with massive outstanding debts. Reasonable borrowings to finance public and infrastructural development are the key to foster economic growth. But excessive borrowing without appropriate planning for investment may lead to heavy debt burden and interest payments, which in turn may create several undesirable effects for the economy (Joy and Panda, 2020).

2.1.2 Brief History of Nigeria's Public Debt

Before 1959, Nigeria concentrated its efforts of loan sourcing from the United Kingdom, the United States Agency for International Development (USAID) and the government of Israeli. However, in 1959, the newly established Central Bank of Nigeria (CBN) was given the mandate to float treasury bills aimed at authorizing domestic investors to lend money to the Nigerian government. In spite of canvassing for domestic loans, the Nigerian government continued to also scout around for foreign loans. The borrowings due to internal debt soon became a major part of Nigeria's public debt from the 1959/1960 fiscal year. In that same year, the control over Nigeria's economy soon passed into the hands of the Nigerian local political elites of the time, under the headship, of Alhaji Abubakar Tafawa Balewa. These pre-independence elites soon designed Nigeria's First Development Plan (1960-1965)

According to Ogunyemi (2011), from 1959/60 to the 1970/71 fiscal years, domestic sources overtook foreign loans as the leading source of public borrowings. Foreign loans were still significant. They increased from British Pounds (BP)19, 405,360 recorded in the 1959/60 to BP 22,116, 000 in the 1960/61 fiscal year and further to BP24, 500,000 in the 1961/62 fiscal year. The scholar also pointed out that in the fiscal year 1960/61 alone, domestic debt rose to BP34, 569, 129 from just about BP2.3million recorded a year earlier. He emphasized that this rise was the sharpest increase in Nigeria's public debt history from 1922 to 1972, as it represented an increase of about 1,749.7% above what was obtained in the 1959/60 fiscal year. The increase in the domestic debt stock also affected total debt liabilities of the country. Alli (2006) noted that concerned about the slow pace of his post-war reconstruction efforts after the Civil War, General Yakubu Gowon's regime promulgated Decree No. 38, known as the 'External Loan Decree', which allowed for raising external loans not exceeding one billion USD. The loan was also expected to be extended to the 12 state governments.

Ogaba Oche (2006) is of the view that, from 1978 the collapse of international oil prices led to a decline in government revenue and placed tremendous pressure on government finances. According to the scholar, it therefore became necessary to borrow for balance of payments support and also for project financing. To discourage excessive borrowing, the Federal Government promulgated decree No. 30 of 1978 which limited the amount of foreign loan obtainable by the Federal Government to 5 billion naira. From this point onwards Nigeria's loan profile, both domestic and foreign took on a life of its own and witnessed an astronomical growth pattern. Ogunyemi, however pointed out that by the middle of the 1990s, and regardless of the diverse measures put in place by the Ibrahim Babangida's regime, Nigeria's debt continued to spiral out of control. This chain of events led some scholars to label Nigeria's situation as the 'debt trap.'

It is noteworthy that Nigeria's indebtedness dates back to pre-independence era. The debts incurred before 1978 were relatively small and mainly long-term loans from multilateral and official sources such as the World Bank and Nigeria's major trading partners. The loans were majorly

obtained on soft terms and therefore did not constitute a burden to the economy. However, due to the fall in oil prices, and oil receipts, the country in 1977/78 raised the first jumbo loan to the tune of 1 billion USD from the international capital market. The loan was used to finance various medium to long-term infrastructural projects.

The decades have witnessed a rising concern on the increase in Nigeria's public debt. The first most significant rise in Nigeria's public debt occurred in 1987 when the total debt rose by 96.9 per cent to ₦137.58 billion. The rise in Nigeria's public debt continued unabated such that as at 2004, total public debt stood at ₦6,188.03 million. In 1986, total debt which was hitherto driven largely by the domestic debt witnessed a reversal and was driven by external debt. Thus, the dominance of the external debt as well as the steady rise in total debt remained till 2005 when the country was granted debt pardon by the Paris Club.

Recent data from the Debt Management Office (DMO) revealed that the total public debt, representing the domestic and external debt stocks of the Federal Government of Nigeria (FGN), the thirty-six (36) state governments and the Federal Capital Territory (FCT), was ₦87.38 trillion (USD113.42 billion) as at June 30, 2023. The total external debt stock for the same period was USD 43.16 billion (₦33.28 trillion), while the total domestic debt stock was ₦54.13 trillion (USD70. 26 billion).

2.1.3 External Debt

Kenton (2022) described external debt as the loans raised through foreign lenders, such as foreign commercial banks, foreign governments, and international financial institutions. In the case of external debt, all repayments must be made in the currency in which the debt was issued. External debt is simply a portion of a nation's debt borrowed from foreign institutions. Typically, governments do not always prefer taking on this type of debt as it gives the lending country(s) leverage over them. Nevertheless, specific reasons compel a country to avail herself of financial assistance from a foreign lender. Kenton (2022) identified under capacity of domestic financial institutions, sectoral allocation of domestic funds and low interest rates and flexible repayment terms of international financial institutions as some of the reasons for foreign loans.

International financial institutions like the IMF and the World Bank are the most common external debt sources. Besides these, governments may also get financial assistance from foreign commercial banks to meet their financial objectives.

CFI (2023) disclosed that there are several risks associated with foreign debt. The risks include:

- i. **Effects on economic growth:** Economic growth occurs when governments and companies incur capital expenditures that boost production and increase output and income levels. If large amounts of external debt need to be repaid, then there is less money left for investment purposes. It hampers future economic growth.
- ii. **Long gestation period:** Gestation period is the interim period between the initial investment in a project and the time the project becomes productive. When external debt is used to fund infrastructures, it takes a few years for the project to start giving returns on investment.

- iii. **Unexpected devaluation of domestic currency:** If the currency of the borrowing country depreciates with respect to that of the lending country, then the real value of interest (as denominated in the domestic currency) will rise.

Despite the various risk associated with external debts, there are some advantages countries can derive from foreign debt. These advantages are as follows:

- i. It enables governments to access capital that can help them meet various expenses and boost economic growth and development.
- ii. It promotes improved governance and helps sustain macroeconomic policies in the borrowing country.
- iii. It enables governments to access funds when domestic financial institutions cannot afford to offer substantial amount as loans.

2.1.4 Domestic Debt

Ozurumba and Kanu (2014) opine that domestic debts refer to the portion of a country's debt borrowed from within the confines of the country. These loans are usually obtained from the Central Bank of Nigeria, Deposit Money Banks, Discount Houses and other non-bank financial houses. Domestic Debts are debts that originate from within the geographical region of a country, which are contracted through debt instruments such as treasury bills, treasury certificates and treasury bonds. Others are development stocks, FGN bonds and Promissory notes (Mathew and Mordecai, 2016).

Bello (2017) traced the first domestic debts in Nigeria to the development stock of ₦600,000. This was followed by treasury certificates worth ₦8 million and ₦20 million respectively, issued in 1960 and 1968. Since then, other structural arrangements to solve the problem of domestic public debt include the treasury bonds, development stocks, among others. The size and growth of the domestic debt from 1960 had grown rapidly, reaching ₦537.5 billion or 45.9% of total public debt by the end of December, 1998.

Odozi (1996) maintained that few factors have been developed to explain the changing domestic debt profile in Nigeria from the early 1960's. These factors include high budget deficits, large expenditure growth, high inflation rate, narrow revenue base, and low output growth experienced since the 1980s. Oyekanmi (2022) stated that Nigeria's domestic debt profile has been on the rise over the years following the decline in revenue, with the economy running on a fiscal deficit for 13 years. The current Nigeria's total debt stock rose to a record high of \$113.42 billion as at June 2023. The breakdown of Nigeria's debt profile showed that domestic debt stood at \$70.26 billion.

2.1.5 Debt Service Payments in Nigeria

Chinaemerem and Anayochukwu (2013) defined debt service payments as the regular payment of installments of loans taken by a country from domestic and external sources. An installment includes interest on debt and a part of the principal. For servicing debt, a country or corporate organization should have timely cash flows. If a country is unable to honor its debt service obligations in the absence of required funds, the country is said to be unable to service her debt. This variable is expected to be inversely related with economic growth provision. This is because the

higher the amount of money required for servicing existing domestic and foreign debts; the lesser would be the amount of fund available for provision of qualitative and quantitative economic growth.

Ali and Mustafa (2012) noted that debt service has a resource-drain effect which retards economic growth and can lead to debt overhang. A drawback concerning external borrowing is the currency risk, because external debt service raises the demand for often scarce foreign exchange. Nigeria's high debt burden has grave consequences for the economy and the welfare of the people. The servicing of the external debt has severely encroached on resources available for socio-economic development and poverty alleviation. Although since 1986, Nigeria had taken a decision to limit debt service to no more than 30 percent of oil receipts; this has not brought much relief. In 1999, for example spending on health represented about 0.2% of GDP and 0.7 percent of GNP compared with 3.4 percent (US\$1.5billion) annual budget spent on debt servicing during the same period.

In 2000, USD1.9 billion was used for debt servicing translating to about four (4) times Federal government budgetary allocation to education and about twelve (12) times the allocation to health while in 2001 debt service payment was USD 2.13 billion which amounted to 6 times of the Federal government's budgetary allocation to education and seventeen (17) times, the allocation to health for that same year. Between 1985 and 2001, Nigeria spent over USD 32 billion on servicing external debt. Prior to the recent rescheduling arrangement with the London and Paris club, creditors annual debt service payments due were in the range of USD 3.0 billion to USD 3.5 billion. Debt service due in year 2000 was over USD 3.1 or (14.5 percent of export earning) excluding arrears of USD 19.6 billion owed to members of the London and Paris club.

Recent data from the DMO indicate that domestic debt service in the second quarter of 2022 was ₦668.69 billion, representing 0.6% increase from ₦664.73 billion in first quarter of 2022. This implies that the federal government has serviced domestic debt with ₦1.33trillion in first half of 2022, a 43 per cent Year-on-Year (YoY) increase from ₦935.46billion reported in first half of 2021. Further breakdown of the data revealed that the government domestic debt service was at ₦2.05trillion in 2021, a 10.8% increase from ₦1.85trillion in 2020. In 2022, Nigeria's debt service-to-revenue ratio was at 80.6% — a figure far above World Bank's recommended 22.5% for low-income countries like Nigeria. The International Monetary Fund (IMF) has said that Nigeria may spend almost 100 percent of its revenue on debt servicing by 2026.

2.1.6 Public Debt Management

IMF (2001) defined Public Debt Management as the process of developing and implementing a public debt management strategy to raise the necessary funds, meet risk and cost targets, and meet any other public debt management objectives that a government may set, such as establishing and maintaining an effective government's securities market.

In the broader macroeconomic public policy context, governments must ensure that the level and rate of growth of public debt are fundamentally sustainable and viable under a wide range of conditions, while responding to costs and risks. Public debt managers share the concerns of fiscal and monetary policy advisers, that public sector debt remains on a sustainable path and that there are credible strategies to reduce excessive debt. Debt managers should ensure that fiscal authorities are aware of public financing requirements and the impact of debt levels on the cost of debt. Examples

of indicators addressing debt sustainability include the public sector debt ratio and the public debt-to-GDP ratio (Calvo and Pablo, 1990).

The main objective of public debt management is to ensure the fulfillment of public financing needs and payment obligations at the lowest possible costs in the medium and long term, while maintaining a prudent level of risk. Debt managers, fiscal policy advisers and central bank should understand the objectives of debt management, fiscal and monetary policy, given the interdependence of their various policy tools. Debt managers should communicate their views to tax authorities on the costs and risks associated with government funding requirements and debt levels. When the level of financial development permits, there should be a separation between debt management and monetary policy objectives and responsibilities. Debt management, fiscal and monetary authorities should exchange information on the government's current and future liquidity needs (IMF, 2001).

2.2 Theoretical Review of Literature

The following theories were reviewed in the study because they provide insight and background knowledge on the variables of the topic studied.

2.2.1 The Debt Overhang Theory

Myer (1977), formulated this theory to explain the condition of an organization (for example, a business, government, or family) that has existing debt so great that it cannot easily borrow more money, even when that new borrowing is actually a good investment that could help increase the value of the organization. The theory originated in the corporate finance literature but migrated to the international finance literature in the mid-1980s, when the debt crisis motivated a series of influential papers (Krugman, 1988).

According to Gordon and Cosimo (2018), the debt overhang theory states that if there is the likelihood that in the future government debt will be larger than the country's repayment ability; expected debt service costs will discourage further domestic and foreign investment. Potential investors would be discouraged on the assumption that the more there is production, the more they will be taxed by governments to service the public debt and thus they will be less willing to incur investment costs today for the sake of increasing future output.

Debt overhang portrays a circumstance where the future debt problem is so high to the point that it acts as a disincentive to current investment, as investors think that the proceeds of any new project will be taxed away to service the pre-existing debt. Lower levels of current investment, thus, lead to lower growth and, for a given tax rate, lower government incomes, lower capacity to pay, and lower expected value of the debt Coccia (2017). Krugman (1988) cited in Abdulkarim and Saidatulakmal (2021), argued that nations that experience the ill effects of debt overhang will have no net asset flows because of the fact that any new loans that may be given would not be worth as much as its nominal value, and no new creditor will give a loan when a deficit is sure. Nations that experience the ill effects of debt shade might be situated on some unacceptable side of the "Debt Laffer curve" which is described as a circumstance in which partial debt cancellation that reduces the expected tax burden can make both lenders and borrowers better off by increasing investment and growth and thus tax revenues and the value of debt.

2.2.2 Debt Crowding-Out Hypothesis

According to the debt crowding-out hypothesis, external debt servicing creates liquidity constraint on the debtors and as a result servicing external debt potentially affects economic growth by crowding out private investment through shifting the direction of public spending (Serieux, 2014).

According to Serieux (2014), higher debt service can raise the government's interest bill and the budget deficit but reduces public savings, which raise interest rates and crowd out credit available for private investment thereby harming economic growth. Higher debt service payments can also have adverse effects on the composition of public spending by squeezing the number of resources available for infrastructure and human capital development and posing a setback to meeting basic human needs and social services in developing countries (Chongo, 2013). Moreover, servicing external debt takes the scarce hard currency away from the poor and highly indebted economies which makes governments shorthanded towards providing sufficient public investment that can stimulate economic growth and development. According to the debt crowding-out hypothesis, external debt services takes the small export gains of poor economies which are dependent on exporting cheap raw materials thereby eroding the major sources of revenue for providing social services.

2.3 Empirical Review of Literature

Under empirical review, the researchers considered works previously carried out in the area of public debt both in Nigeria and abroad.

Abdulkarim and Saidatulakmal (2021) investigated the effect of government debt on Nigeria's economic growth using annual data from 1980 to 2018 and the Autoregressive Distributed Lag (ADRL) technique. The results showed that external debt constituted an impediment on long-term growth while its short-term effect was growth-enhancing. Domestic debt has a significant positive impact on long-term growth while its short-term effect was negative. In the long term and short term, debt service payments lead to growth retardation confirming debt overhang effect. The researchers suggested that government should direct the borrowed funds to the diversification of the productive base of the economy, as this will improve long-term growth, expand the revenue base and strengthen the capacity to repay outstanding debts when due.

Saungweme and Odhiambho (2019) explored the causal relationship between government debt, debt servicing and economic growth in Zambia for the period 1979 to 2017 using a dynamic multivariate ARDL approach. To achieve this objective, RGDP was modeled as a function of stock of public debt, fiscal balance and savings as a share of GDP. The empirical results indicated a unidirectional causal relationship from economic growth to public debt in Zambia. The study findings supported the hypothesis that the pace of economic growth matters in defining the level of public sector indebtedness.

Panagiotis (2018) empirically investigated the nexus between public borrowings and the determinants of economic growth such as private and government consumptions, investment, trade openness, and population growth in Greece through the applications of unit root tests, and autoregressive distributed lag (ARDL) model. The unit root tests indicated mixed integration of order zero and order one among the variables. The results of the ARDL model revealed a long-run relationship between variables. It also showed that private and government consumption, investment and trade openness had positive effects on economic growth; while government borrowings and population growth had a negative impact on growth.

Thao (2018) analysed the effect of government debt on economic growth in six ASEAN countries, namely, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam over the period 1995–2015. The General Method of Moments (GMM) estimation technique was adopted to measure the effect of government debt indicators on economic growth. The findings revealed a significant and positive impact of public debt, FDI, GFCF and real effective exchange rate on economic growth while population growth had a significant negative effect on the growth rate of these countries.

Akhanolu *et al.* (2018) examined the effect of public debt on economic growth of Nigeria using annual data from 1982 to 2017 and Two-Stage Least Square regression (TSLS) technique. The study modeled GDP as a function of internal debt, external debt, savings and capital expenditure. The results revealed that external debt had a significant negative impact on growth while internal debt showed a positive impact. However, the study suffered from significant variable omission bias and the methodology used was inadequate in accounting for complex relationship between the variables of the study.

Igbodika, Jessie and Andabai (2016) investigated the nexus between domestic debt and growth performance of Nigerian economy from 1987 to 2014 through the application of Ordinary Least Square (OLS) technique. Gross domestic product, domestic debt, interest rate and inflation rate were the variables used in the analysis. The empirical results indicated that the interest rate has a negative and significant effect on the gross domestic product (GDP) in Nigeria. The results also showed that domestic debt had a positive and significant influence on the gross domestic product in Nigeria.

Udeh *et al.* (2016) using OLS method and annual data spanning the period 1980–2013 examined the impact of external debt on economic growth in Nigeria. The study modeled GDP as a function of external debt stock, debt service payments and exchange rate. The empirical results indicated that external debt stock and debt service payments impacted growth negatively while exchange rate showed a positive impact. The study concentrated on external debt which is a fraction of total debt stock and used the OLS estimation technique that cannot separate the long- and short-run effect of external debt on growth.

Peter and Ferdinand (2016) focused on the nexus of Nigeria's borrowings burden and economic development using secondary data sourced from Central Bank of Nigeria statistical bulletin and National Bureau of Statistics fact book from the years (1981-2014). The Johansen test for the co-integrating determined that a long run equilibrium relationship exists between economic development and borrowings stocks, and the Granger Causality result shows that the various borrowings stocks granger caused the performance of the Nigeria's economy. On the basis of their findings they recommended that a strategy that exercises tense embargo on fresh loans and advances should be put in place and the government should try by all means to reduce the quantity of public borrowings as well as its total eradication via borrowings buy back, total cancelling of the borrowings or complete repudiation of the borrowings stock.

Abula and Ben (2016) examined the effect of public borrowings on economic development in Nigeria from 1986 to 2014. Johansen integration test, Error Correction Method (ECM) and the

Granger Causality test were utilized in the analysis. The variables employed in the study include gross internal product, foreign borrowings stock, internal borrowings stock, foreign borrowings service payment and internal borrowings service payment. The results showed evidence of long-run relationship among the variables. The results of the ECM indicated that foreign borrowings servicing and foreign borrowings stock have a negative and insignificant impact on economic development in Nigeria while internal borrowings stock has a significant influence on economic development. The results also showed that internal borrowings service payment has a negative and significant effect on economic development in Nigeria. Therefore, the authors recommended that the government should reduce its foreign borrowings stock level but should accumulate more internal borrowings as it will contribute significantly to the development of the economy.

3. METHODOLOGY

This section comprises of the research design, sources and nature of data, model specification and the methods of data analysis adopted by the researchers.

3.1 Research Design

The researchers made use of the ex post facto research design. The research design was considered appropriate because secondary data were used in the study and does not give room for manipulation of the data, being that the data are publicly available.

3.2 Sources and Nature of Data

The data used in this study were gathered from secondary sources. These data were time series data collected from Central Bank of Nigeria (CBN) Statistical Bulletin, the Debt Management Office (DMO) Annual Debt Reports, and World Bank Database. The macroeconomic variables on which data were collected include the Gross Domestic Product (GDP), Per Capita Income (PCI), Human Development Index (HDI), External Debt Stock (EDS), Domestic Debt Stock (DDS), and Debt Service Payments (DSP). Considering the limitations of data availability, all variables cover a period of 26 years; from 1996 to 2021.

3.3 Model Specification

The models for the study are functionally represented as follows:

$$\text{GDP} = f(\text{EDS}, \text{DDS}, \text{DSP}) \dots\dots\dots \text{Equation I}$$

$$\text{PCI} = f(\text{EDS}, \text{DDS}, \text{DSP}) \dots\dots\dots \text{Equation II}$$

$$\text{HDI} = f(\text{EDS}, \text{DDS}, \text{DSP}) \dots\dots\dots \text{Equation III}$$

Where,

- GDP = Gross Domestic Product
- PCI = Per Capita Income
- HDI = Human development Index
- EDS = External Debt Stock
- DDS = Domestic Debt Stock
- DSP = Debt Service Payment

The above functional equations can be defined econometrically as below:

$$\text{GDP} = \beta_0 + \beta_1\text{EDS} + \beta_2\text{DDS} + \beta_3\text{DSP} + \mu_t \dots\dots\dots \text{Equation IV}$$

$$\text{PCI} = \Upsilon_0 + \Upsilon_1\text{EDS} + \Upsilon_2\text{DDS} + \Upsilon_3\text{DSP} + \varepsilon_t \dots\dots\dots \text{Equation V}$$

$$\text{HDI} = \lambda_0 + \lambda_1\text{EDS} + \lambda_2\text{DDS} + \lambda_3\text{DSP} + \upsilon_t \dots\dots\dots \text{Equation VI}$$

Where,

$\beta_0, \Upsilon_0, \lambda_0$ = constants for the three equations,

$\beta_1\text{---}\beta_3; \Upsilon_1\text{---}\Upsilon_3; \lambda_1\text{---}\lambda_3$ = coefficients of the independent variables of the three equations, and

$\mu_t, \varepsilon_t, \upsilon_t$ = Error terms.

3.4 Method of Data Analysis

The researchers employed statistical and econometric tools to analyze the data. The statistical tool used is the descriptive statistics, while the econometric tools include ADF unit root test, Johansen co-integration test, Bivariate multicollinearity analysis and regression analysis, with the use of the Generalized Method of Moments (GMM) technique.

4. RESULTS PRESENTATION AND DISCUSSIONS

In this sub-section, the researchers present and discuss the outputs of various empirical tests carried out.

4.1 Descriptive Analysis

The descriptive statistic technique on the data was conducted using measures of central tendency, measures of dispersion, and data normality measure. The results obtained from the descriptive analysis are presented in Table 4.1.

Table 4.1: Results of Descriptive Analysis

Statistic	GDP \$'M	PCI \$'M	HDI (%)	EDS \$'M	DDS ₦'B	DSP ₦'B
Mean	284917.6	1673.685	0.483885	19414.16	5590.265	872.9708
Median	317242.5	1912.900	0.483000	22876.17	2774.170	388.2500
Maximum	574183.8	3201.000	0.538000	38391.32	19242.56	4221.650
Minimum	51075.82	460.3000	0.391000	3544.490	343.6700	30.84000
Std. Dev.	175695.4	879.0691	0.037611	12016.84	5594.409	1080.019
Skewness	-0.088969	-0.112077	-0.398403	-0.093510	0.951781	1.736180
Kurtosis	1.511405	1.701708	2.677816	1.437386	2.709069	5.253611
Jarque-Bera	2.434875	1.880458	0.800262	2.683134	4.017202	18.56406
Probability	0.295988	0.390538	0.670232	0.261436	0.134176	0.000093
Sum	7407859.	43515.80	12.58100	504768.1	145346.9	22697.24
Sum Sq. Dev.	7.72E+11	19319063	0.035365	3.61E+09	7.82E+08	29161027
Observations	26	26	26	26	26	26

Source: Authors' Eviews Computation (2023)

Results from Table 4.1 show that GDP has the highest mean value (284917.6) while HDI has the lowest mean value (0.483885). GDP with the value 317242.5 and HDI with the value of 0.483000 also have the highest and least median values, respectively. All the variables in the study have positive maximum and minimum values. GDP with the value of 574183.8 and 51075.82 has the highest maximum and minimum values, while HDI with the value of 0.538 and 0.391 has the lowest maximum and minimum values, respectively. On the level of variability, GDP has the highest standard deviation (175695.4) while HDI has the lowest standard deviation (0.037611). Furthermore,

GDP, PCI, HDI and EDS have negative skewness values of -0.8897, -0.1121, -0.3984 and -0.0935, respectively while DDS and DSP had positive skewness values of 0.9518 and 1.7362. with regards to normality measure, all the variable except DSP have Jarque-Bera p-value that is above 0.05 meaning they are normally distributed while the p-value of 0.000093 means that DSP is not normally distributed, as the p-value is below 0.05 level of significance.

4.2 Unit Root for Stationarity

The unit root test was conducted using the Augmented Dickey Fuller (ADF) test, to determine the adequacy of the study data to be used in regression estimation. The excerpts from the results are presented in Table 4.2.

Table 4.2: Results of ADF Unit Root Test

Variable	ADF t-statistic	Test Critical Value		Probability Value	Order of Integration	Remark
		@ 1%	@5%			
GDP	-3.541565	-3.737853	-2.991878	0.0155	1(1)	Stationary
PCI	-3.491247	-3.737853	-2.991878	0.0173	1(1)	Stationary
HDI	-3.499371	-2.674290	-1.957204	0.0013	1(1)	Stationary
EDS	-2.750396	-2.664853	-1.955681	0.0081	1(1)	Stationary
DDS	-3.706697	-4.440739	-3.632896	0.0434	1(1)	Stationary
DSP	-5.998008	-3.752946	-2.998064	0.0001	1(2)	Stationary

Source: Authors' Eviews Computation (2023)

Table 4. 2 shows that all the variables of the study except DSP were stationary at first difference 1(1). DSP was however found to be stationary at second difference 1(2). Given the mixed order of integration of the variables, there is need for cointegration test, to ascertain the existence of long-run relationship among the variables.

4.3 Cointegration Analysis

The cointegration test was conducted to determine the existence of a long-run relationship among the variables in each of the models earlier specified. The summaries of the results from the tests are presented in Table 4.3.

Table 4.3: Johansen Cointegration Test Analysis Results for Variables

Models	Variables	Trace Statistic (Prob.)	Max-Eigen Statistic (Prob.)	Number of Cointegrating Equations
Model One	GDP, EDS, DDS, DSP	71.60891 (0.0001)	40.02529 (0.0008)	At most 2
Model Two	PCI, EDS, DDS, DSP	69.78720 (0.0001)	38.99324 (0.0011)	At most 2
Model Three	HDI, EDS, DDS, DSP	61.65334 (0.0015)	34.87514 (0.0049)	At most 1

Source: Authors' Eviews Computation (2023)

Table 4.3 indicates that the first and second models have two cointegrating equations while the third model has one cointegrating equation. These imply that there exists long-run relationship

among the variables of the study. Therefore, the researchers concluded that public debt variables have long-run relationship with the selected macroeconomic performance indicators in Nigeria (GDP, PCI and HDI).

4.4 Multicollinearity Analysis

The multicollinearity analysis was conducted using the simple bivariate correlation tests. The bivariate correlation result for the variables in the study is presented in Table 4.4.

Table 4.4: Results of the Bivariate Correlation Test for Multicollinearity

Variables	GDP	PCI	HDI	EDS	DDS	DSP
GDP	1.00					
PCI	0.98	1.00				
HDI	0.87	0.79	1.00			
EDS	-0.47	-0.62	-0.20	1.00		
DDS	0.76	0.62	0.87	0.10	1.00	
DSP	0.60	0.44	0.77	0.30	0.95	1.00

Source: Authors' Eviews Computation (2023)

Table 4.4 indicates that PCI and HDI showed the existence of multicollinearity issues when correlated with GDP. Also, DDS and DSP showed the existence of multicollinearity issues when correlated with HDI and DDS has high correlation with DSP which is a sign of multicollinearity. This implies that there is need to use the Generalized Method of Moments (GMM) technique for estimation.

4.5 Regression Analysis

The regression analysis was conducted on each of the models using the Generalized Method of Moments (GMM) technique. The GMM technique was adopted to avoid the occurrence of heteroskedasticity issues of unknown form. The results obtained for each of the model using the GMM technique are presented in Tables 4.5, 4.6, and 4.7, respectively.

Table 4.5: Regression Results for Model One

Dependent Variable: GDP

Method: Generalized Method of Moments

Date: 10/05/23 Time: 11:00

Sample: 1996 2021

Included observations: 26

Linear estimation with 1 weight update

Estimation weighting matrix: HAC (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Standard errors and covariance computed using estimation weighting matrix

Instrument specification: C EDS DDS DSP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	269108.6	30959.49	8.692281	0.0000
EDS	-7.025420	1.359903	-5.166117	0.0000

DDS	36.86074	13.57190	2.715960	0.0126
DSP	-61.69699	65.56450	-0.941012	0.3569
R-squared	0.894183	Mean dependent var	284917.6	
Adjusted R-squared	0.879753	S.D. dependent var	175695.4	
S.E. of regression	60925.18	Sum squared resid	8.17E+10	
Durbin-Watson stat	0.970752	J-statistic	0.000000	
Instrument rank	4			

Source: Authors’ Eviews Computation (2023)

The results show that GDP will remain positive at an average of \$269108.6 million if all the independent variables (EDS, DDS, and DSP) are held constant. Furthermore, the results show that external debt (EDS) has a significant negative effect on GDP, whereas domestic debt (DDS) has significant positive effect. However, debt service payment (DSP) was shown to have non-significant negative effect on GDP. The R-squared value of 0.894183 implies that 89.41% variations in GDP is associated with the independent variables. Finally, the J-statistic of 0.0000 implies that the overall model is significant, meaning that the combination of external debt stock, domestic debt stock and debt service payment have significant effect on Nigeria’s GDP.

Table 4.6: Regression Results for Model Two

Dependent Variable: PCI
 Method: Generalized Method of Moments
 Date: 10/05/23 Time: 11:29
 Sample: 1996 2021
 Included observations: 26
 Linear estimation with 1 weight update
 Estimation weighting matrix: HAC (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)
 Standard errors and covariance computed using estimation weighting matrix
 Instrument specification: C EDS DDS DSP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1948.720	175.2222	11.12143	0.0000
EDS	-0.046862	0.008297	-5.648047	0.0000
DDS	0.145071	0.074683	1.942473	0.0650
DSP	-0.201876	0.362192	-0.557372	0.5829
R-squared	0.860973	Mean dependent var	1673.685	
Adjusted R-squared	0.842014	S.D. dependent var	879.0691	
S.E. of regression	349.4070	Sum squared resid	2685876.	
Durbin-Watson stat	0.938580	J-statistic	0.000000	
Instrument rank	4			

Source: Authors’ Eviews Computation (2023)

The results in Table 4.6 show that PCI will remain positive at an average of \$1948.72 million if all the independent variables (EDS, DDS, and DSP) are held constant. Furthermore, the results show that external debt (EDS) has a significant negative effect on PCI, whereas domestic debt (DDS) has non-significant positive effect. However, debt service payment (DSP) was shown to have non-significant negative effect on GDP. The R-squared value of 0.8609 implies that 86.1% variations in PCI is associated with the independent variables while about 14.9% variation is associated with other factors not considered in the study. Finally, the J-statistic of 0.0000 implies that the overall model is significant, meaning that the combination of external debt stock, domestic debt stock and debt service payment have significant effect on per capita income in Nigeria.

Table 4.7: Regression Results for Model Three

Dependent Variable: HDI
 Method: Generalized Method of Moments
 Date: 10/05/23 Time: 11:30
 Sample: 1996 2021
 Included observations: 26
 Linear estimation with 1 weight update
 Estimation weighting matrix: HAC (Bartlett kernel, Newey-West fixed
 bandwidth = 3.0000)
 Standard errors and covariance computed using estimation weighting matrix
 Instrument specification: C EDS DDS DSP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.465351	0.005466	85.13586	0.0000
EDS	-8.39E-07	3.54E-07	-2.367155	0.0271
DDS	7.00E-06	1.58E-06	4.444665	0.0002
DSP	-4.96E-06	9.09E-06	-0.546286	0.5904
R-squared	0.858900	Mean dependent var		0.483885
Adjusted R-squared	0.839659	S.D. dependent var		0.037611
S.E. of regression	0.015060	Sum squared resid		0.004990
Durbin-Watson stat	0.846839	J-statistic		0.000000
Instrument rank	4			

Source: Authors' Eviews Computation (2023)

The results presented in Table 4.6 show that HDI will remain positive at an average of 0.465% if all the independent variables (EDS, DDS, and DSP) are held constant. Furthermore, the results show that external debt (EDS) has a significant negative effect on HDI, whereas domestic debt (DDS) has significant positive effect. However, debt service payment (DSP) was shown to have non-significant negative effect on GDP. The R-squared value of 0.8589 implies that 85.89% variations in HDI is associated with the independent variables while about 14.11% variation is associated with other factors not considered in the study. Finally, the J-statistic of 0.0000 implies that the overall

model is significant, meaning that the combination of external debt stock, domestic debt stock and debt service payment have significant effect on human development index in Nigeria.

4.6 Discussion of Findings

The findings from the regression analysis show that the independent variables have similar effects on all the dependent variables of the study. Specifically, it was observed that external debt stock and debt service payments have negative effect on Nigeria's economic growth as measured by the Gross Domestic Product (GDP) and economic development as measured by both the Per Capita Income (PCI) and Human Development Index. This is because external debt and debt servicing creates liquidity constraint on the debtors and potentially affects economic performance by crowding out private investment through shifting the direction of public spending. These negative effects align with the debt crowding-out hypothesis and the findings of Abdulkarim and Saidatulakmal (2021). Besides, the borrowed funds are not tied to projects that can bring about employment and increase in production. Also, the borrowed funds could be looted such that less amount is used for project hence yielding less than commensurate impact on the masses while debt services amount to borrowing money from other sources to repay the funds not judiciously invested.

However, domestic debt stock was found to have positive effect on both the economic growth and development of Nigeria. Implying that increase in internal borrowing will produce an improved economic performance in Nigeria. This can stem from the fact that the repayment of the principal and interest on domestic debt is a reinvestment into the economy which would usually have a multiplier effect on domestic investment in the economy and produce a greater economic growth and development. This finding is in line with that of Akhanolu *et al.* (2018).

5. CONCLUSION AND RECOMMENDATIONS

In all respects, it is reasonable and economically normal for countries to borrow funds from both internal and external sources in order to finance productive investments and to finance public infrastructural development which are key drivers of economic growth and development of a country and are necessary for enhancing productivity. However, over the years, this process has left most governments with massive outstanding debts which create several undesirable effects for the economy. It was on this note that the researchers analysed the impact of public debt management on the performance of the Nigerian economy. The empirical results indicated that external debt and debt service payments negatively affected both economic growth and development in Nigeria while domestic debt had positive effect. Therefore, the researchers recommended that the Federal Government of Nigeria should encourage fiscal reforms that boost domestic revenue generation by broadening the revenue base, improving the capacity to tax, and curtailing unproductive government expenditures, as this will help curtail the government's propensity to borrow and reduce the ever increasing debt profile of Nigeria. Also, domestic debt rather than external debt should be encouraged. This is because external debt appears to have a crowding-out effect on domestic investment. Moreover, the repayment of the principal and interest on domestic debt is a reinvestment into the economy which would usually have a multiplier effect on domestic investment in the economy and produce a greater economic growth and development. In addition, external debt should be tied to projects that will bring about employment and increase in production so that repayment could be from the cash flows generated directly and indirectly from the project funded.

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