Domestic Debt and Public Health Financing: Evidence from Nigeria

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Abstract

There is a consensus between the World Bank and International Monetary Fund that the development of domestic bond markets deserves high priority to enhance infrastructural financing. This study focussed on the effect of domestic debt and public health financing in Nigeria. Time series data were sourced from Central Bank of Nigeria Statistical Bulletin from 1986 to 2023. Public health budget was modelled as the function of Treasury Bonds, Treasury Bills and Federal Government of Nigeria Bonds. The study employed Unit Root, Co-integration, Error Correction Model and Granger Causality techniques in analysing secondary data. The unit root test revealed that Domestic Debt all the variables were integrated as order 1 or I (1), meaning it is non-stationary at original level. The study found that the estimated model found that 58.5 per cent variation in public expenditure on health the model is statistically significant by the value of f-probability. Based on the validity of lag I, the study also found that Treasury bond and federal government bond have negative effect on public expenditure on health while federal government treasury bills have positive effect on the dependent variable. The probability value of 0.3098 is greater than the critical value of 0.05, the study conclude that there is no significant relationship between Treasury bonds and public health sector expenditure. The probability value of 0.6110 is greater than the critical value of 0.05, the study conclude that there is no significant relationship between Treasury Bills and public health sector expenditure. The probability value of 0.5334 is greater than the critical value of 0.05, the study conclude that there is no significant relationship between FGN bonds and public health sector expenditure in Nigeria. We recommend that federal government should establish a comprehensive debt monitoring and forecasting system to manage debt sustainability effectively. Invest in the capacity and expertise of debt management institutions to negotiate favorable debt terms, refinance high-cost debt, and minimize risks associated with debt servicing and ensure transparency in debt management and public spending. Publish comprehensive reports on debt levels, sources of financing, and the use of borrowed funds. Engage civil society organizations and the public in monitoring and holding the government accountable for its fiscal decisions.

Keywords: Domestic Debt, Public Health Financing, Treasury Bills, Federal Government Bonds, Treasury Bonds

INTRODUCTION

The domestic debt profile of Nigeria has been on the rise in recent times owing largely to the federal government reliance on borrowing from Central Bank of Nigeria (CBN) and Capital Market to finance its huge fiscal deficits and other needs of government especially with the nosedive of the price of crude oil. The unstable economy, poor infrastructural developments, high unemployment rate, inadequate basic amenities, high inflation rate, high budget deficit, over dependent on importation and declining Gross Domestic Product (GDP) are factors responsible for the continues rise in the domestic debt profile of Nigeria. The growing domestic debt profile is agued to be a hindrance for proper infrastructural development of the Nigeria over the years. This, therefore, raises some questions on what the publicly borrowed funds are been used for since the standard of living of vast majority of Nigerians has worsened since 2005 and no improvement is in sight.

Evidently, the figures from the National Bureau of Statistics indicated that the country's incidence worsened from 54.4% in 2004 to 71.5% in 2011. However, some scholars such as Adofu *et al.* (2010), Ali Abbas and Jacob Christensen (2004), Gbosi (1998) to mention but a few, have given some insights into the contributions of domestic debts and effects on the Nigeria economy. For instance, Jacob Christensen (2004) examined domestic debt and its role in 27 Sub-Sahara African Countries of which Nigeria was among between the period of 1980 and 2000. The study revealed that these countries' domestic debt markets were generally small of short term largely, and without much investors. The study also indicated that in spite of the smaller domestic debt as compared to foreign debt of these countries, interest payment on domestic debt impact heavy burden on the budget. Gbosi (1998) in Adofu *et al.* (2010), posited that borrowing by government from the domestic economy turned into the primary source of financing government expenditure because of the breakdown in costs of oil in the international market. Adofu *et al.* (2010), in their study of domestic debt and the Nigeria Economy reviewed the observational relationship between domestic debt and financial growth in Nigeria. The study examined the relationship between domestic debt and economic development in Nigeria. They indicated in their study that domestic debt has influenced the economy's development contrarily.

The role of domestic debt markets in economic growth built up another domestic debt database covering 93 low income nations and developing markets over the 1975-2004 periods to gauge the growth effect of domestic debt. They discovered that direct levels of non-inflationary domestic debt, as an offer of GDP and bank deposits have a positive overall effect on economic growth. Carlos *et al.* (2014) discovered in their research work 'Measuring the effect of Debt-Financed Public Investment' that debt financed profitable public ventures raises a nation's debt proportions in the short run, it can likewise produce higher growth, incomes, and exports, driving after some time to lower debt proportions. Lora (2007) in her work titled 'Public Investment in Infrastructure in Latin America', surveyed the impact of public indebtedness on the public investment in infrastructure from 1987-2001. She opined that increase in debt is connected with higher public infrastructural undertakings, which is capable of incorporating numerous other monetary and macroeconomic variables. She observed some

complementarities in the middle of public and private investment and of the negative impact of IMF change credits on infrastructural consumption. Harley *et al.* (2014), in their study on the 'impact of financing public utility within a developing economy' figured out that bond is a debt instrument use by various levels of government to finance capital projects. They further figured out that bonds are statistical significant variables though inversely related to infrastructural development because the issue of bonds by governments in a developed economy has not been tied to a particular public utility. Jibrin (2013), expressed that the rise in government spending to GDP ratio was as a result of the plunging into increased fiscal policy during the era of the oil boom in the 1970s. However, government expenditure priorities did not change with the oil boom decline in the 1980s, it brought about the increasing the nation's debt profile. Sanusi (2003), expressed that the debt stock of the nation might grow to the extent where it becomes a burden and the government would find it difficult to service the loan, thereby adversely influence the economic policies. He further argued that a heavy debt burden is likely to daunt government's ability to embark on more developmental programmes in infrastructure, education and public health.

Ogidan (2010) expressed that aside that foreign debt needed to be checked, it was also crucial for government to pay attention to the size and servicing of internal borrowings. Nwankwo (2011), also expressed that Nigeria's domestic debt as at December 2010 was 86.71% of the total debt. He further explained that most of the domestic debt instruments issued by the Debt Management Office were done monthly and were mostly federal government bonds that mature between 3 to 20 years. Ijeoma (2013) in a topic, 'An Empirical Analysis of the Impact of Debt on the Nigerian Economy, evaluated the impact of debt on chosen macroeconomic pointers in Nigerian Economy. The study revealed that Nigeria's external debt stock has a huge impact on her economic growth. It further revealed that there is a critical relationship between Nigeria's debt service payment and her Gross Fixed Capital Formation. It has been observed that borrowing by government from the domestic financial market has become fundamental source of financing government deficit budget because of the downturn in crude oil price in the international market. The need to provide alternative source of revenue and reduce the domestic debt by harmonising the Nigeria tax system as well as other means of generating revenue provides the basis for this study. There have been studies from several researchers on the impacts of domestic debt and gross domestic product (GDP) as well as looking at the nexus that exist between them, however, very little has been done considering them sector by sector, hence, created one of the gaps that this work seeks to address. In view of the above, this study examined the effect of domestic debt on public health financing in Nigeria.

LITERATURE REVIEW

Domestic Debt
James, Magaji, Ayo and Musa (2016) define domestic debt as debt from within a country. DM is owed to holders of GOVT securities like treasury bills and bonds, which represent GOVT borrowing through issuance of securities, bonds, and bills (Babu, Kiprop, Kalio & Gisore, 2015). DM in Nigeria is mainly acquired through debt instruments such treasury bills, certificates, bonds, development stocks, FGN bonds, and promissory notes. Nigeria

introduced FGN Sukuk, FGN Green Bond, and FGN Savings Bond in 2017. GOVTs borrow domestically when planned expenditure exceeds projected revenue and when they need to pay off maturing loans or satisfy an immediate external debt payment obligation, according to Babu et al. (2015). DM, as defined by Onogbosele and Mordecai (2016), includes Federal, State, and Local GOVTs' transfer responsibilities to residents and corporate enterprises. Thus, the Central Bank of Nigeria (CBN) manages domestic public debt as the Federal GOVT's banker and financial adviser.

The federal GOVT issues DMs in local currency. The only debt instruments issued by state and local GOVTs are Nigerian treasury bills, federal GOVT development stocks, and federal GOVT bonds (Babu, et al., 2015). Treasury bills, certificates, and bonds are used to contract DMs. FGN bonds, promissory notes, and development stocks are others. Nigeria's DM profile has changed during the 1960s due to many variables. High budget deficits, poor output growth, huge expenditure growth, high inflation, and a narrow revenue base since the 1980s are the main factors (Anning, Ofori and Affum, 2016; Abula and Ben, 2016; Ehiedu, 2021; Ehiedu, 2020; Obi, and Ehiedu, 2020). According to Okwu, Obiwuru, Obiakor & Oluwalaiye (2016), GOVT borrows to finance emergencies like natural disasters and economic depression, important capital projects like water dams, agricultural development projects, and river basin development projects, and current expenditure in an emergency. GOVT revenue declines were usually offset by Central Bank ways and means advancements. These advances were never defrayed by the federal GOVT but refinanced by the flotation of new treasury bills and bonds to pay holders of maturing debt instruments, leading to the debt stock's rise (Okwu, et al, 2016). Security issues like the Book Haram insurgency and political corruption have worsened the federal GOVT's internal debt.

Nigeria's domestic public debt is managed by the Central Bank of Nigeria (CBN), the federal GOVT's financial adviser (Cordelia, 2019). Thus, DM is the money the GOVT borrows locally from banks, individuals, and enterprises by selling GOVT assets like treasury bills and bonds. DM contains marketable components, which can push out private investments, according to Cordelia and Ogechi (2019). If DM is saleable, Cordelia and Ogechi (2019) suggested that appropriate amounts could benefit the economy. DM marketability could strengthen money and financial markets, boost investment, and boost private savings (Bakare, Ogunlana, Adeleye & Mudasiru, 2016). DM payment costs can consume a large portion of GOVT revenues, especially if domestic interest rates are greater than overseas loans. In shallow financial markets, domestic borrowing costs and debt levels can grow swiftly. DM financing can crowd out private investment by raising interest rates, so the GOVT may be held responsible by some investors. The cost of borrowing and private sector investment rises when bank lending to private sectors increases (Omodero & Mlanga, 2019). Igbodika, Jessie, and Andabai (2016) state that "DM reduces macro-economic risk; the absorption of the domestic financial resources by the GOVT brings some question like inefficient credit to the private sector and poor financial development". The accumulation of GOVT borrowing from local sources has led to Nigeria's exorbitant DM, which is hurting GDP growth and pushing out private sector investment (Okonjo-Iweala, 2011; Obademi, 2012) referenced in Cordelia, et al (2019).

Ozurumba and Kanu (2014) define domestic debt as "a 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. In Nigeria, domestic government debt is defined as debt instruments issued by the Federal government and denominated in local currency. In principle, State and Local governments can also issue debt, but they are still limited in their ability to issue debt instruments. Therefore government domestic debt refers to debt instruments issued by the federal government, and does not include contractor debts and supplier credit by the government. It therefore consists of:

   i.   Nigerian Treasury Bills
  ii.   Nigerian Treasury Certificates
 iii.   Federal Government Development Stocks
 iv.   Treasury Bonds
  v.   Ways and Means Advances

Out of these, treasury bills, treasury certificates and development stocks are marketable and negotiable, while treasury bonds, ways and means advances are not marketable, but held solely by the CBN. Of the three marketable government debt instruments, only treasury bills are currently traded in the money market, since treasury certificates was discontinued in 1996. Development stocks are traded in the capital market, but since1987, the federal government has not issued any new development stock. The Central Bank in the course of discharging its functions with respect to debt management plays an important role in both the primary and secondary markets for government securities. In the primary market, the Central Bank readily guarantees the issue of these securities and absorbs any amount not subscribed by the banks and the non-bank public. Thus even if the non-Central Bank subscriptions were zero, 'mandatory take-up' guarantees the government the full amount of any issues of treasury bills, treasury certificates or development stocks required to finance its budget. The CBN also provides a secondary market for government securities whereby those securities held by the Bank are offered to the public for sale.

Structure of Domestic Debt in Nigeria

Domestic government debt instruments play an important role in any economy, as they provide economic agents with alternative options to banking for allocating their savings accordingly. It is a key part of the collateral used in financial markets and as such plays an important role in monetary policy implementation. Significant changes in the size, structure and composition of government debt instruments may influence financial stability. In order to maintain financial stability, it is therefore important to monitor the structure, characteristics and the level of risk inherent in the debt portfolio. Reliable statistics on the composition, investor's base and maturity structure is necessary to assess these risks. In this section, we shall analyse the structure and characteristics of domestic government debt portfolio in Nigeria.

Composition

Treasury Bills constitute the main component of the outstanding stock of government debt accounting for 77.4 percent of total domestic debt in 1960, declining to 51 percent by 1970 but climbing up to 62 percent in 2003. The decline in the percentage share of treasury bills in the mid 1970's was as a result of the decision not to issue new treasury bills because of the boost in government revenue in the mid 1970's as revenue from the oil sector improved substantially (Okunrounmu, 1992). As soon as there was a decline in revenue from this source, government reliance on credit from the CBN through the issue of treasury bills resumed as from 1981.

The growth in the level of treasury bills also reflected the practice of rollover of maturing securities and continuous recourse to conversion of ways and mean advances outstanding at the end of the year to treasury bills as a way of funding the fiscal deficit. Treasury certificates, which were first issued in 1968, constituted one of the largest securities between 1983 and 1988. It even surpassed treasury bills between the period 1976-1980. It was first issued to further deepen the domestic money market by increasing short-term investment options available. In 1995, the federal government decided to convert treasury certificates outstanding to non- tradable treasury bonds in an attempt to further reduce its debt service obligations on domestic debt. Treasury certificates were therefore abolished in 1996.

In 1989, the monetary authorities at the inception of the auction bid system for flotation of treasury bills and certificates introduced treasury bonds, as another instrument in the portfolio of domestic debt. The objective was to minimize debt service obligations on domestic debt arising from the liberalization policies. Thus in 1989, 20 million Naira worth of treasury bills, representing 58.6% of treasury bills outstanding were converted to treasury bonds of fixed interest rates. The bonds styled as "5% Federal Republic of Nigeria treasury bonds 2004-2015" are to carry a fixed interest rate of 5% and are wholly held by the CBN. As a result of the flotation of new issues of treasury bonds and conversion of part of the treasury certificates outstanding, treasury bonds accounted for up to 69% of total domestic debt as at end 1996.

Development stocks were apparently the first government instrument to be issued. It was floated largely to provide development finance either directly to meet the needs of the federal government or as loan on lent to the state governments. The colonial administrators floated the first registered debt stocks 1956/61 in 1956. Development stocks outstanding increased between 1960 and 1987. It started to decline as from 1988, as no new stocks were made. The Development Stocks were traded in the secondary market of the Nigerian Stock Exchange. In line with government's policy of reducing reliance on monetary financing of deficits, the federal government through the Debt Management Office (DMO) in 2003 raised funds through the capital market to meet its financing needs by issuing the 1st FGN Bonds. The government was able to raise N72.6 billion, out of the N150 billion worth of bonds issued representing about 5.4% of total domestic debt stock.

Public Health Sector Expenditure

Public health infrastructure is the foundation of the public health system. The Public Health Infrastructure objectives address high-performing health departments, workforce development

and training, data and information systems, planning, and partnerships. (Achibong *et al.,* 2023). A strong public health infrastructure includes a capable and qualified workforce, up-to-date data and information systems, and agencies that can assess and respond to public health needs. While a strong infrastructure depends on many organizations working together, public health departments play a central role in the nation's public health system. Federal agencies rely on a solid public health infrastructure in state, tribal, local, and territorial jurisdictions (Healthy People 2030, 2023).

The presence of health infrastructure in terms of having medical facilities is key to having a good health status for the people. Many researchers (Yusuf *et al.*, 2018) have tried to explore the existing healthcare system pattern and the health status of the people so far. Achibong *et al.* (2023) the study asserts that the average annual budgetary allocation for health in Nigeria is about the lowest in Africa at 5.7% as the total health expenditure is only 0.7% of GDP against the WHO recommended 4%-5%. The out-of-pocket spending by Nigerians is more than 60% of total health expenditure instead of WHO recommended 30-40%, while the national coverage of the National Health Insurance is below 5% which poses a serious problem to health care service utilization. In Nigeria, the ever-rising socioeconomic costs of healthcare and the limited or complete lack of supportive public financing is a major challenges to the attainment of the sustainable development goals (SDGs) recently adopted to reduce poverty and improve the well-being of all citizens of the world. This paper examined healthcare financing in Cross River State and determined the extent to which it poses problems to service utilization. The paper reviewed literature relevant to the study while the Marxist conflict theory of healthcare utilization was employed. The design for the paper was Expost facto which relied on secondary data from Cross River State Ministry of Health. The authors reviewed various sources of health care financing in Cross River State and the impact of these sources on health care system strengthening or quality of health care provision. From the study or discourse and review of health expenditure and its related challenges, it was found that out-of-pocket expenditure or user-fee charges, community-based financing, private donor agencies financing and tax-based public health financing sources in the state have not significantly impacted good services provision to individuals. From these findings, it was recommended among others that government should encourage the establishment of village/ward development committees whose responsibilities should include taking the initiative to assist the government in building health posts (in communities where such do not exist), Government should maintain existing health facilities and provide proper logistics during health campaigns and monitoring of health workers activities at the health facilities.

Gangolli, Duggal and Shukla (2005) in a study on healthcare in India brought together a broad array of issues and possess a certain ideological clarity. This book has come out as an input to support the activities of the Peoples Health Movement in India (Jan Swasthya Abhiyan-JSA). The articles in this volume try to analyse and reinterpret the health situation and health statistics from people's perspectives and strengthen the emerging movement demanding a people's health policy in India. The work by (Datar, Mukherji and Sood, 2007) examined the role of health infrastructure and community health workers in expanding immunization coverage in rural

India. The study is based on NFHS data but is constrained to rural India only. They found that the availability of health infrastructure had only a modest effect on immunization coverage and the presence of community health workers in the village was not associated with increased immunization coverage. The study by Shariff and Gumber (2008) concentrated on Health Care Services in rural India and its implications for Reproductive Health. The objective of the paper is to examine healthcare utilization patterns across gender, especially seeking inpatient and outpatient services at public and private facilities. Discussing the pattern of health care utilisation the authors find that the incidence of morbidity for women in the reproductive age group is higher than those for men. Scheduled Castes and Scheduled Tribes reported lower levels of hospitalization, which is largely due to their inaccessibility to healthcare facilities.

Furthermore, Salau (2022) posits that as public sector funding for critical healthcare slows, it is advocated for a public-private partnership (PPP) financing model to bridge Nigeria's healthcare infrastructure gap. With an estimated population of over 200 million people in Nigeria and per capita healthcare expenditure of less than $100, there is no denying that the Nigerian healthcare sector is faced with several challenges, including insufficient funding and inadequate healthcare infrastructure.

Debt Overhang Theory

This theory originated from Krugman (1988) who argued that "debt overhang" is a situation where a country's expected external debt payment capacity falls below the contractual debt value. According to Cohen"s (1993) theoretical model, foreign borrowing has a nonlinear impact on investment and this is supported by Clements et al., (2003) who purports that this association could arguably be extended to growth. Thus, foreign debt accumulation promotes investment up to a certain level after which debt overhang will begin injecting negative pressure on the willingness of the investor to make capital contributions. Similarly, the model proposed by Aschauer (2000) demonstrates a nonlinear effect of public capital on economic growth which could be extended to cover the effect of public debt. If the government debt is partly in financing productive public capital, increasing debt would bring positive outcomes up to a certain level where negative effects begin to emerge.

The recent development of fiscal crises database has highly triggered the emergence of public debt overhang in recent years. This database was advanced by Reinhart et al., (2012) and before it was developed, no one knew that economic growth is affected by balance of public debt. For instance, Sala-i-Martin and Barro (1995) demonstrated empirically that the government consumption to GDP ratio negatively influences percapita GDP. The impact of the amount of public debt was however not identified. Moreover, Fischer (1991) demonstrated empirically that a fiscal deficit negatively influences per-capita GDP but failed to confirm whether per-capita GDP is affected by the amount of public debt (Kobayashi, 2015). This theory is relevant to the study as it recognizes the effect of public debt on economic development and in essence financial development. If this theory was to apply,

domestic public borrowing would affect financial development positively but beyond a certain level the impact would change to a negative one.

Keynesian Theory of Public Debt

This is a macroeconomic model developed by Keynes (1936) that is based on the Keynesian economics principles that is used in identification of equilibrium levels, analysis of disruptions and aggregation of incomes and production (King, 1993). According to this model, the aggregated equilibrium of production and income fall at the intersection of the aggregate expenditure line at 45-degree line. There are there three versions of Keynesian model. This categorization is done based on the number of macroeconomic sectors included which are two-sector, three-sector, and four sector respectively. This model is also presented in the form of leakages and injections from the standard aggregate expenditures format. The Keynesian model is used in the analysis of many vital topics and issues, including business cycles, multipliers, monetary policy and fiscal policy. Keynesian Model came about as a result of the Great Depression (1929-1939). Economist John Maynard Keynes noted that the economy was always operating below its maximum potential. Massive unemployment was witnessed during ring the Great Depression with many businesses failing and thus the economy was not at full employment. The Keynesian Model was first pioneered by Keynes (1936). This model argues that Public Debt is not associated with any form of real burden and it has no effect on Economic Growth (Metwally & Tamaschke, 1994). The real burden during the period of expenditure execution: that's during consumption the consumption of real resources. Internal public debt is debt we owe to ourselves.

Empirical Review

Adesoye (2014), in his study *'Infrastructural Financing in Nigeria: Growth Implications'* definitively assessed the effects of financing of infrastructure on economic growth in Nigeria within 1970 to 2010. He chose the time of the study in light of the data accessible to him and additionally to bring to bear the major basic economic periods in Nigeria since ten years after Nigeria independence. He adopted for this study the empirical model from the work of Cullison (1993). Government spending on infrastructure taking into account capacities was incorporated utilizing the econometric model. Unit root test was carried out for estimation of the empirical model. From the investigation the outcome indicated along these lines: government community service infrastructure spending, private infrastructure speculation, broad money supply, and aggregate population, apply positive impact on economic growth. Though, whereas the economic service of government infrastructural disbursement and overall foreign and domestic obligation relates negative effects on Nigeria economic growth. - F-statistic result the null hypothesis, 'investment on infrastructure has noteworthy impact on economic growth in Nigeria'. He opined that empirical findings brought about the policy recommendations.

Iwedi and Onuegbu (2014) in their research, *'Funding Housing Deficit in Nigeria: A Review of the Efforts, Challenges and the Way Forward',* investigated the efforts and difficulties of financing housing shortfall in Nigeria and the path forward. They have distinguished a few difficulties to incorporate lack of apportionment of funds or poof subsidizing, obsolete

mortgage loan laws or poor mortgage loan framework, unpleasant consistence with the National Housing Fund plan among others. The study reasoned that satisfactory funding by means of apportionment or getting help from the international community, feasible mortgage framework and implementation of government policy are irreplaceable instruments for bridging the housing deficiency in this area of the economy of Nigeria and posited amongst others that government ought to work in conjunction with the private sector and international community to contribute for procurement of-funds for efficient housing provision for Nigerians. Then government at all levels ought to make it easy for acquiring and the issuance of the occupancy certificate.

Harley *et al.* (2014), in a research on the effect of funding public benefit within a third world country revealed that Bond has a debt instruments' use to fund capital intensive project within diverse categories of governments. Public utility such as roads, sea and air ports etc. in any economy can be acknowledged or calculated to the level of cash put in bonds or the sum of Bond given out to fund public facility. Though, Empirical evidences confirmed that bond is used to fund capital intensive projects in developed society but in the third world society it is the opposite consequently hampering the business organisation to participate in it. Diagnostic tools were utilized. There was a positive linear relationship that exists between bonds and infrastructural development. And as well as revealed that bonds are significant variables but contrariwise connected to infrastructural growth due to the issue of bonds by governments in an advanced economy has not been tied to a particular public utility.

Fay *et al.*, (2018) carried out a study on "*Funding and Financing Infrastructure: The Joint-Use of Public and Private Finance.*" The article characterizes the financial structure contract, infer the conditions under which the two parties and private finance coexist. An important feature is access external financing and regulatory decisions about the prices and amounts of public subsidies, so that the extent price adjustment, to be determined collectively. Private financing requires a price match for the service and a large enough subsidy for the service provider, exacerbate the underlying tension between finance sustainability through cost recovery and social inclusion. Then, the paper shows that the compromise of responsiveness in non-trivial path to change in the economic and institutional environment that can occur in the development process. If improving some of these aspects, especially the efficiency of bankruptcy proceedings, will facilitate access to private financing, others, such as the cost of public funds, actually make more public finance effective. Using project data from PPI database, including financial structure information, authors explores an inverted U-shaped pattern in the share of private finance, peaking in upper middle-class countries income range, repeating their theoretical findings.

Nwambeke, *et al.* (2017) study investigated the "*Implications of Bond Financing on Infrastructural Development in Nigeria.*" The objective of the study was to determine the impact of federal government bonds, private sector credit and inflation rates on infrastructure development in Nigeria. An ex post facto study design was adopted while the data obtained for the period (2003-2015) were analyzed using conventional least squares estimation techniques. Research shows that federal government bonds have a negligible negative impact on infrastructure development in Nigeria, private sector credit has a significant positive impact on infrastructure development in Nigeria while the inflation rate has a negative and negligible impact on infrastructure development in Nigeria. The implication of this finding is that increased federal government obligations lead to reduced infrastructure development in Nigeria; An increase in the supply of credit from the private sector leads to an increase in infrastructure development in Nigeria and an increase in the inflation rate leads to a decrease in infrastructure development in Nigeria. The study recommends that Nigeria's huge infrastructure deficit be addressed through policies that will encourage increased funding of infrastructure projects with federal government bonds. Governments should also ensure that they maintain a policy environment that ensures increased private sector credit flows to government infrastructure development projects in Nigeria.

Adesoye, Maku and Atanda (2011) in their work, *'Strategic Development Financing Mix and Economic Growth in Nigeria'* show that expansion of the economy has been a notable worry of most developing countries, for instance, Nigeria in the procurement of infrastructural facilities and projects that are for development have the possibilities of improving the way of life of the subjects and the outputs of the nation. Be that as it may, these aims can't be accomplished without sufficient wellspring of infrastructural funds. As a consequence of different basis of choices of infrastructural funding, the work explored the impact of obligation financing blend on economic development and growth in Nigeria from 10 years after independence 1970 - 2007 financial years. Real obligation financing alternatives were considered in the estimation of this study and the long-run relationship between chosen obligations financing blend and economic growth represented as Real Gross Domestic Product (RGDP) was recognized through the Augmented Engle Granger (AEG)

Co integration test. "The whole time series variables data used for regression are treasury bill, development stocks, treasury bond and certificate, multilateral obligation source, international loaning clubs and real gross domestic product were discovered stationary at first difference with exception of series on international loaning clubs which was discovered unstable. The evaluated co-integrated regression model uncovered the best economic agreeable obligations financing blend to accomplished major macroeconomic focuses of the governments. Vital approach recommendations were proffered in view of the discoveries derived from the study.

Godfrey and Cyrus (2013), in a topic *"Domestic Debt and Economic Growth Nexus in Kenya;"* explored the shift in the composition of all public debt which is in support of domestic debt in sub-Saharan Africa economies has given some insight to the reason for governments to plan and execute domestic debt management strategies to alleviate the effects of the rising debt levels. This study considered the effects of domestic debt on economic growth in Kenya. The issue was evaluated by applying econometric method and periodical time series data from 2000 to 2010. The Augmented Dickey-Fuller (ADF) test was applied before in order to investigate the properties of the macroeconomic time series in the area of unit roots test normality and correspondingly. Engel-Granger residual based and Johannes VAR based co-integration tests was applied to test the long run connection between the variables There was evidence of co-integration. The error correction model was used to dictate the short run relationship between the variables. Therefore the research exposed that domestic debt increase in Kenya, within the period of the study, has a positive and significant effect on economic growth. Moreover, the work suggested that the government Kenyan ought to support internal borrowing if the funds are made use of in productive economic avenues.

Thanapat (2010), in a subject 'the impact of public infrastructure investment on economic growth in Thailand', argued that Infrastructure generally held focus place in nations economic planning. Its significance overall welcomes critical educated open deliberation over the impacts of public infrastructure venture on economic advancement. In economic subsidence, the weighting of infrastructure investment in national budgets made it an intermittent contender for considerable cuts. Amid the Asian economic emergency in 1997, numerous infrastructural ventures in Thailand were suspended or ended. The failure to keep up a suitable level of consumption prompted substandard transport and utilities for the nation, hindering its development. In light of the crisis, a monetary manageability structure was built up by the Thailand government to guarantee sufficient levels of revenue and investment expenditure inside a balanced budget. This study inspected the impacts of public infrastructure venture on monetary development under Thailand's financial manageability system. A recursive supply-side model in view of the Standard Neoclassical Model system was utilized utilizing Thailand national data on public income (taxes, non-tax income and debt) to measure infrastructure venture. A consolidated generation capacity was utilized in light of quarterly time arrangement data from 1993 to 2006. These years were the time of economic problems and recovery in Thailand. The variables under study were tested using unit root test to check for stationariy. On the off chance that all variables were stationary, the Ordinary Least Square (OLS) strategy was utilized as a part of estimation. On the off chance that all variables were non-stationary and of a request 1(1), then the co-integration test was led for long-run equilibrium. On the off chance that the variables affirm co-integration, then the Error Correction Model was assessed utilizing OLS, as the blunder rectification term is built to measure

for coefficients. In the event that the variables were found to have a blend of stationary and non-stationary variables, then the Autoregressive Distributed Lag model was utilized as a part of the estimation. At last, a re-enactment procedure was directed, in light of the assessed model, termed Infrastructure Finance Model for Emerging Economies. Reproduction was done with ex-stake and ex-post situations: to create a period way inside of the data time period to demonstrate model consistency; and for time-way values past the time period to give forecast to approach choices. The simulation comprises of five situations: most extreme borrowing or 20 per cent of budget; 15 per cent of budget; 10 per cent of budget; 5 per cent of budget; and no borrowing, or no effect on budget. The results indicated that public infrastructure investment has a mixed effect on domestic growth. A positive result was found in lagged public investment as a proportion of GDP at the third quarter, confirming that infrastructure capital has a positive significant effect on economic growth. Be that as it may, a negative effect was found in slacked genuine government investment at the second quarter. As open venture expands, the interest for assets likewise builds and, given full limit for the economy, this may prompt expanded expenses of private speculation, bringing about a fall in private venture and in this manner decrease financial development (crowding out impact). Subsequently, under states of full limit, an increment in public investment venture could bring about negative effect on development. The Infrastructure Finance model- is in this manner a helpful pointer of private division expectations for resource expenditure.

Ugo and Andrea (2012), in a topic Public Debt and Economic Growth: Is there a causal effect? In this work, in order to study if public debt has a causal impact on economic growth, the instrumental variable technique was adopted. That is; from a sample of the Organisation for Economic Co-operation and Development (OECD) countries. From the literature review, the result was in line and has shown a negative correlation between domestic debt and economic growth. Though, the link between debt and growth disappears once we apply debt with a variable that captures valuation effects brought about by the interaction between foreign currency debt and exchange rate instability. They conducted a series of strength tests that showed that their results were not affected by weak instrument problems and are strong to relaxing their exclusion restriction. They did not find any evidence that high public debt levels upset future growth in advanced economies.

Muhammad, Muhammad and Khadija (2010), in their study on *'Domestic Debt and Economic Growth in Pakistan: An Empirical Analysis'* discovered that Pakistan is surrounded in serious socio-economic problems. This was a result of low tax base and twin deficits, the country have to depend on both external and internal capital flows. From the foregoing it was observed that foreign capital flows are not effortlessly reachable, but internal capital flows are approachable at all times. The study explored the effects of domestic debt on economic growth in Pakistan utilizing the OLS strategy for the time of 1972 to 2009. The study demonstrated that the stock of domestic debt influenced the economic growth positively in Pakistan. Along these lines, this clearly implies that the resources produced through domestic borrowing have been utilized somewhat to find those expenditures of government which add to economic growth. The work saw that there was a backwards relationship between domestic debt overhauling and economic growth. It was because of the way that tremendous burden of non-advancement expenditures impedes the economic growth. The findings demonstrated that the negative impact of domestic debt on economic growth was stronger than positive impact of domestic debt on economic growth. The work prescribed little

strategies for government to pay up the domestic debt outstanding. This would give space for proper conduct of fiscal strategy in the economy. It would be good if the government by improving on the present revenue and as well as fund budget shortfall instead of settling to internal borrowing. This could be accomplished by enhancing its income sources and effective quest for tax reforms.

Tamunonimim (2014) in a topic *'Domestic Debt and Poverty in Nigeria An Empirical Time Series Investigation',* considered the relationship between domestic debt and the poverty of Nigeria (1986-2012), An Ordinary Least Square Technique, Vector Auto relapse (VAR), Co-integration and Granger Causality Approaches. Utilizing Johansen Co-integration method was utilized; assessed results found that there was a long-run relationship between poverty {measured by real total national output (RGDP), per capita GDP (GDPPC), and fundamental secondary school enrolment and domestic debt in Nigeria. The work additionally found out that the domestic debt coefficient has positive effect on bank credit and this effect was significant. Such credit gives spot to rural development project in order to turn the disordered pattern of urbanization, industrialization, and make lucrative market sector progression in the nation's manufacturing sector, in this way, enhancing the citizens' welfare. Hence, the study prescribed that Government ought to endeavour to settle the outstanding domestic debt. This help in good financial arrangement in the economy. It is vital in light of the fact that unreasonable domestic debt now and then has negative impact on growth, in the event that it proceeds. The work in like manner suggested that Government ought to make accessible low-cost funds to the investors in order to assist them with boosting their different investments.

Jude and Ekundayo (2014) in their topic, *'Financing Capital Investments in Nigeria: The Role of the Banking Industry'* opined that a developing, nation like Nigeria needs huge capital to finance the needed infrastructures and capital intensive investments that are required in order to run the economy. The research emphasis on whether the banking sector is actually funding capital intensive investment thus put in enormously to the expansion of the Nigerian economy. And as well as considered the input of banking sector in supporting the expansion of the capital market thereby making funds available that would improve manufacturing of goods. The data collected were analysed with regression using e-view software. It was discovered that the banks have funded much in financing -capital investments and stock market development in Nigeria. Moreover, it was recommended that financial institutions should be encouraged to make more funds for available to lend that will assist investments that are capital intensive in nature. The Central Bank should as well decrease rediscounting rate to the minimum.

Emmanuel, Pius and Greenwell (2013), in their work, *"Impact of Government Sectoral Expenditure on Economic Growth in Malawi"*, discovered the effect of government sectoral consumption on monetary development in Malawi. By applying time series data from 1980 to 2007, co-integration investigation in the connection of an error correction model was utilized to assess the growth impacts of government consumptions in agriculture, education, health, defence, social protection and transport and communication. The short run results uncovered no significant relationship between government sectoral consumption and economic growth. Furthermore, the long run results on its own revealed a significant positive effect on economic growth of expenditure on agriculture and defence. In this way, the expenditure on education, health, social protection and

transportation and communication were adversely identified with economic growth. They prescribed that so as to help economic growth productive management of assets designated to all sectors must be stressed.

Nwinee and Torbira, (2012b), in their paper, *"Government Sectoral Spending and Economic Growth in Nigeria",* opined that the resolution of the controversy whether government spending motivated economic growth and stability or otherwise was still a great research burden. According to them some theories as well as past empirical studies had seen public expenditure as a major driver of economic growth through the channel of fiscal operations. The work was an attempt at examining the relationship between federal Government sectoral expenditure on Education, Transport, Agriculture and Health, and two macroeconomic variables, Gross Domestic Product (GDP) and Consumer Price Index (CPI) respectively; drawing empirical evidence from Nigeria. They employed Ordinary Least Square (OLS), Augmented Dickey Fuller (ADF), Unit Root test, Co-integration, Granger Causality test and some analytical test procedure applied to annual Nigerian data from 1970 — 2010 were used. The short run result showed that federal government spending on Education was positively and insignificantly correlated with GDP; whereas its relationship with CPI was positive and significant. On the other hand, government expenditure on transport had a negative and significant relationship with GDP and CPI. Also, government expenditure on Agriculture had a negative and insignificant relationship with GDP while its relationship with CPI was negative and significant. Government sectoral expenditure on Health had positive and greatly significant relationship with GDP and CPI. Therefore, this inferred that Government sectoral expenditure developed the economy and tends to stabilize the price level in the economy in the short run. The long run test result revealed that there was long run relationship between GDP, CPI, and the explanatory variables. The causality test result showed a bi-directional causality between EXPE, and GDP. Uni-directional causality run from GDP to EXPH and also stems from EXPH to CPI at 5% level of significance. The study, however, recommended growth stimulating and price controlling government policy with strict budgetary discipline in the public sector; proper financial management training for all public office holders in Nigeria; and improved internal control mechanisms in the public service to guarantee efficient and effective use of budgeted fund in the country.

Nwakanma and Nnamdi (2010), in their article; "*Public Debt: Structure and Influence on Nigeria's Economic Performance"* examined the empirical relationships between structure and aggregated elements of Nigeria's public debt and the nation's economic performance while at the same time sought to assess the level of the economy's sensitivity to the selected variables. In their analyses which were based on three regression techniques of simple, multiple and stepwise, it was found that Nigeria's public debts both in their aggregated and structural forms are valuable in predicting partially, variations in Nigeria's economic performance. Thus, the need for Nigeria to emphasize more on domestic debts in place of external debts through development of new and varied money and capital market products as well as improved internationalization of the operations of Nigeria's capital and money markets was recommended. Again, the need for utmost precedence, to be given to development of local technological potentials to increase Nigeria's technological advancement and ultimately, economic independence was advocated.

Literature Gap

There have been studies from several researchers both cross country and country-specific on the impact domestic debt and gross domestic product (GDP) as well as looking at the nexus that exist between them, however, not much study has been done on domestic debt and infrastructure financing biased in sector by sector basis, therefore, created one of the gaps for further study. Hence, this study is focused on the relationship that exists between domestic debt and educational sector financing in Nigeria.

METHODOLOGY

The quasi-experimental research design was used to specify the appropriate value of information required, select the sample, and determine the appropriate objects to measure and the analytical approach to adopt and interpret results, give meaning and add to knowledge. In this research, secondary data were sourced from the Central Bank of Nigeria's (CBN)Statistical Bulletin (various issues), National Bureau of Statistics (NBS) and Debt Management Office (DMO). Data for this research was the annual time series data ranging from 1986 to 2023 and presented in tables.

Empirical Model Specification

Based on the theoretical groundwork and the empirical review made by Adofu *et al.* (2010), Charles (2012), Carlos *et al.* (2013), and Harley *et al.* (2014), it is our view that Domestic Debt can be explained by unrelated factors. The model thus, is specified in its functional form as follows:

TE = f(TB, FGNTB, FGNBD)   (1)
Transforming equation 1 to as econometrics forms

$$TE = \beta_0 + \beta 1 TB + \beta_2 FGNTB + \beta_3 FGNBD + \mu \qquad (2)$$

Where
TE   = Public Transport expenditure
TB   = Treasury bonds
FGNTB   = Federal government of Nigeria treasury bills
FGNBD   = Federal government of Nigeria bonds

β_0 =   Intercept
$\beta_1 - \beta_3$ =   Coefficient of the explanatory variable
μ =   Error term

$\phi_0, \alpha_0 =$ Constant

$\beta_1 - \beta_3 =$ Coefficients of independent variables

μ_{it} =   Error Term

A priori expectation

Treasury Bonds (TB): This is first of the measure of domestic debt. It contains treasury bonds sold by the government. It is expected that an increase in treasury bonds will cause an increase in the infrastructure financing.

Treasury Bills (TBs): This is second of the measure of domestic debt. It contains Central bank bills. It is expected that an increase in Central bank bill will cause an increase in the infrastructure financing.

FGN Bonds (FBs): As the third measure of domestic debt. It contains FGN Bonds sold by the government. It is expected that an increase in FGN Bonds will cause an increase in the infrastructure financing. In summary, the a priori expectation is stated thus;

$\beta_1 > 0, \beta_2 > 0$ and $\beta_3 > 0$

Test for Stationarity (Unit Root Test)

The stationarity of the variables shall be investigated, since non stationarity could lead to bogus or nonsensical regression results and thus, bogus relationship among variables may be evident in time series data that exhibit non stationarity. It is true that most macroeconomic time series contain unit roots caused by the stochastic trends; therefore, variance and covariance of series change over time. Augmented Dickey-Fuller (ADF) (1981) technique is employed to check or test whether the time series of the data employed in this study are free from the presence of unit roots.

Test for Co-integration

The test for the presence of long-run equilibrium relationship is carried out based on the Johansson's (1991) multivariate co-integration technique. Usually, applying this technique, two statistics are involved — Trace statistic and maximum Eigen Statistic: when the sample size is smaller than forty, the Maximum Eigen statistic provides the more sophisticated results.

Error Correction Model

Error Correction Model is carried out to adjust the short run changes in the variables under study. Rejection of null hypothesis of non-stationarity implies that the residual is stationary and that the series y_t and x_t must be co-integrated. Econometric models are faced with the problem of possible convergence of the series variables in the long run. Such a convergence would imply that the model would have nothing to say about an equilibrium relationship between the series y and x. Brooks (2009) asserts that the Error Correction Model (ECM) overcomes this difficulty through the employment of combinations of first differenced and lagged levels of co-integrated variables as demonstrated in equation (3) below:

$$\Delta y_t = \beta_1 \Delta X_t + \beta_2 (y_{t-1} - \emptyset x_{t-1}) + VT \qquad (3)$$

Were:

$y_{t-1} - \emptyset x_{t-1}$ denotes the error correction model. Provided that y_t and x_t are co-integrated with coefficient $\emptyset$, then it would imply that $(y_{t-1} - \emptyset X_{t-1})$ will be integrated of order, I(0) irrespective

of the fact that the constituents are integrated of order I(1). Further, in the above equation, Ø denotes the long run relationship between x and y, represents the short run relationship between changes in x and y, while ß₂ denotes the speed of adjustment of the series variables back to equilibrium.

Granger Causality

Granger Causality test offers a proper tool for this research. Maddala (2007), Gujarati and Porter (2009) perceived that the Granger Causality approach of whether X Granger Causes (promotes or supports) Y is simply to verify how much of present Y that can be described by previous values of X and also, to determine if by adding the lagged values of X can additionally improve the explanation. In other words, Y is reasonably Granger Caused by X if X assists the prediction of Y, or if the relevant coefficients of the lagged X's are found statistically significant in the equation. Subsequently from above statement, the Granger test is basically established on regression analyses as follows;

$$Y_t = \beta_0 + \sum_{i=1}^{n} \beta_i Y_{t-i} + \sum_{i=1}^{n} \beta_u X_{t-i} + \mu_t \qquad (4)$$
$$X_t = \alpha_0 + \sum_{i=1}^{n} \alpha_i X_{t-i} + \sum_{i=1}^{n} \alpha_u Y_{t-i} + V_t \qquad (5)$$

Where: t and X_t represent the time series variables to be tested. μ_t and V_t constitute the idiosyncratic terms (white noise errors) that capture all variations in Y_t and t not included in the lagged values. Maximum lag length of 2 was imputed.

ANALYSIS AND DISCUSSION OF FINDINGS

Trends of Domestic Debt in Nigeria

The Figure 1 represents the trend of domestic debt in Nigeria from 1986 to 2023. It shows the evolution of domestic debt over this period, categorized into Treasury Bonds, NGN Treasury Bills, FGN Bonds, and the total domestic debt. Treasury Bonds, NGN Treasury Bills, and FGN Bonds are individual components of domestic debt. These instruments represent different ways through which the Nigerian government borrows money from the domestic market (Omodero *et al.,* 2019).

From 1980 to 1988, the data shows that Treasury Bonds remained at zero, while NGN Treasury Bills increased gradually. This suggests that the government primarily relied on Treasury Bills for domestic borrowing during this period. In 1989, Treasury Bonds were introduced, indicating a diversification in the government's borrowing instruments. FGN Bonds remained at zero throughout the entire period, suggesting they may not have been utilized for domestic debt until after 2002.

Over the years, the total domestic debt shows a consistent upward trend, with some fluctuations. It increases from 2.89 billion Naira in 1980 to 13.3 trillion Naira in 2019.

In the 1980s, the total domestic debt remained relatively low, below 100 billion Naira, until the late 1980s. Starting in the late 1980s and continuing through the 1990s, there was a significant

increase in domestic debt, reaching over 700 billion Naira by the end of the decade. Domestic debt continued to rise in the 2000s, surpassing 1 trillion Naira by 2003 and doubling by the end of the decade. The 2010s saw a substantial acceleration in domestic debt, with the total debt exceeding 4 trillion Naira by 2011 and reaching over 13 trillion Naira by 2019.

The trend in domestic debt reflects the government's borrowing and financing strategies over the years. The substantial increase in domestic debt, particularly in the 2010s, may indicate the government's need for additional funds to finance various projects and budget deficits. It's important to note that the growth in domestic debt can have economic implications, including interest payments and potential crowding out of private sector borrowing. It's essential to consider inflation and the changing value of the Naira over this period when assessing the real impact of domestic debt. Further analysis, including an examination of the ratio of domestic debt to GDP and interest rate trends, is necessary to fully understand the implications of this debt trend.
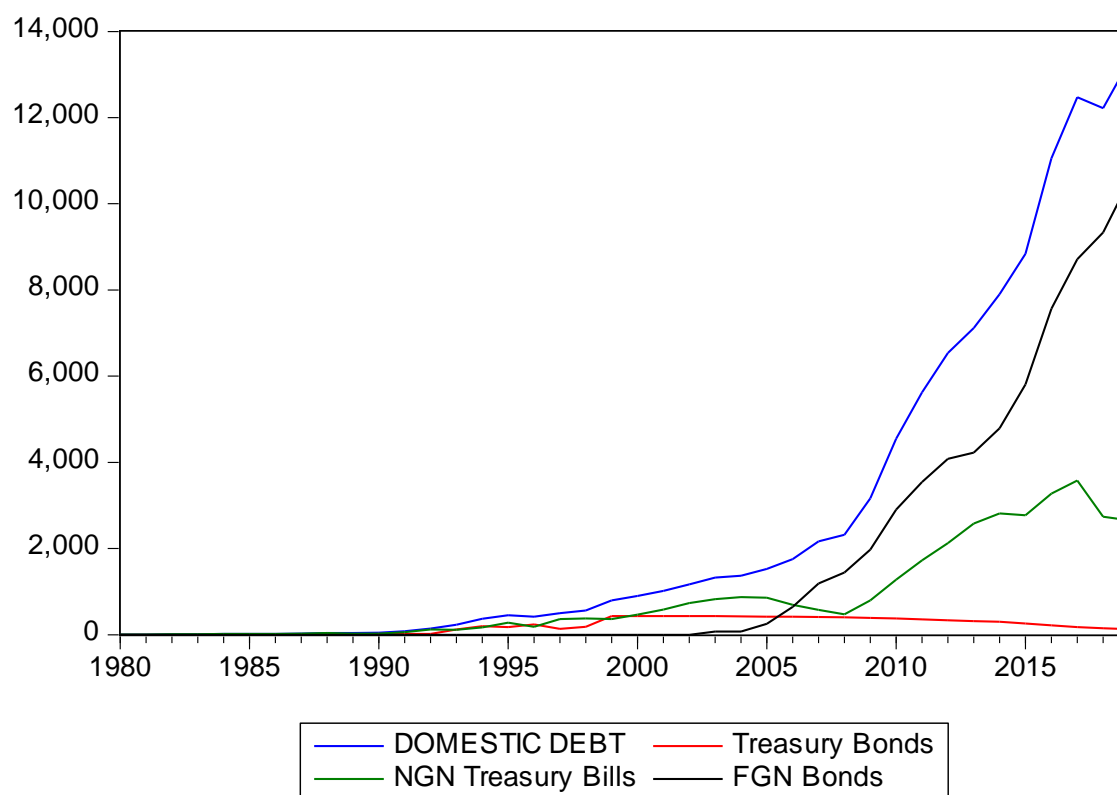
Figure 1: Trends of Domestic Debt
Source: Researcher's Computations using E-Views 9.0

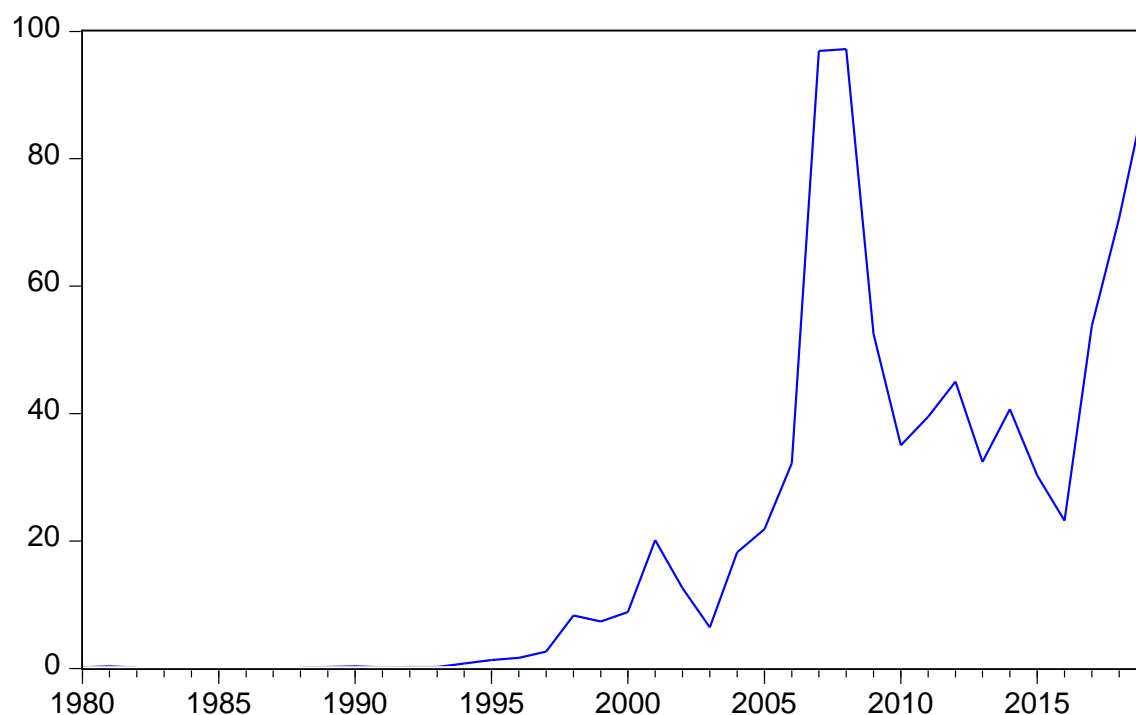**Trend of Public Health Sector Expenditure in Nigeria**

Figure 2 represents the trend of Public Health Sector Expenditure in Nigeria from 1986 to 2023. Public Health Sector Expenditure signifies the amount of government spending allocated to the healthcare sector, including the financing of healthcare services, facilities, and programs.

Analysing the trend in Public Health Sector Expenditure provides insights into the government's commitment to healthcare development and the evolution of the healthcare system over the years.

Public Health Sector Expenditure was relatively low during this period, ranging from 0.05 billion Naira in 1984 to 2.62 billion Naira in 1997. The spending increased gradually but remained relatively modest compared to other sectors. From 1998 onwards, there was a significant increase in Public Health Sector Expenditure, reaching a peak of 97.20 billion Naira in 2008. This period witnessed a substantial surge in government investment in healthcare infrastructure and services. The late 2000s and early 2010s saw fluctuations in healthcare spending, with a peak of 90.70 billion Naira in 2019. This suggests a sustained commitment to healthcare development but with some variability (Olayinka, 2022).

The trend in Public Health Sector Expenditure reflects the government's emphasis on improving healthcare infrastructure and services, which are crucial for the well-being and productivity of the population. Increased investment in healthcare can lead to improved access to quality healthcare services, reduced disease burden, and enhanced overall public health.

It's important for policymakers to ensure that healthcare funds are allocated efficiently and directed towards areas that can have the most significant impact on public health. Sustainable and predictable funding for healthcare is essential to address the healthcare needs of the growing population. Further analysis, including a breakdown of specific healthcare projects, investments in healthcare facilities, and healthcare outcomes, would provide a more comprehensive understanding of the healthcare development landscape in Nigeria. The trend of Public Health Sector Expenditure in Nigeria from 1986 to 2022 demonstrates fluctuations in government investment in healthcare infrastructure and services. Understanding these trends is critical for policymakers, as a robust healthcare system is fundamental for the overall well-being and development of a nation's population.

Figure 2: Trend of Public Health Sector Expenditure

Source: Researcher's Computations using E-Views 9.

Table 1: ADF Unit Root test

Variable	ADF	MacKinnon at 1%	MacKinnon at 5%	MacKinnon at 10%	Order of Int	Conclusion
ADF at Level						
HE	-2.077359	-3.626784	-2.945842	-2.611531	1(0)	Not stationary
TB	-0.862817	-3.724070	-2.986225	-2.632604	1(0)	Not stationary
FGNTB	-1.516616	-3.626784	-2.945842	-2.611531	1(0)	Not stationary
FGNBD	-1.426149	-3.626784	-2.945842	-2.611531	1(0)	Not stationary
ADF at Difference						
HE	-6.127085	-3.653730	-2.957110	-2.617434	1(1)	Stationary
TB	-6.634891	-3.699871	-2.976263	-2.627420	1(1)	Stationary
FGNTB	-11.50359	-2.951125	-2.951125	-2.614300	1(1)	Stationary

FGNBD	-5.879933	-3.661661	-2.960411	-2.619160	1(1)	Stationary

Source: Researcher's Computations using E-Views 9.0

The unit root values for the variables of understudy reveal that the variables are not stationary at difference except foreign portfolio investment in the money market. This is because the ADF values of the variables are all greater than the critical value at 10% the Null Hypothesis of the presence of unit root in all the variables is rejected.

Table 2: Presentation of Johansen's Unrestricted Co-Integration Ran

Series: HE TB FGNTB FGNBD
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.551324	53.87671	47.85613	0.0122
At most 1	0.313179	25.82581	29.79707	0.1340
At most 2	0.217026	12.67693	15.49471	0.1272
At most 3 *	0.110897	4.113967	3.841466	0.0425

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.551324	28.05090	27.58434	0.0436
At most 1	0.313179	13.14888	21.13162	0.4386
At most 2	0.217026	8.562967	14.26460	0.3243
At most 3 *	0.110897	4.113967	3.841466	0.0425

Source: Researcher's Computations using E-Views 9.0

Johansen-Juselius Cointegration tests are presented in the tables above where the result shows that the variables are cointegrated and significant at the 5% level. Thus, these results suggest that a long run and stable relationship between the variables exists. The maximum Eigen and the trace statistics in the above table show the presence of one co-integrating equation at 5% significant level, which is an indication that there is a long run relationship among the variables.

Table 3: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
TB does not Granger Cause HE	35	0.60569	0.5522
HE does not Granger Cause TB		0.49397	0.6151
FGNTB does not Granger Cause HE	35	1.87985	0.1702
HE does not Granger Cause FGNTB		3.67037	0.0375
FGNBD does not Granger Cause HE	35	0.82594	0.4475
HE does not Granger Cause FGNBD		1.00319	0.3787

Source: Researcher's Computations using E-Views 9.0

Using the pair wise granger causality test, there is a unidirectional causality from health expenditure to federal government treasury bills. The presence of causality implies the rejection of null hypothesis while the variable that has no causal relationship accepts the null hypothesis.

Table 4: Presentation of Parsimonious Error Correction Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HE(-1))	0.678078	0.279471	2.426293	0.0254
D(TB(-1))	-0.006197	0.005939	-1.043453	0.3098
D(FGNTB(-1))	0.008901	0.017208	0.517228	0.6110
D(FGNBD(-1))	-0.043344	0.068321	-0.634413	0.5334
D(HE(-2))	0.005824	0.307961	0.018911	0.9851
D(TB(-2))	-0.010353	0.005084	-2.036379	0.0559
D(FGNTB(-2))	0.041577	0.015029	2.766470	0.0123
D(FGNBD(-2))	-0.122541	0.060269	-2.033223	0.0562
D(HE(-3))	0.242196	0.273363	0.885988	0.3867
D(TB(-3))	-0.000671	0.008962	-0.074930	0.9411
D(FGNTB(-3))	-0.018757	0.012960	-1.447270	0.1641
D(FGNBD(-3))	-0.056347	0.065235	-0.863755	0.3985
C	1.706163	4.353189	0.391934	0.6995
ECM(-1)	-0.764197	0.348692	-2.191611	0.0411

R-squared	0.585564	Mean dependent var		1.131788
Adjusted R-squared	0.302002	S.D. dependent var		19.81882
S.E. of regression	16.55788	Akaike info criterion		8.748018
Sum squared resid	5209.105	Schwarz criterion		9.382900
Log likelihood	-130.3423	Hannan-Quinn criter.		8.961636
F-statistic	2.065033	Durbin-Watson stat		2.188267
Prob(F-statistic)	0.003377			

VAR Lag Order Selection Criteria
Endogenous variables: HE TB FGNTB FGNBD

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-935.7575	NA	1.20e+19	55.27986	55.45943	55.34109
1	-854.9372	137.8700*	2.66e+17*	51.46689*	52.36475*	51.77309*
2	-840.8011	20.78846	3.10e+17	51.57653	53.19268	52.12768
3	-830.3814	12.87140	4.82e+17	51.90479	54.23922	52.70089

Source: Researcher's Computations using E-Views 9.0

The existence of cointegration among the variables allows us to implement the Error Correction Modeling technique, which describes the systematic disequilibrium adjustment process and the short-run transmission mechanism. The result of the ECM is presented in Table 4.5 above. We observe that the estimated lagged error-correction term (ECMt-1) emerges as an important channel of influence. The statistically significant error-correction term (apart from that of the exchange rate equation), confirms the existence of long run relationships between domestic debt and health expenditure. In other words, the series quickly adjusts to eliminate any deviations from

the long-run equilibrium relationships that they may share with each other. It is evidence that the coefficient of ECM prove that the variables can adjust at the speed of 76.4 per cent annually. The independent variables 58.5 per cent variation in public expenditure on health the model is statistically significant by the value of f-probability. Based on the validity of lag I, the study also found that Treasury bond and federal government bond have negative effect on public expenditure on health while federal government treasury bills have positive effect on the dependent variable.

Domestic Debt and Public Expenditure on Health

The estimated model found that 58.5 per cent variation in public expenditure on health the model is statistically significant by the value of f-probability. Based on the validity of lag I, the study also found that Treasury bond and federal government bond have negative effect on public expenditure on health while federal government treasury bills have positive effect on the dependent variable. The positive effect of the variables confirms our a-priori expectations and in line with the Keynesian's opinions of fiscal policy while the negative effect contradict our expectation and could be blamed on poor management of funds allocated for infrastructural financing. Empirically the positive effect of the variables confirm the findings of Godfrey and Cyrus (2013) that domestic debt increase in Kenya, within the period of the study, has a positive and significant effect on economic growth, Thanapat (2010 that public infrastructure investment has a mixed effect on domestic growth. A positive result was found in lagged public investment as a proportion of GDP at the third quarter, confirming that infrastructure capital has a positive significant effect on economic growth. Be that as it may, a negative effect was found in slacked genuine government investment at the second quarter, the findings of Tajudeen (2012), that there was a bi-directional causality between public obligation and economic growth in Nigeria, Ugo and Andrea (2012), Isaiah and Nahashon (2008) that domestic debt growth had a positive however not significant impact on economic growth amid the period under study, El-Mahdy and Torayeh (2009) was discovered utilizing some algebraic systems. The outcomes pushed that the recent way of debt followed in Egypt was practical. With the end goal debt should stay' managed in future substantial monetary changes are required and policies ought to be grasped to keep up expanding development interest rate dissimilarity, Muhammad, Muhammad and Khadija (2010) that there was a backwards relationship between domestic debt overhauling and economic growth. It was because of the way that tremendous burden of non-advancement expenditures impedes the economic growth, Tamunonimim (2014) that the domestic debt coefficient has positive effect on bank credit and this effect was significant. Such credit gives spot to rural development project in order to turn the disordered pattern of urbanization, industrialization, and make lucrative market sector progression in the nation's manufacturing sector, in this way, enhancing the citizens' welfare.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The analysis on the relationship between domestic debt and public health financing in the Nigerian economy from 1986 to 2023 yields several key findings. Based on the validity of lag I, the study also found that Treasury bond and federal government bond have negative effect on public expenditure on health while federal government treasury bills have positive effect on the dependent variable. The variables were stationary at first difference and concluded that they are

integrated in the order of 1(1). From the findings, the probability value of 0.0477 is less than the critical value of 0.05, the study conclude that there is no significant relationship between FGN bonds and public works sector expenditure in Nigeria. The probability value of 0.0733 is greater than the critical value of 0.05, the study conclude that there is no significant relationship between FGN bonds and public transport sector expenditure in Nigeria. The probability value of 0.5334 is greater than the critical value of 0.05, the study conclude that there is no significant relationship between FGN bonds and public health sector expenditure in Nigeria

Recommendations

i. Given the bidirectional causality between Health Expenditure and FGN Bonds, prioritize healthcare financing to meet the growing healthcare needs of the population. Explore ways to enhance healthcare infrastructure and service delivery without overreliance on debt financing.

ii. Establish a comprehensive debt monitoring and forecasting system to manage debt sustainability effectively. Regularly assess the impact of debt on the overall economy, and adjust borrowing plans as needed to maintain fiscal responsibility.

iii. Invest in the capacity and expertise of debt management institutions to negotiate favorable debt terms, refinance high-cost debt, and minimize risks associated with debt servicing.

iv. Ensure transparency in debt management and public spending. Publish comprehensive reports on debt levels, sources of financing, and the use of borrowed funds. Engage civil society organizations and the public in monitoring and holding the government accountable for its fiscal decisions.

v. Diversify the types of debt instruments used to raise funds. This may include exploring longer-term bonds, green bonds for environmentally sustainable projects, and other innovative financial products to optimize debt structure.

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