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BANKS DEBT HOLDINGS AND PUBLIC INVESTMENTS IN NIGERIA

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ABSTRACT

Investments are a major channel to achieving growth and development in any nation, however, the pattern of the country's spending considering the narrow domestic revenue base have shown that large part of the generated revenue are used for recurrent expenditure as well as debt serving, while little funds are allocated to capital expenditure thereby not meeting the desired amount for investment in capital projects and infrastructural development. Poor domestic saving and investment causes higher debt and debt service payment which crowds out available resources for public investment. Consequently, the objectives of this study is to investigate the impact of domestic debt on public investment in Nigeria from 1984 to 2022. The data were estimated using the autoregressive distributed lag model. The findings revealed that domestic debt holdings by the CBN has a positive and insignificant impact on public investment, while domestic debt holdings by the deposit money bank and inflation rate have negative and insignificant impact on public investment. Therefore, the study recommended that the government or the policy makers should adhere strictly to the appropriate use of debt through efficient public investment, so that the debt service payment should not exceed the country's payment capacity.

Keywords: Domestic debt, Public Investment, Central Bank of Nigeria, Deposit money Bank, Nonbank Public.

INTRODUCTION

Public investment is crucial for economic growth and development of any nation, as a catalyst for public development in the government agenda such as health care delivery, infrastructure development, transportation, education and food security. This has led to the production of goods and services, creation of employment opportunities, increasing income of the citizens as well as reduction in poverty and thereby bringing about an increase in the quality of life of the citizens. Government investment in infrastructure is enormous, it is capital intensive and as such grows the economy because it affects most human endeavors in various field of life such as production, construction, technology, transportation, and power (Enya & Ezeali, 2021). More so, due to the huge resources required to carry out public investment and the inadequacy of domestic resources available to the government, the government is left with the option of sourcing for this resources in the form of debt either externally or internally to bridge the gap.

Debt is an important element of macroeconomic fiscal policy due to the role it plays as an instrument of expansionary fiscal policy, especially when a country is faced with economic challenges. Public debts are often deliberately contracted for the purpose of expansionary fiscal policy and this happens when government expected expenditure is designed to exceed the expected revenue. In most or some cases, such debts are designed to encompass domestic and foreign components, depending however on whether the purpose of fiscal expansion necessitates foreign sourcing of materials (Akpan *et al.*, 2024). Domestic debt is a component or portion of public debt that are borrowed within a country. These funds are borrowed through the sales of debt instruments to the citizens of a country, issued by the government for various reasons which include financing the budget when a government is unable to meet its expenditure commitments (Lidiema, 2018).

The prudent management of domestic debt is a crucial aspect of fiscal policy, particularly for emerging economies like Nigeria. However, the direction of government spending of the borrowed funds will determine to a large extent if such debt will enhance economic activities and growth of the economy. For instance, borrowing to service debts, current consumption or to meet recurrent expenditures may not stimulate the economy, while borrowing to carry out development projects, increase capital expenditures and rational investment in productive ventures will in the long run lead to growth of the economy (Ogunjimi, 2019). Unfortunately, many developing countries including Nigeria borrow for the former reason, which is why our debt profile keeps increasing, investment keeps dwindling, unemployment keeps rising, national output keeps falling, and majority of the citizens being trapped in poverty. Data from the CBN Statistical Bulletin (2022) indicated that lesser funds were allocated to capital expenditure relative to recurrent expenditure. For instance, ₦4.78 trillion, ₦5.68 trillion, ₦6.99 trillion, ₦8.19 trillion, N9.15 trillion and ₦11 trillion were allocated for recurrent expenditures between 2017 to 2022, while at the same period, ₦1.24 trillion, ₦1.68 trillion, ₦2.29 trillion, ₦1.61 trillion, ₦2.52 trillion and ₦3.13 trillion were allocated for capital expenditures (CBN, 2022). The implication is that most borrowed funds were used for statutory transfers, personnel costs, pensions, gratuities just to mention a few, while lesser funds were allocated for development projects and infrastructures that are required for the growth of an economy. These misallocations have the potential to dampen public investment thereby affecting the growth and development of the country negatively. This is because, the costs of servicing the debts which could grow beyond the capacity of the debtor nation can have negative impact on the ability of the borrowing nation to achieve the desired investment. This can crowd out private investment and reduce future output and wages which obviously threatens the welfare of the residents as well as their standard of living (Iwedi & Ogbonna, 2024).

This surge in domestic debt has raised questions about its implications for public investment decision-making and overall economic stability. Public investment in infrastructure, education, and healthcare can enhance productivity, promote inclusive development, and improve citizens' well-being (Okafor, 2019). However, the availability and cost of domestic financing can influence government's ability to undertake such investments effectively. Over reliance on domestic borrowing may crowd out private investment, increase borrowing costs, and expose the economy to risks of debt distress (Alesina *et al.*, 2018). Therefore, understanding how public investment decisions relates with domestic debt is crucial for formulating sound fiscal policies that balance the need for investment with debt sustainability objectives. Furthermore, Nigeria's economic landscape is characterized by structural challenges, including infrastructure deficits, revenue

volatility, and governance issues. Effective debt management and investment planning are important to overcoming these challenges and fostering inclusive growth (IMF, 2020). By examining the relationship between domestic debt market instruments and public investment, this study seeks to provide evidence-based insights that can inform policy interventions aimed at promoting fiscal sustainability and public investment in Nigeria.

The following formulated hypotheses guide the study:

H_{01}: Domestic debt holdings by the Central Bank of Nigeria has no significant impact on public investment in Nigeria.

H_{02}: Domestic debt holdings by the deposit money banks has no significant impact on public investment in Nigeria.

LITERATURE REVIEW

Conceptual Framework

Domestic Debt

Domestic debt according to Oshadami (2016) are debt instruments issued by the Federal Government and denominated in local currency. Domestic debt refers to the total amount of money borrowed by a country's government, companies and individuals from domestic sources, such as banks, bondholders and other lenders within the country. The DMO (2022) defined domestic debt as debt owed to lenders or nationals or citizens of a country, and these debts are classified according to instruments, and according to investor base (holdings). Domestic debt according to instruments include; Federal government bond, treasury bills, federal government saving bond, Federal government Sukuk, federal government green bond, and the promissory notes. Classification according to investor base includes debt holdings by the CBN, deposit money bank, and the non-bank public. Based on Lidiema (2018) assertion, government domestic debt is used for various reasons including; financing the budget deficit when the government is not able to meet its expenditure commitments using domestic raised revenue, helping in the implementation of monetary policy through open market operations in addition to the development of financial markets through debt instruments. Moreover, the purpose of borrowing is also to influence aggregate demand for maintaining stability in the economy. Asogwa and Ezema (2005) opined that domestic debt is also seen as a means of filling domestic savings gap especially in the face of dwindling government revenues from domestic sources. It is particularly so in the face of fluctuating prices of primary commodity exports and hence dwindling foreign exchange earnings. Governments with large recurrent budget deficits may be forced to close the budget gaps by tapping into domestic savings, and also through the issuance of domestic debt. These debts are mostly used to finance development project. The efficient use of which bring about credit availability for investment purposes and economic growth. Domestic debt in Nigeria is approximately N27.55 trillion (US61.41billion) which account for 59% of the country's total debt stock. The federal government account for 80.62% of domestic debt in Nigeria.

Domestic Debt Holdings by the Central Bank of Nigeria

Domestic debts holding with the Central Bank of Nigeria (CBN) are debt instruments held by the CBN (Asogwa, 2005). The CBN plays important role in both the primary and

secondary markets for government securities in the course of discharging its functions. In the primary market, the CBN readily guarantees the issue of these securities and absorbs any amount not subscribed by the deposit money banks and the non-bank public. Hence, when debt instruments are issued by the CBN on behalf of the federal government, the deposit money banks and the non-bank (private & public institutions, and private investors) subscribe to the debt instruments. Any debt instruments left unsubscribed are absorbed by the CBN, which constitute the domestic debt holdings by the CBN (Odozi, 1996). Thus, even if there is no subscription at all, the Central Bank 'mandatory take-up' and guarantees the government the full amount of any issues of treasury bills, treasury certificates or development stocks required to finance its budget. Domestic debt holdings by the CBN is used as one of the proxy for the independent variables in the study.

Domestic Debt Holdings by Deposit Money Banks of Nigeria

Debt holdings with deposit money banks often refers to amount of debt instruments held by the banks as investments, these debt instruments includes, federal government of Nigeria bonds, federal government of Nigeria treasury bills, commercial papers, treasury bonds corporate bonds and state government bonds. The deposit money banks hold these debt instrument for reasons of liquidity management, risk management return on investment and regulatory requirement. Commercial banks also subscribe to debt instrument floated by the federal government for various benefits such as, diversifications of income stream, contribution to the development of Nigerian debt capital market improved liquidity management and enhanced risk management. The federal Government Issue these debt instrument to raise funds for various purposes, including infrastructure development, working capital, and refinancing existing debt. The deposit money banks in turn invest in these instruments to manage their liquidity, risk and returns. As at 2023, the

Public Investment

Public investment refers to the allocation of resources by the government or public entities into various assets, projects, or programs that benefits the society as a whole. These investments can be made through various channels including, public private partnership (PPPs), government securities (bonds and treasury bills), state owned enterprises, research and development initiative, social programs, public buildings and facilities. These investment aims at promoting economic growth and development, improve public services and infrastructure, enhance better quality of life; support innovations and entrepreneurship and foster equity and inclusiveness. Government investment are funded by government budgets-tax revenues, borrowing which can be domestic or external and public private partnership. Public investment involves funds allocated for projects and services that the private sector cannot effectively deliver on its own, and the projects are usually large scale such that the private sector does not get involved in most of them (Chukwu *et al.*, 2021). According to the United Nations (2009), public investment ae government expenditures whose productive life expands into the future and such investments involve infrastructural outlays such as roads and rails, ports, bridges, energy generating plants, telecommunications, water and sanitation networks. Others include outlays which can contribute to human capital development for the benefit of the society.

Public Investment Index

Public investment index used in this study, is the federal government capital expenditure. Public investment index is projected to be 14.4% of the country's gross domestic product (GDP) in 2022. The federal government capital expenditures are budgeted expenses

incurred by the government to ensure the certainty of projects execution which are of economic benefit to the citizens of the country. It is the money spent by a government on the development of machinery, equipment, building, health facilities, and education among others, the federal government capital expenditures as at September 2023 stood at N1043.310 increasing from previous quarter's N877.890 billion in June 2023. It also includes expenditure incurred on acquiring fixed assets like land and investment by a government that gives profits of dividend in future. Federal government capital expenditure is used as proxy for public investment.

Empirical Review

Iwedi and Ogbonnna (2024) explored the relationship between domestic debt market and public investment decision in Nigeria from 1986 to 2022 using the autoregressive distributed lag technique of analysis. The study used treasury bills, treasury bonds and federal government bonds as the independent variables, while public transport expenditure was used as the dependent variable. The findings showed that there is significant impact of Treasury Bills and federal government bonds on public transport expenditure. The study recommended that government should encourage public investment by channeling resources for development purposes. There is a limitation in the scope of this research, the focus is on the federal government public investment neglecting state and local government. Likewise, the investment was limited to the transportation sector which is not a complete reflection on public investment.

Akpan *et al.* (2024) analyzed the asymmetric effect of public debt on public investment in Nigeria using time series data from 1981 to 2021. The variables used includes public investment, external debt, domestic debt and debt servicing. The data were estimated using the Non-linear Auto-Regressive Distributed Lag (NARDL) technique of analysis. The findings revealed that long run asymmetric effects of external debt and debt service on public investment were statistically insignificant, while the long run asymmetric effect of domestic debt on public investment was statistically significant. The result further revealed that the short run asymmetric effects of external debt, domestic debt and debt service on public investment were statistically significant. The paper recommended that the Debt Management Office (DMO) which is vested with the management of the country's debt should advice the federal government to minimize or discourage borrowing to fund her budget by encouraging revenue generation from the non-oil sector. Furthermore, funds should be sourced from domestic sources rather than external sources for development purposes. The borrowed funds should be channeled into investment in infrastructural projects that will improve public investment. The study relies on simple econometric models that fails to account for endogeneity, reverse causality, and omitted variables bias.

Olaleye *et al.* (2023) investigated how public domestic debt impacted on private investments in Nigeria using the time series data from 1990-2022, The study employs the autoregressive Distributed lag (ARDL) model to investigate the relationship between public domestic debt and private investment. The result showed that public domestic debt with deposit money banks (PDDMMB) has a significant negative impact on private investment, while domestic debt with the Central Bank of Nigeria (PDCBN) and public domestic debt with non-bank public (PDNBP) have no significant impact. The study recommends that the government should ensure that domestic debt are utilized for capital project that have direct and indirect impact on private investment in Nigeria. The study fails to examine sector specific effect of domestic debt on private investment in Nigeria.

Madete and Were (2022) investigated the link between public debt and public investment in Tanzania from 1976 to 2020 using the ARDL model. The variables used for the study include external debt, debt service, trade openness and real GDP. The results revealed that increased in external debt has a positive impact on public investment. However, the lagged value of external debt shows negative impact on public investment which was attributed to debt servicing. The study recommended the optimal use of resources to enhance efficiency of public investment. Also recommended was that the government should explore other avenues of raising funds to reduce dependence on external debt. The study however failed to underpin the work with a theoretical framework. The study employed a simple econometric model that might not capture the complex relationship between public debt and public investment.

Anoke *et al.* (2021) investigated the relationship between public debt and domestic private investment in Nigeria from 1980 to 2018. The paper employed the vector error correction model and the Granger causality for the analysis. The variables used by the author are domestic private investment, external debt, domestic debt, debt servicing, interest rate and foreign direct investment. The result shows that both external debt and domestic have negative but significant impact on the domestic private investment. Debt servicing has a negative and insignificant impact on domestic private investment. Therefore, the researcher concluded that public debt crowds out domestic private investment in the long run within the period under review. The study recommended that the debt management office of Nigeria should review its credit policies to be in favour of the private sector. Also, that all foreign direct investment should be channeled to critical sectors of the economy. However, model for the technique used in the study was not specified. The study findings shows that public debt has a negative impact on domestic investment, but it does not provide specific policy recommendations for managing public debt to promote domestic private investment.

Chukwu *et al.* (2021) examined the effect of public debt on public investment in Nigeria from 1985 to 2018 using secondary data from the Central Bank of Nigeria Statistical Bulletin. The dependent variable used for the study is public investment, represented by fixed investment measured by total assets of public investment and corporation, while the independent variables are public debt, budget deficit, ratio of export to GDP and ration of import to GDP. The Auto-Regressive Distributed Lag technique analysis was used to analyze the data. The study revealed the existence of long run relationship among the variables, while the short run result indicated that public debt has significant effect on public investment. The study therefore recommended that the Nigerian government should be channeling borrowed funds into investment that will bring growth in the economy. Also recommended was that wastage and corruption should be tackled by the government to make sure that funds meant for investment are judiciously utilized. The writer failed to underpin the study with a theory and he focuses solely on public investment and did not examine the impact of public debt on other important economic variables, like economic growth, inflation or private investment.

Omodero (2019) investigated external debt financing and its effect on public capital investment in Nigeria. Data for the study were obtained from the World Bank and Central Bank of Nigeria Statistical Bulletin 1996 to 2018. The dependent variable is government capital expenditure, while the key independent variables are external debt accumulation

and debt servicing cost. The moderating variables used in the study were Inflation and exchange rates. The ordinary least squares multiple regression method was used as method of data analysis. The regression results revealed a significant negative impact between external debt and capital investment while debt servicing cost has a strong and significant positive effect on capital investment. Under these conditions, there is no significant relationship between controlling variables and capital investment. Consequently, the study suggests that if external borrowing must be embarked upon emphasis should be on profitable capital investments. In order words emphasis should be on the establishment of industries, revival of abandoned industries and development of untapped natural resources in other to help in debt repayment. The study fails to include a theoretical framework that the study is based upon and the study focuses only on external debt financing, neglecting the impact of domestic debt financing on capital investment.

Picarelli *et al.* (2019) examined whether public debt produces a crowding out effect for public investment in the EU? The study uses a panel data for 26 Countries in EU, to investigate the degree to which decrease in public investment was caused by increased levels of public debt, the supposed debt overhang hypothesis. To deal with the endogeneity concerns, instrumental approach based on GMM estimation was used. The study revealed that debt overhang hypothesis can continue to be rigorous across different evaluation techniques. The GMM specification with year dummies revealed that 0.03% decrease in public investment was caused by 1% increase in public debt in EU countries within the period of the study. Furthermore, the study indicates that (1) high-debt countries largely influence the result'; (2) the negative impact of debt on investment is slightly smaller in the Eurozone than in the entire European Union; (3) public debt reduces public investment with the effect of public debt stock more weighty than the flow. The study recommended that consequent policy implication might be that a measure focused on debt reduction would be less effective than an additional lending strategy. The study did not provide specific policy recommendations for managing public debt to promote public investments.

Ogunjimi (2019) examined the impact of public debts on investment in Nigeria from 1981 to 2016 using the Autoregressive Distributed Lag (ARDL) technique of analysis. The study used the variables private investment; public investment, foreign direct investment and public debt in the study. The result revealed that domestic debt improved both private and public investment in the short-run and long-run. In order words, domestic debt crowded-in both private and public investment, but does not attract foreign direct investment (FDI). The study further revealed that external debt crowded in private investment both in the short-run and the long run, crowded-out public investment, but does not influence FDI. The study recommends that policy makers formulate and implement appropriate policies to ensure public debts are put to optimal use to stimulate investment. The study also recommends that external debt should be more favored over domestic debt because of its impact on investments. Ogunjimi used the right technique of data analysis. Relevant theories used for the study were not reviewed and the writer did not consider nonlinear effect of public debt on investment in Nigeria.

Thobeka and Marius (2018) examined if public debt can influence public investment and ultimately economic growth in South Africa. The autoregressive distributive lag, Granger causality, impulse response function and variance decomposition were applied to achieve the objectives. The cointegration test found the existence of long-run relationship among

the investigated variables. It turned out that in the long run, there was a negative relationship between public debt and investment. Since there is direct link between investment and economic growth, there is an inverse relationship in the public debt economic growth nexus. The error correction mechanism confirmed that the system can adjust to equilibrium at a speed of 17%. There was bi-directional Granger causality relationship between public debt and economic growth. The impulse response function has found that, one standard deviation shock in public debt inversely affects economic growth. Variance decomposition results showed that a shock to public debt account for 16.39% fluctuations in economic growth. It was recommended that a capital scarce country be encouraged to borrow so that more capital can be accumulated. However, the later stage of borrowing marked with high level of debt would lead to subdued growth. The study used annual data from 1990 to 2016, future studies could explore more recent data for more detailed analysis.

Ncanywa and Masog (2018) examined the influence of public debt on public investment and economic growth. The dependent variable used for the study was fixed investment measured by total assets of public investment and corporation, while the independent variables are public debt, budget deficit, ratio of export to GDP and ration of import to GDP. The Auto-Regressive Distributed Lag, granger causality, variance decomposition and impulse response function techniques of analyses were used to analyze the data. The results revealed existence of long run relationship among the variables as well as negative relationship between public debt and public investment. The study recommended that country with scarce capital should be encouraged to borrow in order to accumulate more capital for investment purposes. However, the study did not include the scope of the study as well as any particular theory to base its theoretical framework. The study used a simple regression analysis, which may not account for complex relationship and dynamics between the variables.

Theoretical Framework

Debt Overhang Theory

The debt overhang theory was propounded by Myers (1977) with his theory of "company valuation in corporate finance and the effects on debt financing". The theory states that companies do not like financing their activities with maximum debt because high amount of debt will distort the possibilities for company to make optimal future investment due to the fact that future earnings accruing to the company will go to the creditors in the form of debt service. It is a situations where the debtor nation reaps scanty benefits from the proceeds on any fresh investments owing to its debt service commitments. In a national framework, debt overhang transpires when a considerable slice of a nation's capital is dedicated to debt servicing, thus hampering economic progress by levying a toll on domestic output. Bamidele and Joseph (2013) associated the notion of debt overhang with Nigeria's financial liabilities, arguing that the weight of debt servicing has impeded swift progression and advancement, intensifying societal challenges. Nigeria's forecasted debt servicing is considered to be a variable that intensifies with its economic yield, leading to capital meant for economic enhancement being channeled to debt servicing charges. It signifies that due to the elevated indebtedness and significant debt servicing outlays, any future revenue generated by prospective investors would be substantially appropriated by the state to alleviate debt servicing expenditures. This deters investors and results in capital withdrawal from the overall economy, leading to a reduction in the pace of growth.

Based on Myers postulations, Krugman (1988) analyzed that corporations can fully commit their revenue streams to their debt servicing, while countries on the other hand can only use a fraction of their national income for debt service because they have obligatory commitments to keep the country stable as a priority. That if company default, they could go into bankruptcy procedures where creditors are paid back as much as possible of the debt owed to them. But a sovereign country will not be forced to service debt. However, there could be negative effects associated with defaulting. If a country's debt level is expected to exceed the country's repayment ability with some probabilities in the future, the expected debt service is likely to be an increasing function of the country's output level. Thus, some of the returns from investing in the domestic economy are effectively taxed away by existing foreign creditors and investment by domestic and foreign investors and thus economic growth is discouraged (Benedict *et al.*, 2023).

The Keynesian Theory

This study is underpinned by the Keynesian theory of public debt propounded by Keynes (1932). The theory states that if an economy is operating at a less than full employment, government spending through borrowing would have a positive multiplier effect on the economy such that the total impact of public debt spending would have more than offset the loss in investment occasioned by high rate of interest. Keynes ideology on public debt was positive and contrary to the classical public debt doctrine of crowding-out. The theory came to fold during the Great Depression of 1929 to 1932 when the rate of unemployment was very high. The Classical economists' opined that the unemployment was a temporary phenomenon and the economy will come back to full employment in the long run. On the contrary, Keynes explained that in the long run, "we will all be dead". He therefore argued that an economy would experience only partial crowding out of private expenditure with no crowding out at all in times of deep economic recession (Omojolaibi *et al.*, 2016). His argument was based on several facts. First, he contends that savings and investment decisions are driven not only by the rate of interest but equally by other factors such as future expectation of profit which in itself is determined among others by the emotional psychology of the investor himself (Oluranti, 1999). In this wise, at the peak or nearing the peak of business cycle, or better put in period of good economic conditions, investors maker higher investments since they expect high future profit. Conversely, investors are reluctant to make investment when the economy is operating at the bottom of the business cycle because the future is gloomy (Omojolaibi *et al.*, 2016). If investments were to be driven solely by interest rate, businessmen would not have made any investment at the peak of the business cycle because at that period, interest rate are generally high since people are more eager to invest in stocks or more lucrative savings option than on government bonds with low interest.

Keynes second argument hinges on the concept of the multiplier. He argued that if the economy is operating at less than full employment, government spending would have a positive multiplier such that the total impact of public spending would more than offset the loss in investment occasioned by high rate of interest. government spending has a multiplier effect on the economy, such that an extra amount of government expenditure would stimulate national income not only by the amount of the initial expenditure, but rather by a multiplier effect of several amounts. The offshoot of this is that increase in household consumption, occasioned by increased government expenditure, would stimulate aggregate demand -thereby signaling firms to raise production which will consequently bring about increased private investment – a case of crowding-in of

investment (Onwe, 2014). Therefore, "deficit financing according to the Keynesians can be used to create additional employment when the economy is suffering from a deficiency of effective demand".

Based on Keynesian theory, consumers are not far sighted since they are myopic and do not consider any tax reduction or bond certificate as constituting future tax liability on them. Instead, they look at a net increase in their wealth and are therefore motivated to spend their increased income. In this instance, the dampening of private investment occasioned by the rise in interest rate brought about by domestic borrowing will be more than offset by the positive business expectation occasioned by the increase in aggregate demand. This is in line with the Keynesians believed that it is demand that creates supply and not supply that creates demand. Keynes therefore advocated higher government spending financed by government borrowing to revive an economy that was in recession. Keynes believed that the absolute size of debt does not constitute any burden upon the society. Owing to his proposal, public borrowing became an indispensable source of financing for countries including Nigeria.

METHODOLOGY

This study employed the expost-facto research design because it describes the statistical association between two or more variables using time series data. Secondary data sourced from the Central Bank of Nigeria (CBN) Annual Statistical Bulletin 2022 was used for the analysis for the period of 39 years spanning from 1984 to 2022. The data sourced from these sources were on public Investment (PUIN) which is the dependent variable, while debt holding by the Central Bank of Nigeria (DCBN) and debt holding by the deposit money bank (DDMB) were the independent variables. Descriptive statistic was conducted to have a glimpse of the raw data. Afterwards, a correlation analysis was used to determine the strength and direction of the linear relationship among the variables. Unit root tests were also conducted to determine the stationarity levels of the variables. This is to ensure that the estimated regression results are not spurious. Consequently, the model was estimated using the autoregressive distributed lag model to analyze the data. In testing the hypotheses of the study, the Wald test was employed.

Model Specification

The economic model used for this study is adopted from the study of Iwedi and Ogbonna (2024), which is titled domestic debt market and public investment decision in Nigeria. Their model is specified thus:

$$PTE_t + \alpha_0 + \beta_1 TBD_t + \beta_2 TBL_t + \beta_3 FGB_t + \mu_t \text{ ---------- (1)}$$

Where:
PTE = Public transportation expenditures
TBD = Treasury Bonds.
TBL = Treasury Bills
FGB = Federal Government Bonds.

From model 1, the study used public transport expenditures as proxy for public investment, while the debt instruments were used as proxies for domestic debt. However, this study modified the model of Iwedi and Ogbonna (2024) by substituting public transport expenditures with government capital expenditures as proxy for public investment, which is a more appropriate variable to use for public investment. Furthermore, the dearth of data on domestic debt instruments necessitated this study to

use data on domestic debt holdings (investors based) as proxy for domestic debt. Consequently, the model for this study is hereby specified:

$$PINV_t + \varphi_0 + \varphi_1 DCBN_t + \varphi_2 DDMB_t + \varphi_3 INFR_t + \mu_t \text{ ---------- (2)}$$

Where:

PINV = Public investment index (proxy by government capital expenditure).
DCBN = Debt holding by the Central Bank of Nigeria.
DDMB = Debt with deposit money banks.
INFR = Inflation Rate (%)
φ = Parameters to be estimated
μ = Error term

Table 1: Variables Measurement

Variables	Measurement	A priori Expectation	Source
Independent Variables			
Domestic debt holding by the CBN (DCBN).	Amount of domestic debt holding by the Central Bank of Nigeria.	DCBN is expected to have positive impact on PUIN ($\varphi_1 > 0$).	CBN Annual statistical Bulletin 2022.
Domestic debt holding by the deposit money banks (DDMB).	Amount of domestic debt holding by thedeposit money banks.	DDMB is expected to have positive impact on PUIN ($\varphi_1 > 0$).	CBN Annual statistical Bulletin 2022.
Dependent			
Public Investment (PINV)	Government capital investment.	-	CBN Annual statistical Bulletin 2022.

Source: Author's Compilation

RESULTS AND DISCUSSION

The results to be discussed in the study include: the descriptive statistics, correlation analysis, unit root tests and the regression analysis.

Descriptive Statistics

Descriptive statistics is conducted in order to have a glimpse of the data used in the study at its raw state.

Table 2: Descriptive Statistics

	JIN	CBN	DMB	IF
Mean	5.3305	7.4051	66.502	.20205
Median	8.7000	8.2700	0.4300	.88000
Maximum	35.580	06.280	004.65	.84000
Minimum	100000	530000	700000	390000
Std. Dev.	16.616	4.1392	78.152	.95353
Skewness	363696	881824	666375	817303
Kurtosis	087959	776625	264071	101378
Jarque-Bera	.38278	.54638	.37902	.64249
Probability	000000	000000	000002	000001
Sum	697.89	638.80	693.56	8.8800
Sum Sq. Dev.	258433	809805	93E+08	922.05
Observations				

Source: Output from Eview 12(2024)

Table 2 described the statistics of the variables. The output showed that DDMB has the highest average value of 1966.502 while INFR has the lowest mean value of 19.20205. The median which is the middle number when arranged from the smallest to the highest revealed that DDMB has the largest middle number of 500.4300 while INFR has the lowest median of 12.8800. Out of the four variables, DDMB has the maximum value of 11004.65 while DDMB has the minimum value of 3.700000. The standard deviation which measures the dispersion around the mean revealed that DDMB is more volatile than the remaining variables with standard deviation value of 2778.152. The skewness which measures the asymmetries of the distribution revealed that all the variables were skewed to the right side of the distribution (positive skewness). The kurtosis which measures the peakness or flatness of the distribution revealed that PUN, DCBN, DDMB and INFR with kurtosis values of 8.087959, 5.776625, 5.264071 and 5.101378 were all peaked (leptokurtic) relative to the normal kurtosis whose value is 3. The Jarque-bera value is used to show if the series are normally distributed or not. The results revealed that all the variables are not normally distributed due to their probability values being less than 0.05. The total observation for the study is 39.

Correlation Analysis

Correlation analysis describes the strength and direction of a linear relationship between two or more variables. Two variables are said to be correlated if they tend to simultaneously vary to the same direction. The parameter used to measure the correlation is the correlation coefficient (*r*), which shows the degree of linear relationship between two variables. Correlation can take on values from +1 and -1, and the closer the absolute value of r is to 1, the stronger the correlation between the variables. The signs (+ or -) indicates whether there is a positive or negative correlation. Cohen (1988) stated that correlation coefficient between 0.10 - 0.29 denotes weak correlation, values of 0.30 - 0.49 denote moderate correlation, and 0.50 - 1.0 denotes strong correlation. Table 3 showed that output of the correlation matrix.

Table 3: Correlation Output

Sample: 1984 2022
Included observations: 39
Correlation

Probability	PINV	CBN	DMB	NBP
PUN	1.000000			
	—-			
DCBN	0.892160	000000		
	0.0000	--		
DDMB	0.937748	827928	000000	
	0.0000	0000	--	
INFR	-0.406532	.137371	.416290	000000
	0.0102	4043	0084	--

Source: Output from Eview 12 (2024)

Table 3 is the correlation output of the variables. The relationship between public investment (PUIN) and debt holdings by the CBN indicated positive correlation. The strength of the relationship is strong and significant with correlation value of 0.892160, and probability value of 0.0000. Also, the correlation between public investment and debt holding by the deposit money banks showed that strong and significant relationship exist between the variables with the value of 0.937748 and its corresponding probability value of 0.0000. Furthermore, the relationship between public investment and inflation with

correlation value of -0.406532 and probability value of 0.0102 indicated a negative and significant relationship between public investment and inflation. The results showed that there is strong and significant relationship between domestic debt variables and public investment.

Unit Root

Unit root test is being conducted in order to ensure that the data used in estimating a model is stationary. For stationarity to exists, the absolute value of the Augmented Dicker Fuller test statistics has to be greater than the chosen critical value (5% in used this study), and also, the probability value should be less than 5% (0.05) significance level. The summary of unit root test results at first difference and at levels are presented at Table 4.

Table 4: Summary of Unit Root Results

Variables	ADF Results	Critical Value @ 5%	Prob. Value	Order of Integration
Integrated @ Levels				
PUIN	-3.294168	-3.533083	0.0826	I(0)
DCBN	-1.908070	-3.533083	0.6308	I(0)
DDMB	-0.885041	-3.548490	0.9463	I(0)
INFR	-1.057275	-3.574244		I(0)
Integrated @ First Difference				
PUIN	-8.704826	-3.536601	0.0000	I(1)
DCBN	-6.334109	-3.536601	0.0000	I(1)
DDMB	-4.286412	-3.548490	0.0092	I(1)
INFR	-6.224405	-3.574244	0.0001	I(1)

Source: Output from Eview 12 (2024)

The Augmented Dicker-Fuller unit root test results in Table 4 showed that the variables were not stationary at levels, but became stationary at first difference. Consequently, the ARDL bounds approach was used due to the mixed order of integration. The outputs for the unit root are attached at Annex II.

Cointegration Analysis

In order to determine the existence of long run relationship between a set of variables, the cointegration test was carried out. The null hypothesis states that there is no cointegration among the set of variables (H_0: $\beta_1 = \beta_2 = 0$), while the alternate states that there is cointegration (H_1: $\beta_1 \neq \beta_2 \neq 0$). The decision rule is that, if the value of the F-statistics is greater than the value of the upper bound I(1), then there is cointegration among the variables. However, if the value of the F-statistics lies below the lower bound I(0), then cointegration does not exist. Furthermore, if the value falls between the upper and lower bound, the test is considered to be inconclusive. Consequently, the autoregressive distributed lag (ARDL) cointegrated approach was used for this study. The ARDL cointegrated output is presented in Table 5.

Table 5: ARDL Bound Test Output

-Bounds Test		ull Hypothesis: No levels relationship		
:st Statistic	alue	gnif.	))	1)
F-statistic	331994	%	47	45
		%	01	62
		%	17	36

Source: Output from Eview 12 (2024)

The results in Table 8 showed that there is long run relationship among the variables to be estimated. This is because the value of the F-Statistics which is 9.331994 is greater than the value of the upper bound which is 4.62, at 5% significance level. Thus, the null hypothesis of no cointegration is rejected and the alternate hypothesis of the existence of cointegration is accepted. Therefore, it can be concluded that there is long run relationship among the variables.

Autoregressive Distributed Lag -Error Correction Mechanism (ARDL-ECM)

The Error Correction Mechanism is a means of reconciliating the short-run behavior of an economic variables to its long-run behavior. Disequilibrium in the short run necessitated the use of Error Correction Mechanism. During disequilibrium, π which is the speed of adjustment shows how the dependent variable changes in response to disequilibrium (Obumneke & Eze, 2021).

Table 6: ARDL – ECM Long Run Results

Dependent Variable: PUIN

ariable	oefficient	d. Error	Statistic	ob.
	560723	276008	016945	0000
TREND	130089	021334	097662	0000
(DDMB)	304212	141271	153399	0420
(DDMB(-1))	539967	152391	543294	0017
(DCBN)	.110111	161755	.680727	5028
(DCBN(-1))	.450750	174099	.589045	0164
(INFR)	.026372	005743	.591721	0001
(INFR(-1))	006597	004879	352218	1895
(INFR(-2))	.022758	005181	.392662	0002
ointEq(-1)*	.828992	127618	.495910	0000
Squared	770701	ean dependent var		183719
djusted R-squared	591328	S.D. dependent var		652832
E. of regression	362702	Akaike info criterion		039663
im squared resid	420373	Schwarz criterion		479530
og likelihood	.713939	Hannan-Quinn criter.		193188
statistic	709900	Durbin-Watson stat		047998
ob(F-statistic)	000002			
	Long Run Form			
CBN	259801	153360	694064	1038
DMB	.144144	224524	.642001	5272
IFR	.007600	012126	.626783	5370

Source: Output from Eview 12 (2024)

Test of Hypothesis

The two hypotheses were tested using the Wald test. The decision rule is that the value of the F-statistics must be less than 5% (0.05) for the result to be statistically significant. Summary of the Wald test outputs is presented in Table 7.

Table 7: Wald Test Results

Variables	F-Statistics	D.f	Probability
DCBN	0.634660	(2, 13)	0.5392
DDMB	5.522662	(2, 23)	0.0110

Source: Output from Eview 12 (2024)

Hypothesis 1 (H_{01}) states that domestic debt by the CBN (DCBN) has no statistically significant impact on public investment in Nigeria. Based on the results presented in Table 7, the value of the F-statistics (0.634660), with its corresponding probability value of 0.5392 is less than 5% (0.5392 < 0.05). Hence, the null hypothesis of no statistically significant cannot rejected. This means DCBN has no significant impact on public investment. Based on hypothesis 2 (H_{02}) which states that domestic debt holdings by the deposit money bank (DDMB) have no significant impact on public investment, the result revealed that the DDMB has significant impact on public investment. This is because the probability value of the F-statistics which is 0.0110 is less than 5% (0.0110<0.05). Hence the null hypothesis is rejected and the alternate that DDMB has significant impact on public investment is accepted. The outputs is attached at Annex III.

Discussion of Findings

From Table 6, the coefficient value of DCBN which was found to be 0.259801, showing that DCBN has a positive relationship with PUIN. This means that a billion naira increase in DCBN, on average, increased PUIN by 0.259801 billion (approximately 25.9 billion naira) between 1984 and 2022. This positive relationship could be due to the securitization of the ways and means loans borrowed from the CBN by the federal government of Nigeria. Such loans are intended to be used to augment deficits in the government budget. Securitization of the borrowed funds avail the government with new funds for developmental projects. However, these funds were often misappropriated or misallocated for other expenditures, thereby making DCBN to have insignificant impact on public investments. This study is in line with the observations of Iwedi and Ogbonna (2024) whose study found a positive relationship between public debt instruments and public investment in Nigeria.

The coefficient value of DDMB which is -0.144144 showed that DDMB has an inverse (negative) relationship with PUIN, meaning that increase in DDMB increases PUIN. The magnitude of the coefficient showed that a billion naira increase in DDMB on the average, decreased PUIN by -0.144144 (approximately 14.41 billion naira). Deposit money banks promotes savings and investment which help to form capital, thus permitting banks to buy government securities as a way of investment. By so doing, the federal government is left with much funds generated from the sales of the debt instruments. The funds are expected to be used for investment in infrastructural and human capacity development, as well as used for social economic activities. However, deposit money banks may prioritize lending to private sector borrowers over the government, thereby reducing the availability of funds for public investments. Also, high bank debts may reduce government revenue, as large portion of the budget goes towards debt servicing, leaving less for public investment.

This finding aligns with the study of Ncanywa and Masog (2018) who found public debt to have negative relation with public investment.

Inflation rate coefficient was revealed to be -0.007600 showed that inflation rate has negative relationship with public investment in Nigeria. Specifically, when inflation rate increases by 1%, public investment will decrease by 0.007600 billion naira (approximately 0.76 billion naira). Inflation can lead to high costs for public projects, reducing their feasibility and potential returns. It can also create uncertainty, thereby making it harder for government to plan and invest in long term projects. Increase in inflation can lead to higher interest rates, which could crowd out public investment by making borrowing more expensive. This finding is in line with the study of Nwamuo (2022), whose study found negative relationship between inflation and public investment in Nigeria.

The R-Square and Adjusted R-Square are used to show the explanatory power of the model and the reliability of the estimates. It indicates how the model is reasonable fit for prediction. The coefficient of determination (R-Square) gave a value of 0.770701 and the adjusted R-Square value of 0.691328. The R-Square showed that 77.07% changes or variation in PUIN were collectively due to DCBN and DDMB, while the remaining 22.93% which is the unaccounted variation was captured by the error term. Thus, the model is fit for prediction. The F-Statistics is use to examine the overall significance of the regression model. The results further confirms that the overall regression model is significant. This was captured by the F-Statistics value of 9.709900 and its associated probability value of 0.000002 was found to be significant at 5% level. Durbin Watson (DW) was used to test for the presence of autocorrelation or serial correlation among the residuals. The result of the DW which is 2.047998 showed that there is no evidence of autocorrelation in the model, because it falls within the acceptable DW range of 1.45 to 2.44.

CONCLUSION AND RECOMMENDATION

The study investigated the relationship between domestic debt variables and public investment in Nigeria, using the ARDL technique of analysis. The findings revealed that domestic debt holding by the CBN had a positive and insignificant impact on public investment, while domestic debt holding by the deposit money banks and Inflation rate were found to have negative and insignificant impact on public investment. Based on the findings, the study therefore made the following recommendations:

i. The government or the policy makers should adhere strictly to the appropriate use of debt through efficient public investment, so that the debt service payment should not exceed the country's payment capacity.

ii. Purchase of government debt instruments by the deposit money banks should be encouraged due to the significant roles of the deposit money banks in the development of the nation through its mobilization of funds from the surplus units and borrowing for investments purposes. The deposit money banks could help in financing development projects, encouraging public investment.

iii. The federal government is advised to formulate policies that will reduce inflation. The government can reduce their spending and lower demand for goods and services, thus reducing inflation. Also, the government can implement policies to improve productivity and increase supply, thereby reducing the

upward pressure on prices. Furthermore, the government can reduce their budget deficit to reduce the amount of money in circulation and curb inflation.

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