Investigating the Relationship between Debt Burden Servicing and Infrastructural Development in Nigeria.

Babalola Olatunji Oladapo, Awe Dayo Amos

Directorate of Entrepreneurship, College of Health Sciences and Technology, Ijero Ekiti

DOI: https://dx.doi.org/10.47772/IJRISS.2024.803099S

Received: 27 May 2024; Accepted: 06 June 2024; Published: 25 June 2024

ABSTRACT

This study evaluates debt burden and servicing as it relates to infrastructural development in Nigeria for the period 1992-2021. The study embraced annual time-series data and employed the Fully Modified Ordinary Least Squares (FMOLS) estimation techniques to examine the relationship between the variables. The findings revealed that there exist a positive and significant relationship between domestic debt and infrastructural development; as well as external debt and infrastructural development. The implication of the findings is that increases in domestic and external debt of the federal government leads to an increase in Infrastructural development. More so, a significant and strong relationship was established between infrastructural development, domestic debt, external debt and exchange rate, while all the dependent variables were found to be responsible for 81% variation in the state of infrastructural development in Nigeria. The study, therefore, concluded that domestic and external debt remains strong and active variables driving infrastructural development in Nigeria. It suggested that Public debt should be used for the purpose for which it was borrowed for and such, debts should be used on the basic infrastructural development that will help to improve on the business environment and economic output making for ease of repayment

Keywords: Debt burden, External Debt, Domestic Debt, Federal Government Capital Expenditure, Infrastructural Development.

INTRODUCTION

Some, if not all, nations have always borrowed to increase the deficit in annual budgets since the Keynesian revolution of the 1920s and even before. When a country's budgeted spending exceeds its planned revenue in a given fiscal year, it must borrow to close the gap (Irina, 2016). Domestic debt is one source of borrowing; foreign debt is another (external debt). Whether the debt originates domestically or internationally, it will eventually need to be repaid. Additionally, there is a cost associated with the loan (interest rate) that must be paid in addition to the debt principal when it is due (Rudiger & Stanley, 1994).

Unlike private debt, which is borne by the individual borrower, the burden of public debt is shared by all citizens because they either pay higher taxes that go toward repaying the debt or have their welfare negatively impacted when money that would have gone toward improving public utilities is instead used for debt servicing (Rudiger & Stanley, 1994). Regardless, everyone in the city is scorched by the heat. What's scarier is when borrowing has become customary, but the purpose for which the money is borrowed is either useless or simply unknown to those who will suffer the cost. Regarding the nature of the link between economic growth and government borrowing, economists are divided.

While some theorists support public borrowing with certain restrictions, others are vehemently opposed to it, whether it occurs inside or outside the economy (Eleana & Ines, 2016). The classical economists who

cling to the laissez-faire principle are vehemently opposed to public debt, arguing that it would result in resource waste and, as a result, reduce the productive capacity of the private sector, which will subsequently reduce capital accumulation and economic growth, or at best, have a neutral long-term effect rather than promoting growth as suggested by the Ricardian equivalence. However, Keynes and his supporters strongly encouraged public borrowing in the years after the world slump of the 1920s. They argued that that raising government spending will inevitably boost overall demand and productivity.

The impact of public debt on every economy, however, will inevitably rely on three factors, as highlighted by Irina (2016). The first is whether or not a country's use of debt is customary or even political. Second, whether or not the borrowed money is put to good use; third, the rate of debt buildup and the total amount owing in comparison to the country's prior financial commitments. According to empirical studies, public debt can have both good and negative effects on a country's economic growth. Public debt, in accordance with Saifuddin (2016), benefited investment and economic expansion in Bangladesh. In a similar vein, Gómez-Puig and Sosvilla-Rivero (2017) investigated the impacts government borrowing and established a positive impact of public debt on economic growth.

In Nigeria, the government debt profile has been disturbingly increasing over time. Yearly, the deficit in the budget has been continuously financed through domestic and external debts with little result to show for its productivity. For instance, Nigeria's total debt outstanding has grown from about N10,948.51, N14,537.11, N18,377.00, N20,533.60, and N23,295.07 billion in 2015, 2016, 2017, 2018, and 2019 respectively (CBN, 2019) to about N33.11 trillion as of March 2021 (DMO, 2021). Also, empirical studies report that public debt negatively impacts growth in Nigeria. Isibor, et al, (2018) discovered in their study that although internal debts affected GDP positively, the external debt had a negative impact. In a similar study, Elom-Obed, et al, (2017) found that both domestic and external debts significantly and negatively impacted the growth of the Nigerian economy.

These results are not doubtful as public funds seems not well invested. For instance, a close look at the Nigerian budgets over time shows that a larger percentage is allocated to recurrent expenditure rather than capital expenditure that has a greater capacity to increase capital formation. This means that the deficits that lead to borrowing may not have been invested in capital projects.

Infrastructural development has been on the top of priority list for governments worldwide. According to World Bank (2020), improving infrastructure in the world is very fundamental to reducing poverty, increasing growth and achieving the Millennium Development Goals (MDGs). The need for infrastructure development is very important for developing countries, especially Nigeria. Infrastructure contributes to economic development by increasing productivity services, which enhance the quality of life (Babatunde, 2018).

Public debt is the total of all borrowings made by the federal, state, and local governments, as well as the national debt owed by the government (Didia and Ayokunle, 2020). It can be thought of as the total amount of borrowings a nation's government agencies have taken on, including debts owed to foreign governments, private groups, and the general people. Consequently, it may be internal or external debt. Future pension payments, government liabilities, as well as goods and services that the government purchased on credit, are all taken into consideration in the discussion of public debt (Camillus, 2019)

One important tool of fiscal policy that the government can use to finance a country's development is debt, according to some. It is utilized to settle expenses that will ultimately boost productivity and accelerate economic growth (Muhammad, et al, 2017). Global attention has been drawn to the issue of debt burden experienced by various developing countries; this experience, which is brought on by factors such as the decline in oil prices, exchange rate volatility, and increasing interest rates, has had a detrimental impact on the economies of developing economies around the world, especially Nigeria (Osadume and University, 2021).

Infrastructure development has always been the justification for taking on debt in Nigeria. Since 1958, when a loan of USD28 million was obtained from the World Bank to build a railway and other development projects, various governments and administrations have continued to borrow money for the same or related infrastructure projects, even as the amount of money allocated for capital expenditures continues to decline on an annual basis (Davies et al., 2019). Our internal and external debt have been amassed over many years by borrowing enormous sums of money from a variety of national and international sources. The government has continued to borrow, and on December 10, 2022, the debt management office in Nigeria announced that the country's public debt had reached N44.06 trillion, while the total debt as at 2023 December stood at #97,340,708.25

Nigeria is still far from improving in this sector, with a weak road network, subpar energy, a subpar water system, and a sluggish ICT development, among other issues, despite the high profile of debt and the weight of debt payments accrued for this reason. President Muhammadu Buhari continued to declare that Nigeria would need to borrow N348 trillion to finance infrastructure development over the next ten years on September 23, 2022 (Business Day, 2022), despite the World Bank describing Nigeria's infrastructure's level and quality as low. Nigeria's development outcomes were among the worst in the world, according to the World Bank, despite the huge burden of public debt and debt servicing. Hence, the need to verify the relationship and contributions of public debt to infrastructural development in Nigeria.

Statement of the Problem

Nigeria is one of the country in Africa suffering from various economic and social challenges that cut across poverty, unemployment, insecurity, poor exchange rate etc. this challenges however have been proving by expert to originate from poor state of infrastructural development, which is very eminent in the country Nigeria. The International Trade Office of the US Department of Commerce observed that Nigeria's infrastructure deficit, amounted to 30% of its gross domestic product (GDP), and falls short of the international benchmark of 70% set by the World Bank. This Indicated that the huge borrowing which has become a burden on the country doesn't seems reflecting on the said infrastructural development. Thus the necessity for this study to investigate the link between debt profile or debt burden and infrastructure development in order to determine whether borrowing for infrastructure improvements is economically justifiable.

Purpose of the Study

The basic objective of this study is to establish the relationship between the high debt burden of Nigeria and her state of infrastructural development. Other objectives includes:

1. to establish the level of variation in debt burden of the country over 30 years
2. to establish the level of variation in infrastructural deficit of the country over 30 years
3. to examine the contribution of total borrowings to infrastructural development of Nigeria
4. to establish the relationship between debt burden and infrastructural development of Nigeria.

Research Questions

1. What is the level of variation in the debt burden of Nigeria over 30 years?
2. What is the level of variation in infrastructural development of Nigeria over 30 years?

Research Hypotheses

1. There is no significant relationship between debt burden and infrastructural development in Nigeria
2. Total borrowing will not significantly contribute to infrastructural development of Nigeria

Justification of the Study

The government of Nigeria in the last 16 years have been very active in borrowing locally and internationally, all in the name of infrastructural development, resulting to a high debt profile and debt burden, majorly in terms of debt servicing. However, it appears that little had been done in the area of infrastructural development which they claim to borrow for. Infrastructural deficit is on the high side why debt burden kept on increasing.

Several empirical studies have analyzed the question of whether the rising of external debt shows positive or negative effects on the economic growth of an economy. However, little or no study has been done on the relationship between external debt burden and infrastructural development in Nigeria. It is against this background that this study seeks to ascertain the relationship and contribution debt burden (external and domestic debt) to infrastructural development in Nigeria.

REVIEW OF RELATED LITERATURE

Concept of Public Debt

Borrowings are another name for debt, which can be further broken down into internal (domestic) debts and external (international) debts is broadly divided into two categories: internal debt and foreign debt. Public debt, which is debt undertaken to fund public initiatives, is another name for government debt. Borrowing from both external and/or internal sources is a constant result of the lack of funding for infrastructure, expansive policies, and programs that promote growth and development (Osadume and University, 2021).

One important tool of fiscal policy that the government can use to finance a country's development is debt, according to some. It is utilized to settle expenses that will ultimately boost productivity and accelerate economic growth (Chinonye, 2022). Global attention has been drawn to the issue of debt burden experienced by various developing countries; this experience, which is brought on by factors such as the decline in oil prices, exchange rate volatility, and increasing interest rates, has had a detrimental impact on the economies of developing economies around the world, especially Nigeria (Chinonye, 2022). Public debt is the total of all borrowings made by the federal, state, and local governments, as well as the national debt owed by the government (Said &Yusuf, 2018).

Debt is a result of borrowing. Therefore, debt refers to financial resources used by an organization that were not provided by its owners and in no other manner belong to them (Kosovo et al, 2020). Domestic or foreign debt is both considered public debt. External debts are those incurred outside of the country, whilst domestic debts are those incurred within the country. According to Udoffia and Akpanah (2016), external debt is a collection of financial, technical, and managerial requirements that originate from outside the nation, are intended to assist economic growth and development, and are repayable in foreign currency at a predetermined future period.

Public debt issued within the nation is referred to as internal debt, whilst loans issued abroad are referred to as external debt (Alagba and Eferakeya, 2019). National debt can be divided into two categories: internal and foreign. Funds borrowed from domestic sources are referred to as internal debt. Sold-off securities, bonds, and bills are used to finance this kind of debt. Money borrowed from foreign lenders is known as external debt. Private sources, other nations, and the International Monetary Fund may all be considered in this (IMF).

Debt Servicing Cost

Debt service is the sum needed in a particular time frame to cover the interest and principal on an existing

loan. To put it more simply, it is the sum of money that a nation (debtor) agreed to pay over the course of a loan. The word "debt service" is typically used in the financial sector to describe the sum of principal and interest payments that a certain company must make to its creditors, whether through a bank or bondholder. Since people are also subject to loans like vehicle loans, credit card debt, home mortgages, and many others, this idea also applies to them (Ndubuisi, 2017).

History of Nigerian Public Debt

Nigeria was wealthy in comparison. She had no justification for borrowing. In fact, she later carried out her 30-month civil war successfully from 1967 to 1970 without obtaining a loan from a foreign country. In the early 1970s, Nigeria's then-military head of state, General Yakubu Gowon (1966–1955), remarked that the country didn't have cash flow issues; rather, her issue was how to use the money in her vault (Adejuwon, et al, 2010).

Surprisingly, the nation's vault quickly started to dry up. She later realized that she had to take out international loans in order to stay afloat. Despite the contradiction of being an oil exporting nation, it began joining the league of debtors in 1981. Up until 1978, Nigerian government borrowing was not essential due to the country's plenty of petrodollars as a result of the 1973 OPEC oil price windfall. The administration has set the limit on external borrowing at a manageable N1.0 billion up until this point.

When Olusegun Obasanjo, the country's then-military head of state, decided to lift the external debt ceiling from N1.0 billion to N5.9 billion in 1978 (Ogbonna et al., 1978), Nigeria's rendezvous with other debtor nations officially began (2019). She quickly became embroiled in a dire foreign debt issue that jeopardized her country's ability to advance economically, politically, socially, and culturally. Poverty accompanied this debt problem. It moved up in a swing. For instance, poverty increased dramatically from 28% in 1980 to 66% in 1996 before finally leveling off at roughly 70% in 2000. Simply put, according to the UNDP, 65 million Nigerians were making less than $1 a day. As it stands now, Nigeria public debt is total at #97,340,708.25 as at 2023 amidst increase poverty rate.

Concept of Infrastructural Development

Infrastructure development entails creating the essential frameworks needed for a community and civilization to function. Typically, this refers to infrastructure like roads, sewage, electrical grids, telecommunications, renewable energy, and so on. According to Nworji and Oluwalaiye (2012), capital expenditures are costs associated with large-scale projects including building roads, airports, hospitals, schools, national telecommunication systems, and power plants. Capital expenditures, or costs for capital projects, lead to improvements in a country's infrastructure. As a result, every nation's ability to enhance its infrastructure will undoubtedly have an impact on how well its economy does economically (Olukoye, 2009). Therefore, in this analysis, capital spending by the government has been combined with infrastructure development.

In order to have a significant impact on the nation's infrastructure at any one time, the central authority of any country must deploy enormous financial resources. This is why national economic managers, despite a tight economic schedule, work to amass some capital (via savings) in order to gather significant resources over time to start making significant capital investments (infrastructure development) in the economy. Capital accumulation is a part of economic growth and development in any civilization, according to Ajayi and Edewusi (2020). When a portion of current revenue is saved and invested to increase future output and incomes, it happens.

According to Isiboret al. (2018), capital accumulation includes all the institutions and mechanisms employed within a specific ownership structure of the means of production to extract surplus from the

economy as well as to mobilize and direct the surplus to increase the economy's productive capacity. According to Wikipedia, infrastructure refers to the basic services and facilities required for an economy to run as well as the physical and organizational framework required for the operation of a society or business.

Infrastructure development frequently demands a big initial investment, although there are usually tremendous economies of scale. According to Didia and Ayokunle (2020), there are two categories of infrastructure: "Hard" infrastructure and "Soft" infrastructure. In contrast to "soft" infrastructure, which includes all the institutions necessary to uphold a nation's economic, health, cultural, and social standards, such as the financial system, the education system, the health system, the governance system, the judiciary system, and security, "hard" infrastructure refers to the large physical networks required for the operation of a modern industrial nation (Camillus, 2019).

While soft infrastructure focuses on the development of human capital and institutions that grow infrastructure, such as universities, hard infrastructure refers to the actual infrastructure, such as roads, bridges, power, marketplaces, and health centers (Akos and Istvan, 2019). Therefore, the establishment of fundamental foundational services to promote economic growth and quality of life constitutes infrastructure development for any country.

Empirical Review

The impact of Nigeria's external public debt on the country's infrastructure development from 2008 to 2021 was assessed by Awa, et al. in 2022. As substitutes for external public debt, they employed debt servicing costs (DSC), trade debt (TD), and balance of payments (BOP), while capital spending on infrastructure by the federal government serves as a substitute for infrastructure development. Data were taken from CBN publications for the time period and the National Bureau of Statistical Bulletin for the study's ex-post-facto research design. The hypotheses formulated at the 5% level of significance were tested using multiple regressions based on the ordinary least square (OLS) approach. The results showed that debt servicing costs have a large negative impact on federal government capital expenditures (FGCE), but trade debt has no such impact.

Amaefule (2018) investigated how Nigeria's economy performed in relation to public debt. Gross domestic product (GDP), public capital investment (PCI), and the human development index (HDI) were used to measure economic performance, and external debt, domestic debt, and total debt servicing were used to measure public debt. For the years 1991 to 2016, information on the variables was gathered from the Central Bank of Nigeria bulletin, reports from the Debt Management Office, and World Bank publications. Utilizing an Augmented Dickey-Fuller unit root test, the stationarity of the gathered data was determined and confirmed. In order to analyze the data, an ordinary least squares regression model was used. Findings suggested that, without any supporting data, external debt has a considerable negative impact on GDP and PCI.

Using the Auto-Regressive Distributed Lag (ARDL) model, Chukwu et al. (2021) examined the effects of Nigeria's public debt on public investment from 1985 to 2018. According to reports, public debt may have a short-term, negligible impact on public investment in Nigeria. In order to determine the effect of Nigeria's public debt on private investment, Kehinde, et al. (2015) used the Johansen Co-integration test and Vector Error Correction Model (VECM). In contrast to Ogunjimi, (2019) their long-run and short-run data indicate that internal loans discourage domestic investment. The outcome, however, suggests that over time, foreign debt drives out local investment.

Ogunjimi (2019) investigated how Nigeria's national debt affected investment. The study sought to determine how public debt factors affected investment in Nigeria. Information was taken from CNB bulletins and Bureau of Statistics publications. Descriptive statistics were used to evaluate the data in a descriptive manner, and regression model techniques were used to test the hypotheses at a 5% level of

significance. The analysis's findings suggested that Nigerian investment would suffer significantly.

The impact of debt stock and debt payment costs on Nigeria's economic growth were determined to be minimal by Udeh et al. (2018), who looked into the impact of external debt on the country's economy. Isibor et al. (2018) used two-stage least square regression, regressing lagged internal and foreign debts on GDP in the first stage, to study the impact of government debt on Nigeria's national production between 1982 and 2017. It was found that internal debt had a beneficial impact on the economy whereas external debt had a negative one. The following equation regressed GDP, total savings deposits in DMBs, and capital expenditures on local debt, and data showed that all three factors were related to household debt.

Matandare and Tito in 2018 examined Zimbabwe's national debt and economic expansion. The research design used in the study was quantitative. We acquired secondary time series data for 36 years (1986–2016) from the World Development Indicators database. The study's data were examined inferentially. The study's findings demonstrated a significant negative association between external debt and economic growth in Zimbabwe. The analysis confirmed that inflation and exchange rate also had substantial negative correlations with economic growth in Zimbabwe, while the external environment was found to have a strong positive relationship with economic growth.

Researchers Aladejana, et al. (2021) looked into Nigeria's debt load and infrastructure growth. For the years 1986 to 2019, annual time-series data were taken from the CBN statistical bulletin. At a significance level of 5%, a multiple regression test based on ordinary least square (OLS) was used. The study's findings showed that domestic debt and infrastructure development have a positive and statistically significant relationship under both current and lagged coefficients, while external debt and infrastructure development have a negative relationship under both current and lagged coefficients during the study period. The results suggest that while the federal government's external debt has not improved Nigeria's infrastructural development during the study period, an increase in domestic debt causes an increase in it in the near term.

Research Design

This study will apply fully modified ordinary least square (FM-OLS) analysis technique in order to investigate debt burden, implications for infrastructural development in Nigeria. This will enable us to induce flexibility by contributing the dynamics significance of the variables to infrastructural development in a unified manner for the period of the study.

The method used in this study is a technique for fitting the sum when the squared vertical deviation of point from the line, that is the overall discrepancy between the variables in the model. This means that the sum of all the residual would be a measure of all overall discrepancy of the point from the line. Applying the use of FM-OLS is very significant such that the outcome of the residual ui is normally distributed in the model when the explanations for the behavior of the variables are offered.

The FM-OLS is also to establish the coefficients or the type of relationship that exist and the degree of the relationship in the model in Nigeria for the period 1992-2021.

Sample

Macro-economic data on variables that includes external debt, domestic debt, capital expenditure, inflation rate and exchange rate from 1992 to 2021 were sourced for from 2022 statistical bulleting made available at the official website of the Central Bank of Nigeria.

Procedure for Data Collection

The macro-economic data used were retrieved from the 2022 statistical bulleting made available at the official website of the Central Bank of Nigeria.

Validity of the Research Instrument

To ensure the validity of the instrument a pre-test (stationary and co-integrated) was carried out to examine the causal relationship between the variables. The stationary test and co-integration testis used to show the short and long run equilibrium relationship respectively; between the variables using Augmented Dickey Fully (ADF) test and Johansen co-integration test. Meanwhile, it was established that all the variables were stationary even at level, which automatically validate the data without necessarily conducting co-integration test.

Modelling

This study adopted Aladejana et al, (2021), with little modification. The study model which is given as:

$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X_3 + \beta 4X_4 + \beta 5X_5 + U$…… (i)

Where: Y = Federal Government Capital Expenditure (a proxy for Infrastructural Development) $X1$ = Federal Government's External Debt

$X2$ = Federal Government's Domestic Debt

X3 = Cost of Servicing Debt

X4 = Official Exchange Rate

X5 = Inflation Rate.

$\beta 1, \beta 2, \beta 3 + \beta 4 + \beta 5$ = the coefficient of the independent variables

U= Error term. The model adopted for the study used two (4) variables as independent variables on federal government capital expenditure but to suit the topic and the objectives of the study

The third variable (Cost of Servicing Debt) was removed from the model and the model is mathematically written as:

GCE= f (ED, DD, ER INF) ---------- (ii)

GCE = Government Capital Expenditure

ED = External Debt

DD = Domestic Debt,

ER= Official exchange rate

INF= Inflation rate.

On the a priori, we expect; $\beta 1 > 0, \beta 2 > 0, \beta 3 > 0, \beta 4 > 0$

Econometrically, equation (ii) is written as:

$lnGCEt = \beta 0 + \beta 1 lnEDt + \beta 2\ lnDDt + \beta 3ERt + \beta 4\text{INF} + U1$---------- (iii)

Equation (iii) shall be estimated in the course of this study. Where: $\beta 1$ to $\beta 4$= the parameters to be estimated and $U1$= the error term. Follow: $\beta 1$, $\beta 2$, $\beta 3$ and $\beta 4$ >0

RESULTS AND DISCUSSION

Descriptive Statistics

This analysis answered the two research question raised and give more in-depth description of the five variables considered.

Table 1: descriptive analysis of the characteristics of the economic variables

	CAPITAL_EXPENDITURE	DOMESTIC_DEBT	EXHANGE_RATE	EXTERNAL_DEBT	INFLATION_RATE
Mean	774.6485	5060.286	167.5651	3208.607	11.81852
Median	653.6090	2169.638	132.8500	1631.500	12.74000
Maximum	2522.468	19242.56	435.0000	15855.23	28.88629
Minimum	54.50180	273.8364	79.50000	438.8909	-14.06701
Std. Dev.	624.8502	5519.609	97.30863	3823.645	7.193269
Skewness	1.249620	1.089821	1.353582	1.926317	-1.198309
Kurtosis	4.130153	2.993186	3.747997	6.217383	7.680916
Coefficient of Variation	81%	100%	3%	100%	61%
Observations	30	30	30	30	30

Table 1 shows the summary of descriptive statistics of the variables included in the model. It shows the existence of wide variations in the variables as depicted by the mean values. The analysis shows that the standard deviations of the capital expenditure, domestic debt and external debt are high and this also reflect on the coefficient of variation if the variables. All the distributions in the analysis are positively skewed with the exception of inflation rate that is negatively skewed. Variables with value of kurtosis less than three are called platy kurtic (fat or short-tailed) and only domestic debt (DD), variable qualified for this during the study period. On the other hand, variables whose kurtosis value is greater than three are called leptokurtic (slim or long tailed) and Government capital expenditure (GCE), external debt (ED), exchange rate (ER) and inflation rate (INF) variables qualified for this during the period of the study. This shows that some operations are required to normalize the time series data.

Test of Stationarity

The study first investigated the time series properties of the data. It has been established in literature thatmost time series variables are not stationary, hence the need to establish stationarity before using them in a model to avoid spurious regression. A series is said to be stationary if its mean and variance are constant over time and the value of the covariance between the two-time periods depends only on the distance or lag between the two-time periods and not the actual time at which the covariance are computed (Gujarati, 2003). A nonstationary variable can be made stationary if differenced appropriately. The appropriate number of differencing is called the order of integration. The study therefore

employed the Augmented Dickey-Fuller (ADF) unit root test to check the stationarity properties of the data. The essence of the ADF is to test the null hypothesis of unit root or non-stationary stochastic process. To reject this, the ADF statistic value must be higher than the critical value at 5% significance level.

Table 2 below presents the results of test statistics for the levels and first differences of the stochastic time series data for the period of 1992 to 2021.

Table 2. Unit Root Test (ADF Test)

Variable	@ Level		Result
	t-stat	Prob**	
GCE	-0.4512	0.6712	Stationery
DD	-3.1278	1.000	Stationery
ED	-2.8765	0.9876	Stationery
ER	-3.1459	0.9997	Stationery
INF	-2.9812	0.9883	Stationery

Source: Author's computation, 2023

The table two above presents the result of stationerity of the time series variable. A variable is said to be stationery when the value of test statistics is lower compared to the probability value. The output above however revealed that all the variables are stationery at level. This indicates that there will be no need for further test (Cointegration Test).

Inferential Statistics

The other two tables bellow present the regression, correlation and test of casualty of the variables in the model and the results is presented in table 3 and 4 below.

Table 3: Ordinary Least Squares Regression A

Dependent Variable: CAPITAL_EXPENDITURE				
Sample: 1992 2021				
Included observations: 30				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DOMESTIC_DEBT	0.133659	0.048420	2.760418	0.0109
EXHANGE_RATE	-3.174496	3.378313	-0.939669	0.3567
EXTERNAL_DEBT	0.034754	0.032034	1.084897	0.0287
INFLATION_RATE	5.891856	8.612607	0.684097	0.5005
C	449.0891	265.4205	1.691991	0.1036
R-squared	0.806712	Mean dependent var		774.6485
Adjusted R-squared	0.774498	S.D. dependent var		624.8502
S.E. of regression	296.7232	Akaike info criterion		14.37906
Sum squared resid	2113071.	Schwarz criterion		14.61480
Log likelihood	-203.4964	Hannan-Quinn criter.		14.45289
F-statistic	25.04181	Durbin-Watson stat		0.909933
Prob(F-statistic)	0.000000			

The table 3 above presents the regression analysis of the variable considering the capital expenditure which is the proxy of infrastructural development as the dependent variable. The output made it clear that only domestic and external debt contributed significantly to infrastructural development. This indicated that the government spend more on infrastructural development when they borrow more. However, the value of R-squared made it clear that all the independent variables considered are actively involved in dictating 81% variation in infrastructural development in Nigeria whit F (25.04) and p (0.000) indicating a good fit and significant contribution of the all the variables to the dependent variable. This implies that the four independent variable goes a long way in influencing the state of infrastructural development in the country.

Table 4: Correlation analysis of the relationship between the variables in the model

Variable	Capital Expenditure	Domestic Debt	External Debt	Exchange Rate	Inflation Rate
Capital Expenditure	1	0.8913	0.7441	0.8632	0.3373
Domestic Debt	0.8913	1	0.7943	0.9723	0.3306
External Debt	0.7441	0.7943	1	0.8648	0.3127
Exchange Rate	0.8632	0.9723	0.8648	1	0.3790
Inflation Rate	0.3373	0.3306	0.3127	0.3790	1

The table 4 above presents the analysis of the relationship between the variables used in the model, it was revealed through the output of the table that there is a positive relationship between the variables. It was as well discovered that all the dependent variables has a strong relationship with capital expenditure except inflation rate. Meanwhile the output indicated that the dependent variables moves in the same direction with capital expenditure, which means that the independent variable is being actively driven by the dependents variables.

DISCUSSION

This study examined the relationship and contribution of debt servicing and burden to infrastructural development in Nigeria. The contributions of variables that includes domestic debt, external debt and some other economic variables that include inflation and exchange rate to infrastructural development were also considered. The outcome the study established a high variation in the time series data of each variables.

The outcome of the ordinary least square analysis run to establish the contribution of the dependents variables to infrastructural development indicated and revealed that external and domestic debt does significantly and positively contribute infrastructural development. It was as well established all the dependents variables dictates 81% variation in the state of infrastructural development in Nigeria. This is in line with the outcome of the studies of Amaefule, et al. (2018), Aladejana, et al. (2021) which affirmed that public debt contributed significantly to infrastructural development. The study in addition also established a strong and positive relationship between infrastructural development, external debt, domestic debt and exchange rate. In contrary, Awa, et al. (2022) found out that debt servicing cost has negative significant effect on Federal Government Capital expenditure.

CONCLUSION

It was concluded in the study that there is a wide variation in the time series data, even though they normalized at level as revealed by the outcome of the Dickey Fuller stationery test. It was established that both external and public debt does significantly contributed to infrastructural development in Nigeria. Which indicated that the more the borrowings the more development witnessed in infrastructural development. It was also established external and domestic debt coupled with exchange and inflation rate

does dictate 81% variation in the changes in the state of infrastructural development in the country. While a strong and positive relationship was established between external debt, domestic debt, exchange rate and infrastructural development.

RECOMMENDATION

Considering the findings of the study, the following recommendations were made:

1. Government should consider an alternative means of generating fund to facilitate infrastructural development outside borrowings
2. Government should put in place fiscal policies that will ensure good earnings from the infrastructures financed through borrowing to ease the effect of debt servicing
3. Government should promote quality assurance and ensure such in every development projects executed in this regard.
4. Proper monitoring and evaluation of projects should prioritized for accountability
5. Government should consider sourcing for raw materials locally and reduced the consumption of foreign resources even in the course of executing infrastructural development projects for balance of trade and good exchange rate.
6. Local produce and active economic activities driven by infrastructural development should be encouraged, by making funds or loan facilities available to SMEs in other to curb inflation.
7. Public debt should be used for the purpose for which it was borrowed for and such debts should be used on the basic infrastructural development that will help to improve on the business environment and economic output making for ease of repayment

REFERENCES

1. Adejuwon KD, James KS, Soneye OA (2010). "Debt Burden and Nigeria Development". J. Bus. Organ. Dev. 2:102-113
2. Ajayi, I., and Edewusi, D. (2020) 'Effect of public debt on economic growth in Nigeria: An Empirical Investigation' International Journal of Business and Management Review, Vol.8, No.1, pp.18-38
3. Akos, D and Istvan, D. (2019). Public debt and economic growth: What do neoclassical growth models teach us? Journal of Applied Economics, 51 (29), 104-121.
4. Aladejana, S.A., Okeowo, I.A., Oluwalana, F.A and Alabi, J.A. (2021). Debt burden and infrastructural development in Nigeria. International Journal of Academic Research Business and Social Science, 11(1), 419-432.
5. Alagba, O. S., & Eferakeya, I. (2019). Effect of public debt on economic growth in Nigeria: An empirical analysis 1981-2018.International Journal of Business and Economic Development, 7(2), 10-17.
6. Alejandro, D. J., & Ileana, R. J. (2017). The impact of government debt on economic growth: An overview for Latin America. Department of Economics, University of Perugia (IT), Working Paper,28, 1-11
7. Amaefule, L.I. (2018). Public Debt and the Performance of Nigeria's Economy: An Empirical Evaluation (1991-2016). International Journal of Social & Management Sciences 1(1): Pp. 14-27
8. Babatunde, W., (2018). Infrastructure development in Nigeria; Roadmap to sustainable development. Business Day, September 23, 2022)
9. Camillus, E. (2019). Nigeria's Buhari seeks parliamentary nod on $23 billion in foreign loans
10. CBN Statistical Bulletin (2020). Annual Statistical Bulletin.
11. CBN Statistical Bulletin (2021). Annual Statistical Bulletin
12. Chinonye Emmanuel Onwuka. (2022). External Debt Burden and Infrastructural Development Nexus In NIGERIA: An Ardl Approach (1981-2020), J Eco Res & Rev, 2(3), 217-225.
13. Chukwu, K.O., Ogbonnaya-Udo, N., & Chimarume, B. U. (2021). Effect of Public Debt on Public Investment in Nigeria: 1985-2018. Asian Journal of Economics, Business and Accounting, 21(2), 98-

114. Debt Management Office, (2021). Nigeria. Press Release: Total Public Debt Stock as of March
14. Davies, I.E.E., Nwankwo, C.O., Olofinna, O.M. and Michael, T.A. (2019). Insight review on impact of infrastructural development in driving the SDGs in developing nations: a case study of Nigeria. International Conference on Sustainable Infrastructural Development. Available online at: 10.1088/1757-899x/640/1/012112
15. Debt Management Office (DMO) publication, Federal Republic of Nigeria. November, 20121.
16. Didia, D., & Ayokunle, P. (2020). External debt, domestic debt and economic growth: The case of Nigeria, Advances in Economics and Business 8(2), 85-94. http://www.hrpub.org DOI: 10.13189/aeb.2020.080202
17. Elom-Obed, F. O., Odo, S. I., Elom-Obed, O., & Anoke, C. I. (2017). Public debt and economic growth in Nigeria. Asian Research Journal of Arts & Social Sciences, 4(3), 1-16.
18. Isibor, A. A., Babajide, A. A., Akinjare, V., Oladeji,T., & Osuma, G. (2018). The effects of public debt on economic growth in Nigeria: An empirical investigation. Journal of International Business Management, 12(6), 436-441.
19. Kehinde, J. A., Olanike, B., Oni, E., & Achukwu, M. (2015). Public Debt and Private Investment in Nigeria. American Journal of Economics, 5(5): 501-507. DOI: 10.5923/j.economics.20150505.10
20. Mohamed, Elwasila SE. "Effect of external debt on economic growth of Sudan: Empirical analysis (1969-2015)." Journal of Economic Cooperation & Development 39, no. 1 (2018): 39-62.
21. Muhammad, D.A.B., Ruhaini, M., Nathan, S.B. & Arshad, (2017). Real effects of government debt on sustainable economic growth in Malaysia. Journal of International Studies, 10(3), 161-172.
22. Ndubuisi, P. (2017). Analysis of the impact of external debt on economic growth in an emerging economy: Evidence from Nigeria. African Research Review, 11(4), 156-173
23. Nworji, I. D. & Oluwalaiye, O. B (2012). Government Spending on Road Infrastructure and Its Impact on the Growth of Nigerian Economy. International Journal of Management & Business Studies (IJMBS), 2(2), 24-30. ijmbs.com
24. Ogbonna, K.S., Ibenta, S.N., Chris-Ejiogu, U.G. and Atsanan, A.N. (2019). Public debt Services and Nigerian Economic growth. European Academic Research Journal, 6(10), 22-34.
25. Ogunjimi, J.A. (2019). The Impact of Public debt on investment in Nigeria. Development Bank of Nigeria Journal of Economics and Sustainable Growth, 3(2), 1-28.
26. Olukoye, M. E. (2009). Does Government Spending Spur Economic Growth in Nigeria? MPRA paper No. 17941
27. Saifuddin, M. D. (2016). Public Debt and Economic Growth: Evidence from Bangladesh. Global Journal of Management and Business Research: (B), 16(5), 65-73.
28. Sánchez-Juárez, I., & García-Almada, R. (2016). Public debt, public investment, and economic growth in Mexico. International Journal of Financial Studies, 4(2), 1-14. http://dx.doi.org/10.3390/ijfs4020006
29. Saungweme, T., & Odhiambo, N. M. (2020). Public Debt Service in South Africa and Its Impact on Economic Growth: An Empirical Test. The Review of Black Political Economy, https://doi.org/10.1177/0034644620960228
30. Udeh, S., Ugwu, J. and Onwuka, I. (2018), "External debt and economic growth: the Nigeria experience", European Journal of Accounting Auditing and Finance Research, Vol. 7 No. 2, pp. 33-48.
31. Udoffia, D.T. and Akpanah, E.A. (2016). An Assessment of the impact of external debt on economic growth of Nigeria. International Journal of Social sciences, 10(1), 1-27
32. World Bank. (2020). World Bank Development Indicators