



Does External Debt Servicing Affects Infrastructural Development In Nigeria?

Gbenga Michael Ajibua (PhD)

Charisma University
Dept. Of Business Administration
Grace Bay, Turks & Caicos Island

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The study assessed the relationship between debt servicing and infrastructural development in Nigeria covering the period, 1999-2022. The study submitted that allocation for capital projects over the years has been affected by continuous rise increase in debt servicing thereby constraining provision of critical infrastructures. The study employed debt servicing, external debt, exchange rate and trade openness as the independent variables. Utilising the ordinary least square technique, the study found that debt servicing and exchange rate had significant negative effects on infrastructural development in Nigeria. On the contrary, the study further found that the impact of external debt and trade openness on level of infrastructures is positive and statistically significant. Among other things therefore, it is recommended that government, through the Debt Management Office, should take into account a scenario wherein foreign loans should be acquired only for economic purposes and not for political or social ones. This is primarily meant to stop unproductive debt service in Nigeria and avoid increase of foreign debt stock over time.

Keyword: Debt servicing, external Debt, Infrastructural Development, Nigeria.

I. INTRODUCTION

The discussion of the relationship involving debt, debt servicing and infrastructure is still a raging debate. Thus, the constantly rising debts in Nigeria from both domestic and foreign sources have become a serious concern by many people on the likely effects on public infrastructures such as roads, power supply, education, health, sanitations and so on (Osadume & Imide, 2022; Falade, Akinjeji & Falmata, 2024). The authors Oriloye and Oni (2023) state that a significant number of nations have resorted to borrowing money in order to bridge the resource gap that exists in order to pay their infrastructure

requirements. According to Onwuka (2022), the majority of governments have come to the realisation that the development of infrastructure is a genuine tool by which to enhance the productive standards of their economies. As a result, they are doing all in their power to accomplish these elevated standards. Every single government in the globe that is focused on development takes out loans in order to support its various programs and initiatives. The management of debt, on the other hand, may be a challenging endeavour for people, business organisations, and even nations. In the case of Nigeria, debt management has become a significant burden, which has stifled every known measure of economic progress (Muhammad, 2023). Due to the fact that it is the primary focus of Nigeria's recurrent spending profile, debt servicing is a significant cause of resource loss in the nation (Onwuka, 2022). According to Ariyibi, Akingunola, and Asogba (2023), Nigeria's ability to meet its debt commitments continues to be a key obstacle to the country's growth and development. This is because servicing the debt requires the country to forego welfare and capital projects in order to further its social and economic development. There is no doubt that Nigeria is naturally blessed with enormous resources that are necessary to put her on par with other developed nations; however, as a result of problems with governance, the country is burdened with severe infrastructural deficits, including water supply, road, rail, sewage, waste disposal, oil and gas, and epileptic power supply, amongst others (Osadume & Imide, 2022).

The escalating external debt payments, prompted by elevated external borrowings from various international bilateral and multilateral creditors such as the Paris Club, London Club, and African Development Bank, poses a significant danger to the expansion of the Nigerian economy. Sulaiman and Azeez (2012) contended that



substantial debt accumulation subjects the economy to a significant debt burden. Nigeria possesses abundant resources within Africa; Nonetheless, several macroeconomic issues, including inflation, unemployment, dependence on crude oil as the principal income source, corruption, and increasing foreign debt and debt payment requirements, result in a substantial segment of the population living below the poverty line. Between 1958 and 1977, the need for foreign borrowing was negligible. The decrease in oil prices in 1978 negatively affected government finances, requiring borrowing to address balance of payments issues and to finance projects. During the 1970s, the oil sector's contribution to GDP increased from around 11% to 22%, while its share of government income rose from 26% to 81%, and its proportion of export profits escalated from 58% to 96% in the 1980s. The variations in oil prices adversely impacted the economy by diminishing income to the public treasury, so limiting the government's capacity to spend significantly in social infrastructure. In sectors such as transportation, construction, education, oil, and energy production, minimal advancement has occurred, as the majority of roads in Nigeria are deteriorating rapidly. Conversely, a significant portion of government revenue has been allocated to heavily subsidised and unfeasible projects across nearly all sectors of the economy. Development initiatives have focused on urban centres, resulting in the neglect of the agricultural sector, which has contributed to a significant rise in rural-urban migration and a decline in agriculture's share of total exports (Onodugo, 2014).

Significantly, foreign debt servicing has adversely impacted government budgets, consequently hindering the supply of essential infrastructure. The Islamic Development Bank (IDB) reports that Nigeria allocates about 80% of its earnings to debt servicing. According to the Debt Management Office (DMO), the nation allocated 28.1% of its earnings to debt payment in 2015, which increased to 35.32% in 2016 and exceeded 40% in 2023. Nigeria has used several techniques throughout the years to address external debt management, including refinancing, restructuring, buybacks, collateralization, debt conversion agreements, and various external borrowing criteria. The payment and service of these loans constitute public spending, and the cost of managing public debt (both domestic and foreign) may exceed the economy's capacity, adversely affecting the attainment of fiscal and monetary policy goals. An increasing debt load

may limit the government's capacity to implement more profitable investment initiatives in infrastructure, education, and public health. To prevent such situations, the government must meticulously manage the magnitude and composition of the nation's debt in alignment with the country's growth and development objectives, since debt payment has been identified as an impediment to infrastructure advancement. The research is conducted as a consequence of this realisation. The subsequent sections of the paper are organised as follows. part two provides a concise literature overview, while part three delineates the technique. part four discusses the results, while part five concludes the article with policy recommendations.

II. LITERATURE REVIEW

Conceptual Issue

Infrastructure refers to the fundamental physical and organisational frameworks essential for the functioning of a society or industry, as well as the services and facilities required for an economy to operate effectively. Onodugo (2014) defined infrastructures as interrelated structural components that offer a framework for comprehensive development. This phrase is crucial for evaluating a nation or region's progress. The phrase often denotes the technological frameworks that underpin a civilisation, including roads, edifices, bridges, water supply systems, sewage systems, electrical grids, and telecommunications. It may also be characterised as the physical components of linked systems that provide essential products and services necessary for enabling, sustaining, or enhancing societal living standards.

The creditors have established two primary groups to discuss the repayment of debt and interest with sovereign states. The entities are the Paris Club and the London Club. It includes the settlement of outstanding debts within a certain 12-month period. A debtor nation must execute a stabilisation program with the IMF before meeting rescheduling obligations. It generally does not pertain to obligations associated with an IMF stabilisation program. It often neglects debts that have been previously restructured or short-term liabilities.

The London Club, often known as the London Club of Bankers, consists of around 360 creditor institutions. This institution coordinates talks for commercial bank loans. They consistently



mandate the full payment of accumulated interest before finalising any rescheduling arrangement, in addition to the continuous payment of interest throughout the debt restructuring process. The parameters encompass loans maturing within the subsequent two years; the correlation of interest rates to the London Inter-Bank Offered Rate (LIBOR); a refinancing or rescheduling fee of fluctuating amounts; and the requirement that the debtor nation must have an adjustment program with the IMF before discussions commence. The terms of the London Club are seldom favourable to indebted countries. Debtor governments often negotiate to restructure and continuously fulfil their debts.

Theoretical Issue

One solution for bridging the gap between saving and investment has been seen as external borrowing. The increase in foreign debt has accelerated debt payment, therefore consuming a large amount of Federal Government funds. Moreover, it has been argued that insufficient domestic investment—which is supposed to foster development—was the reason for the significant rise in general debt service payment expenditure (Obadan, 1991). Particularly in the 1970s, Oke and Sulaima (2012) observed that developing countries took out large loans, usually at somewhat low rates of concession. By allowing greater investment and quickening development, these loans were supposed to hasten the course of expansion of the countries. But as debt service ratios rose dramatically in the 1980s, it became clear that many debt-ridden countries found it almost impossible to pay back their loans while keeping a positive balance to support their own economy. This limited their economic performance. Usually, the government's aim to borrow for fiscal control results in a declining economic growth.

Cambell (2009) argued that government debt can quickly become an economic burden, eroding its foundations, and advise legislators to realise that the accumulation of debt also increases risk by raising claims on unrealised future income, so affecting the country's expenditures for loans and interest. According to Adepoju, Salau, and Obayelu (2007), Nigeria has been sending \$0.8 billion to other international and commercial creditors as well as around \$1 billion annually to Paris Club creditors. Moreover, Nigeria has often failed to meet its yearly US \$3 billion debt commitments to creditors. This resulted in the accumulation of arrears coupled with penalty

charges, which always increase the total debt load. Sometimes a concentration on debt payment compromises macroeconomic goals, therefore hindering developmental aims. How much have loans shaped Nigerian economy over years? According to Onodugo (2014), the government of a country like Nigeria plays a vital interventionist role to reach general macroeconomic objectives of stability and development. Cases of market failures, including monopolies and the insufficient supply of certain public goods and services, support even more the case for government intervention. Consequently, a deficit or fiscal shortfall results from government spending programs' financial needs typically exceeding the resources generated by taxation. This makes bridging the difference necessary by borrowing essential. Public sector borrowing to cover the budget deficit might come from home or international sources or from both together. "Public sector borrowing leads to public debt, which may be classed as either domestic or foreign," Onodugo (2014) noted. "The main justification for developing countries like Nigeria to seek foreign loans is to alleviate the domestic resource imbalance and speed economic development." Such borrowing helps to guarantee the eventual repayment and debt settlement if the loans are wisely employed for production instead of consuming and controlled. According to Udoka and Anyingang (2010), the country started outside borrowing to quicken its economic development.

Empirical Issue

The relationship between infrastructure and foreign debt servicing has caused strong arguments and various empirical studies with different conclusions. Examining the relationship between foreign debt and infrastructure development in Nigeria, Ogboru (2006) assessed how corruption affected the debt issue of the country from 1980 to 2000. Using both quantitative and qualitative approaches inside the framework of OLS, the study found that debt stock and debt servicing reduce the limited resources available for infrastructure development in the nation while corruption re allocates resources from education, health, industry, and infrastructure to private individuals. The studies argued that a major underlying reason of the bad road conditions, falling infrastructure, inadequate healthcare services, dropping educational standards, and lack of foreign loans is corruption. Adepoju et al. (2007) assessed in Nigeria's sustainable economic development and growth the effects of external



debt management. According to their research, although debt is a necessary tool for promoting sustainable economic development, large external debt without servicing—as was the case for Nigeria before 2000—created a major barrier to the recovery of its broken economy and the reduction of general poverty. Examining the impact of significant foreign debt and related payment commitments on economic growth in Nigeria and South Africa, Ayadi and Ayadi (2008) Using foreign debt, debt indicators, and many macroeconomic elements, the neoclassical growth model—which combines these elements—was applied and investigated using generalised least squares and ordinary least squares methods. Their results revealed a negative impact of debt and its servicing commitments on the economic growth of South Africa and Nigeria. 2009 saw Adesola assess how foreign debt service payments affected Nigeria's sustainable economic development. Applying the OLS technique and using data from 1981 to 2004, he found that gross domestic product and gross fixed capital production were significantly impacted by debt repayments to creditors including Paris Club and London Club promissory note holders as well as other creditors. With GDP and GFCF, the study particularly found a positive association between debt payments to Paris creditors and promissory note holders; while, with London Club creditors and other creditors, the relationship was clearly negative. From 1970 to 2010, Uma, Eboh, and Obidike (2013) investigated in Nigeria's economic development the effects on total domestic debt, total foreign debt, and external debt payments. OLS indicated that total domestic and total foreign loans are small and adversely linked with economic development. The studies also revealed that economic development had a positive but minor correlation with debt service payments.

2014's Onodugo looked at how foreign debt affected Nigerian infrastructure development between 1999 and 2012. Using OLS, the study found that while foreign debt slows economic growth, interest rate effect is positive. The studies showed that the R² values of 53% and 64% fit the models very strongly. In 2016 Amaefule and Umeaka looked at how government borrowing affected Nigerian infrastructure development. While no clear association with international debt was found, the study employed capital expenditure as a surrogate for infrastructure development and showed a positive correlation between federal government capital expenditure and domestic debt.

From 1986 to 2015, the study examined the relationships using the OLS approach. Examining the effects of foreign debt on infrastructure development in a few sub-Saharan African countries from 2003 to 2018, Kengdo, Nchofoung, and Ntang (2020) We used Lewbel's estimators as well as Driscoll and Kraay's fixed effects estimators. According to the study, foreign debt lowers African infrastructure quality. At a sustainable debt level of around 99%, there was a clear significant correlation found between infrastructure and external debt. The results matched the past results also when the transport index, electricity index, water index, and sanitation index were added as proxy variables for infrastructure. As dependent variables, the effect of foreign debt is quite favourable on the ICT index and mobile cellular. The studies underlined the importance of improving infrastructure expenditures by means of public projects. Examining debt payments' effects on Nigerian infrastructure development during 2010 to 2020, Chuks and Ogbodo (2021) Using the OLS method, the study found that infrastructure development was somewhat negatively impacted by debt payments and interest rates. The research recommended that Nigeria's infrastructure development pay only sustainable debt.

Examining the impact of foreign debt on Nigerian infrastructure development from 1979 to 2020, Osadume and Imide (2022) Whereas the explanatory factors include foreign debt, debt service, inflation rate, and real gross national income, the dependent variable is the ratio of capital investment to gross national income. Using the OLS method, the study found that although debt servicing had a negative and statistically significant effect, external debt had a somewhat positive affect on infrastructure. The study did not, however, find any relationship between actual GDP and capital investment expenditure. In a related study, Osadume, Edih, and Ikubor (2022) looked at how Nigerian infrastructure development suffered under foreign debt from 1979 to 2019. Using the autoregressive distributed lag approach, the study found that whereas foreign debt had a significant near-term beneficial effect on infrastructure, it had no long-term effect at all. According to the study, consistent credit evaluation need to be a basic rule for obtaining outside money to support infrastructure.

Examining how foreign debt affected infrastructure development in Ogun and Kwara



States, Nigeria, Lola and Oni (2022) found Using the Taro Yamane sample size computation, the study identified 228 individuals from primary data. The study found that infrastructure development in Nigeria was not much influenced by foreign loans. Using data from 1981 to 2020, Onwuka (2022) assessed the effect of foreign debt on infrastructure development in Nigerian The study was conducted using the ARDL model, wherein domestic debt, foreign debt, inflation rate, interest rate, and currency rate decided on infrastructure development. The results revealed a long-term relationship between the explanatory and dependent elements. Particularly, the study turned out not to show any significant correlation between infrastructure development in the near future and the independent factors. Nevertheless, the study found that changes in the currency rate greatly and favourably affect infrastructure development, unlike its very unfavourable response to changes in the interest rate. The studies argued for lower government borrowing levels.

Investigating the effects of foreign debt on Nigerian infrastructure development, Ariyibi et al. (2023) Whereas the independent variables included borrowings from multilateral financial organisations, bilateral financial institutions, foreign direct investment, and trade openness, the study employed government capital expenditure as a proxy for infrastructure development as the dependent variable. Using data from 1983 to 2019 the ARDL model demonstrated a long-term equilibrium relationship between infrastructure development and the independent variables. The study showed that although trade openness had a somewhat unfavourable effect, borrowing from bilateral financial institutions and foreign direct investment favourably affected infrastructure development. By a triangulation technique, Oriloye and Oni (2023) investigated the relationship between infrastructure and debt structures in Nigeria using a questionnaire. Selected from a population of 532 overall, a sample of 228 respondents came from the finance ministries of Ogun and Kwara States. The degree of infrastructure development in Nigeria was demonstrated to be not much influenced by external debt. The investigation revealed that the desired loan amount had to be connected to a specific project. Falade et al. (2024) said that the government aggressively pursued foreign borrowing to close the infrastructure gaps driven by the need to solve infrastructure deficits. As such, significant government spending went towards debt

payment. Their study used information from 1986 to 2021 to examine how public debt affects infrastructure development in Nigeria. The study used ARDL model. Using access to electricity as a gauge of infrastructure development, the study found that debt servicing, external debt, and exchange rates had major negative effects on infrastructure development while domestic debt showed a positive and notable correlation with the dependent variable in the short term. Over time, the study revealed, loan payments, interest rates, and inflation rates adversely and severely hampered infrastructure development in Nigeria.

Stylist Facts on Infrastructures and Debt Servicing

The DMO data show that the overall foreign debt service payment year 2004 was \$1.75 billion, a decline from \$1.81 billion in 2003, thus accounting a drop of \$0.054 billion or 3.01%. Comprising principal repayments of \$1.17 billion and interest payments coupled with commitment costs of \$0.589 billion, the foreign debt service payments amounted to \$1.75 billion. The bulk, at \$0.994 billion or 56.67%, were payments to the Paris Club creditors. Multilateral institutions received \$0.487 billion, or 27.77%; the London Club got \$0.090 billion, or 5.14%; Promissory Note holders received \$0.171 billion, or 9.76%; non-Paris Club bilateral creditors received \$0.012 billion, or 0.66%. The debt service paid in 2004 is much less than the debt service due for that year—\$2.99 billion. With \$2.23 billion due and only \$0.99 billion sent, Nigeria's partial fulfilment of its Paris Club commitments produces this outcome. The shortage becomes arrears and results in significant penalty interest. "This method has greatly contributed to the rise of Nigeria's foreign debt stock over the years," the debt office stated. Many sorts of infrastructure in Nigeria have suffered greatly as a result of debt repayments and loan servicing. Specifically by lowering debt stock and public debt payment costs, thus saving resources for investment in poverty reduction initiatives, DMO seeks to promote efficient debt management methods that favourably impact economic growth and national development.

III. Methodology

The research used a model similar to that of Lola and Oni (2022), Oriloye and Oni (2023), and Falade et al. (2024), whereby infrastructure is determined by several macroeconomic factors. Capital projects, including roads, airports, healthcare, education, telecommunications, and



energy production, are classified as capital expenditure, which is anticipated to enhance a nation's infrastructure condition. Consistent with

previous research, infrastructure development has been included into government capital expenditure and is detailed as follows:

$$GCE = f(DSV, EXD, EXC, TOP) \quad (1)$$

In stochastic log-term, equation 3.1 becomes:

$$\ln GCE_t = \alpha + \beta_1 \ln DSV_t + \beta_2 \ln EXD_t + \beta_3 EXC_t + \beta_4 TOP_t + \varepsilon_t \quad (2)$$

Where: DSV_t = Debt servicing at time t, TOP_t = Trade openness at time t, GCE_t = Government capital expenditure at time t, EXC_t = Exchange rate at time t, EXD = External debt at time t., α is a constant, and β_1 through β_4 are parameters to be estimated, while ε_t is the white noise error term. An increase in debt payment is anticipated to result in a decrease in government capital spending. An rise in the currency rate similarly impacts government

capital spending. Consequently, an inverse connection between the dependent and explanatory factors is anticipated. A positive correlation is anticipated between foreign debt, trade openness, and government capital expenditure. The research used the error correction model to evaluate the long-term and short-term effects of debt servicing on infrastructure levels in Nigeria as follows:

$$\Delta \ln GCE_t = \sigma_0 + \sum_{i=1}^K \sigma_{1i} \Delta \ln GCE_{t-1} + \sum_{i=1}^K \sigma_{2i} \Delta \ln DSV_{t-1} + \sum_{i=1}^K \sigma_{3i} \Delta \ln EXD_{t-1} + \sum_{i=1}^k \sigma_{4i} \Delta EXC_{t-1} + \sum_{i=1}^K \sigma_{5i} \Delta TOP_{t-1} + \lambda ECT_t$$

(3)

While λ indicates the rate of adjustment to the equilibrium process when a discrepancy occurs between the short run and long run periods, ECT_{t-1} in equation 3 reflects the error correction term. As Brown, Durbin, and Evans (1975) clarify, λ . Anticipated is a negative coefficient, which, in case co-integration occurs between the dependent variable and the regressors, should be statistically significant.

IV. PRESENTATION OF RESULTS AND ANALYSIS

Table 1 shows the results of stationarity using the ADF and PP test levels. The results indicate that at level differencing none of the variable is stationary at 5% level of significant. However, at first differencing all five variables become stationary in that both the ADF and PP values exceed the significant level thereby satisfying the key condition for Johansen co-integration test. Accordingly, Table 2 is the Johansen test of co-integration aimed at establishing the long run relationship.

The findings demonstrate that both the trace statistics and maximum eigenvalue suggest the presence of at least one co-integrating connection when assessed against the 5% critical value. This indicates that a long-term link exists between the dependent variable and all four explanatory factors at least throughout the research period. The subsequent presentation in Table 3 illustrates the short-run model, whereby the independent variables explain 87% of the variance in government capital spending, and the DW statistic confirms the lack of serial correlation. The F-statistic indicates that the model is statistically significant, having successfully passed diagnostic tests, demonstrating normal distribution, absence of ARCH effects, and serial uncorrelation.

The findings indicated that all factors are statistically significant in influencing government expenditure, the proxy variable for infrastructure. Consequently, debt payment and currency rates adversely affected infrastructure, although external debt and trade openness had a beneficial influence.



A 1% rise in debt servicing resulted in a 0.06% drop in infrastructure, while an equivalent percentage increase in debt servicing corresponded to a 0.12% growth in infrastructure throughout the analysed period. The considerable adverse effect of debt servicing on infrastructure aligns with the conclusions of Chuks and Ogbodo (2021), Oriloye and Oni (2023), and Falade et al. (2024), although contradicts the results of Amaefule and Umeaka (2016) and Lola and Oni (2022). The beneficial and substantial effect of foreign debt on infrastructure supports the conclusions of Osadume and Imide (2022) and Osadume et al. (2022).

V. Concluding Remarks

The research evaluated the impact of foreign debt payment on infrastructural development in Nigeria, use government expenditure as a proxy variable for infrastructure. The analysis indicated that the persistent rise in debt payments has compromised the allocation for capital investment, thereby impacting the supply of essential infrastructure. The research indicated that debt servicing increases at a rate above that of capital expenditure growth. Furthermore, it was determined that debt servicing and currency rates negatively affected government capital investment, but external debt and trade openness had a direct effect on infrastructure progress throughout the analysed period.

Nigeria has consistently borrowed without restraint, unlike several nations that impose restrictions on their borrowing to effectively manage their debt loads and minimise the effects of debt payments on their economies. For instance, the United States has a debt ceiling of \$14 trillion, and exceeding this amount requires Congressional permission. Nigeria is progressively descending into another escalating financial predicament after the 2006 debt relief agreement, prompting worries on the nation's present debt status. Although some Nigerians contended that the debt stock of around \$46.6 billion in 2004 was unsustainable, the debt management authority has said that the current debt of the nation is manageable. Based on the results of this research, it can be stated that while borrowing may be advantageous to the economy when prudently allocated to particular projects, the payment of such loans has detrimental impacts on the economy. Consequently, it is advisable that foreign loans be incurred only for commercial purposes, rather than for social or political motivations. This aims to prevent the buildup of foreign debt over time and to clarify the true purpose of external debt. The government may

prioritise foreign debt payback responsibilities, hence reducing resources allocated to debt servicing. Similarly, the government may advocate for an export policy approach to enhance the naira's exchange rate, therefore augmenting resources to elevate infrastructure levels. The government's initiative should focus on broadening the nation's trade partners to enhance competitiveness for exports.

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