POLAC INTERNATIONAL JOURNAL OF ECONS & MGT SCIENCE (PIJEMS)
DEPARTMENT OF ECONOMICS & MANAGEMENT SCIENCE
NIGERIA POLICE ACADEMY, WUDIL-KANO

IMPACT OF PUBLIC DEBT ON ECONOMIC GROWTH IN NIGERIA

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Abstract

This study investigates the impact of public debt on economic growth in Nigeria spanning 1982-2023. Using an ex-post facto design, secondary data extracted from the central bank of Nigeria annual statistics bulletin, and world development indicator (WDI) database 2023. Unit root test was conducted using augmented Dickey-Fuller method to determine whether the variables are stationary or not and the result shows that the variables are all stationary. Co-integration test was conducted and the result shows that there is evidence of long-run relationship among the variables. The study employed the vector autoregression (VAR) model for estimation. The findings showed that public multilateral debt (MUD) has insignificant negative impact on economic growth in Nigeria during the period under study, similarly, the findings showed that public bilateral debt (BID) has significant positive impact on economic growth in Nigeria during the period under study. The findings showed that treasury bills rate (TBR) has insignificant negative impact on economic growth in Nigeria during the period under study, and commercial paper (COP) has insignificant negative impact on economic growth in Nigeria during the period under study. Treasury bonds (TRB) has insignificant positive impact on economic growth in Nigeria during the period under study. Therefore, it was concluded that public debt has strong and positive impact on economic growth in Nigeria during the period under review. The study recommends that government should renegotiate existing multilateral debt agreements and prioritize debt repayment aligns with the policy implication to alleviate the debt burden. This strategic approach enables Nigeria to redirect resources towards economic development. Stakeholders, such as international financial institutions, should support debt relief programs, while civil society organizations should advocate for responsible lending practices. Effective debt management and transparency are crucial.

Keyword: Bilateral Debt, Multilateral Debt, Treasury Bills Rate, Commercial Paper, Treasury Bonds, Economic Growth

1. Introduction

Public debt is an economic stimulant but when its accumulation gets to a very substantial level, a reasonable proportion of government expenditure and foreign exchange earnings will be used to service and repay the debt with a heavy opportunity costs even for future generations. Moreover, the cost of debt servicing can increase beyond the capacity of the economy to cope, adversely affecting the efforts to address the desired fiscal and monetary policy objectives. In addition, rising debt burdens can restrict the government's ability to pursue more productive investment programmes in infrastructure, education and public health (Johnny & Johnnywalker, 2018).

The justification for government borrowing has its foundation in the neoclassical growth models, which prescribes the need for capital-scarce countries to borrow to increase their capital accumulation and steady-state level of output per capita (Madow et al., 2021). The occurrence of global economic crises has provided further impetus for countries (especially the developing ones) to borrow as they are often confronted with the need for increased expenditure levels and declining capital inflows (Ogbonna *et al*., 2019).

Conventional view suggests that public debt has a positive effect on economic growth in the short-run by stimulating aggregate demand and output. However, theoretical literature continues to point to a negative debt-growth relation in the long run by crowding out private investment. Public debt can crowd-out private investment and threaten economic growth through higher long-term interest rates, higher inflation, and higher future distortionary taxation (Mhlaba *et al.;* 2019). The extensive use of domestic borrowing can have severe repercussions on the economy. Domestic debt service can consume a

significant part of government revenues, especially given that domestic interest rates are higher than foreign ones. The interest cost of domestic borrowing can rise quickly along with increases in the outstanding stock of debt, especially in shallow financial markets. In the long-run, higher interest rate would discourage investment and thus crowd out private investment. This is also referred to as the burden of public debt, as each generation burdens the next, by leaving behind a smaller aggregate stock of capital (Àkos & Istvàn, 2019).

Nigeria is currently ranked among Sub-Saharan Africa heavily indebted countries with a stunted GDP growth rate, retarded export growth rate, a fast dwindling income per capita and an increasing poverty level. Most of these countries, Nigeria inclusive, have been trapped by hasty and distress borrowing which they are often unable to service. Worse still, they need to borrow more because of the deteriorating world prices of their primary exports (Ogunjimi, 2019). Nigeria's 2005 debt relief provided by the Paris Club of creditors motivated largely by the need to free-up resources for investment and faster economic growth led to a significant decline in the country's debt burden in 2006. Unfortunately, 14 years after, the country is back in bigger debt crisis. Successive governments have been accumulating debt at an alarming rate while debt servicing cost has again increased astronomically to become a sour point in Nigeria's budgetary process in the last decade.

Rising global interest rates and the increasing debt burden of Nigeria is pointing toward another debt crisis which may not be far ahead. It is evident that unsustainable public debt is discouraging investment and lowering growth in Nigeria, thereby reducing the country's global competitiveness, and increasing financial market susceptibility to international shocks (Ogbonna *et al*.; 2019). Generally, debt sustainability can be explained using either debt to GDP or debt service to revenue ratio. Nigeria's debt to GDP ratio is estimated at about 22%, one of the lowest in the world and much below what is obtainable in most emerging markets. With Nigeria's total public debt below 30% of GDP, the country's debt burden appears to be relatively light compared with many other countries. Meanwhile, debt-to-GDP is not regarded as the best indicator of debt sustainability, especially in a country like Nigeria that has one of the lowest tax-to-GDP ratio (6.1%) in the world. For Nigeria, a better indicator of debt sustainability is the debt service-to-revenue ratio, a metric that reveals whether the government is generating enough revenues to pay down its debts as they mature.

Since the recession experienced in 2016, Nigeria has struggled with a higher debt service to revenue ratio as revenues slid in direct correlation with the fall in oil prices. Nigeria's government spent about 2.45 trillion Nigeria Naira in debt service in 2019 out of total revenue of N4.1 trillion or 59.6% debt service to revenue ratio. The rising cost of Nigeria's debt profile breached a new milestone with the country's debt service as a percentage of revenue rising to 83% in 2020. This suggests that 83% of the revenue generated in 2020 was used to meet debt service obligations and this is worrisome. To service domestic debt, the government spent N1.76 trillion in 2020 as against a budget of N1.87 trillion in 2019. For foreign debts, a sum of N553 billion was spent against a target budget of N805.47 billion. The drop here is likely a result of lower interest rates on foreign borrowing as well as very limited borrowing from the foreign debt market during the year. The government only contributed N4.58 billion into its sinking fund instead of the budgeted N272.9 billion. (Ogunjimi, 2019).

However, despite the cancellation of Nigeria's membership in Paris and London Club in 2006, the country still employed deficit financing especially in 2009 and 2010 when it provided debt instruments of about N524billion and N867billion respectively, this attempt was clearly awkward as it occasioned the payment of an increased interest rate of $42billion owed to the Paris Club (Nwankwo, 2010).

Other internal problem that has incapacitated Nigerian governments to meet their debt obligation include high level of corruption; diversion of external loans from what it was meant for to less productive and/or personal use; high and rising inflation; and persistent crises. On the external front, there has been the problem of consistent fall in the foreign exchange value of naira leading to rising value of external debts. This is the major challenge faced by Nigerian government over the years.

Managing debt service burden entails reducing the burden of external and domestic debt in the country. According to Debt Management Office (CBN, 2017), over 40% of Nigeria budget are allocated to servicing her debt not even repaying the capital borrowed. Nigeria debt profile keeps on rising but the economic growth and other major macroeconomic goals are falling this can be seen from

Nigeria debt profile image. And this has raised many questions among the stake holders. It is for this reason that the study examined the impact of public debt on economic growth in Nigeria.

2. Literature Review

2.1 Conceptual Definitions

2.1.1 Debt

Debt is a liability that requires payment of interest and/or principal by the debtor to the creditor at a specified date or dates in the future (IMF, 2014). Debt is an amount of money borrowed by a country, organization, or individual that must be repaid, usually with interest (World Bank, 2020). Makau, (2008) referred to public debt as the total of the nation's debts, which covers debts of local, and state and national governments, indicating how much public spending are financed by borrowing instead of taxation

2.1.2 Economic Growth

Economic growth could be defined as the increase in the amount of goods and services in a given country at a particular time. This of course indicates that when the real per capita income of a country increases over time, economic growth is taking place. Economic growth is measured by the increase in the amount of goods and services produced in a country. A growing economy produces goods and services in each successive time period, showing that economy's productive capacity is at increase. Broadly, economic growth implies raising the standard of living of the people and reducing inequalities of income distribution (Jhingan, 2004).

2.2 Theoretical Framework

This study is grounded in the dual gap theory, a framework that analyzes the requirements of public borrowing to bridge the savings-investment gap and the foreign exchange gap in developing economies (Chenery & Strout, 1966). The savings-investment gap arises from the disparity between available savings and required investment for economic growth and development (Rosenstein-Rodan, 1943). The foreign exchange gap represents the difference between foreign exchange earnings from exports and the foreign exchange required to finance imports, including capital goods (Chenery & Strout, 1966).

The dual gap model posits that reducing these gaps facilitates economic growth and development, ultimately enabling economies to reach the take-off stage, as described by Rostow's stages of economic development theory (Rostow, 1960). The model defines the growth rate as:

$g = s / k + f / k$
Where:
g = growth rate
s = savings rate
k = capital-output ratio
f = foreign capital inflow ratio

The dual gap analysis reveals that development is contingent upon investment, which is largely influenced by domestic savings. However, in many cases, domestic savings are insufficient to finance development, prompting governments to adopt strategies to supplement domestic resources with foreign capital (Lewis, 1954). This often results in a surplus of imports over exports (M > E).

The dual gap theory provides a foundation for understanding the relationship between public debt and economic growth. By recognizing the existence of savings-investment and foreign exchange gaps, policymakers can design targeted interventions to address these gaps and promote sustainable economic growth (Easterly, 2001). In the context of public debt, the dual gap theory suggests that borrowing can be an effective strategy for bridging these gaps and stimulating economic growth, provided that the borrowed funds are invested productively and efficiently (Sachs, 1989).

2.3 Empirical Review

Kalu and Boniface (2023) examined the effect of public debts on economic growth in Nigeria. The study applied ex-post facto design with secondary data as instrument for data collection. Multiple regressions model was used. The study was estimated using ordinary least square. Gross domestic product was used as the dependent variable while internal debts, external debts and interest rate was used as the explanatory variables. Findings from the study showed that external debts have significant negative impacts on GDP while internal debts showed significant positive impacts on GDP. There is also high cost of borrowed fund, it is recommended that Government should make sure that all borrowed fund

is judiciously used. There should exhaust internal means of borrowing before resorting to external debts. Also creating the enabling environment that will make public debt to achieve the purpose for which it was borrowed.

Soyres, Kawai and Wang (2022) examined the impact of public debt on real GDP. Using public debt forecast errors, the study identify exogenous changes in public debt to assess the impact of a change in the debt to GDP ratio on real GDP. By analyzing data on gross public debt for 178 countries over 1995-2020, the study find that the impact of an unanticipated increase in public debt on the real GDP level is generally negative and varies depending on other fundamental characteristics. Specifically an unanticipated increase in the public debt to GDP ratio hurts real GDP level for countries that have high initial debt level or rising debt trajectory over the five preceding years. On the contrary, an unanticipated increase in public debt boosts real GDP for countries that have a low-income level or completed the HIPC debt relief initiative. Akpan et al. (2022) examined the relationship between treasury bonds and economic growth in Nigeria using dynamic panel analysis from 2000 to 2020. The study found a positive correlation between treasury bonds and economic growth.

3. Methodology

The study adopted ex-post facto design to investigate the impact of public debt on economic growth in Nigeria during the 1982-2023. To this end, the study utilized secondary data based on variables of the study. The method of analysis was based on cointegration to carry out the investigation. The Vector Autoregressive (VAR) model and Granger Causality tests was employed to determine the causal elements in the parameters. The data were collected from various sources including Central Bank of Nigeria (CBN), World Development Indicator (WDI) database and National Bureau of Statistics (NBS).

This study adopted the Vector Autoregressive (VAR) model used by Egbetunde (2012) who analyze the nexus between public debt and economic growth in Nigeria. The model for their study was states as:

RGDP= f (EXT, DDB) (1)

Where:

RGDP = Real Gross Domestic Product;

EXT = External debt outstanding;

DDB = Domestic Debt

In this study, equation (1) was modified by replacing its variable with the study variables in a functional equation:

GDPR = f(MUD, BID, TBR, COP, TRB) (2)

Where:

GDPR = Gross domestic product growth rate

MUD = Public multilateral debt

BID = Public bilateral debt

TBR = Treasury bills rate

COP = Commercial paper

TRB = Treasury bonds

The model has been explicitly stated below with 6×6 vector variables matrices.

$$GDPR_t = \alpha_{10} + \sum_{i=1}^{n} \alpha_{11i} GDPR + \sum_{i=1}^{n} \alpha_{12i} MUD_{t-i} + \sum_{i=1}^{n} \alpha_{13i} BID_{t-i} + \sum_{i=1}^{n} \alpha_{14i} TBR_{t-i} - \sum_{i=1}^{n} \alpha_{14i} COP_{t-i} - \sum_{i=1}^{n} \alpha_{14i} TRB_{t-i} \text{ ---------- (3)}$$

$$MUD_t = \alpha_{20} + \sum_{i=1}^{n} \alpha_{21i} GDPR_{t-i} - \sum_{i=1}^{n} \alpha_{22i} MUD_{t-i} - \sum_{i=1}^{n} \alpha_{23i} BID_{t-i} - \sum_{i=1}^{n} \alpha_{24i} TBR_{t-i} - \sum_{i=1}^{n} \alpha_{14i} COP_{t-i} - \sum_{i=1}^{n} \alpha_{14i} TRB_{t-i} - - - - - - - - - - - (4)$$

$$BID_t = \alpha_{30} + \sum_{i=1}^{n} \alpha_{31i} GDPR_{t-i} - \sum_{i=1}^{n} \alpha_{32i} MUD_{t-i} - \sum_{i=1}^{n} \alpha_{33i} BID_{t-i} - \sum_{i=1}^{n} \alpha_{34i} TBR_{t-i} - \sum_{i=1}^{n} \alpha_{14i} COP_{t-i} - \sum_{i=1}^{n} \alpha_{14i} TRB_{t-i} \text{ ---------- (5)}$$

$$TBR_t = \alpha_{40} + \sum_{i=1}^{n} \alpha_{41i} GDPR_{t-i} + \sum_{i=1}^{n} \alpha_{42i} MUD - \sum_{i=1}^{n} \alpha_{43i} BID_{t-i} - \sum_{i=1}^{n} \alpha_{44i} TBR_{t-i} - \sum_{i=1}^{n} \alpha_{14i} COP_{t-i} - \sum_{i=1}^{n} \alpha_{14i} TRB_{t-i} \text{ ---------- (6)}$$

$$COP_t = \alpha_{40} + \sum_{i=1}^{n} \alpha_{41i} GDPR_{t-i} + \sum_{i=1}^{n} \alpha_{42i} MUD - \sum_{i=1}^{n} \alpha_{43i} BID_{t-i} - \sum_{i=1}^{n} \alpha_{44i} TBR_{t-i} - \sum_{i=1}^{n} \alpha_{14i} COP_{t-i} - \sum_{i=1}^{n} \alpha_{14i} TRB_{t-i} \text{ ---------- (7)}$$

$$TRB_t = \alpha_{40} + \sum_{i=1}^{n} \alpha_{41i} GDPR_{t-i} + \sum_{i=1}^{n} \alpha_{42i} MUD - \sum_{i=1}^{n} \alpha_{43i} BID_{t-i} - \sum_{i=1}^{n} \alpha_{44i} TBR_{t-i} - \sum_{i=1}^{n} \alpha_{14i} COP_{t-i} - \sum_{i=1}^{n} \alpha_{14i} TRB_{t-i} \text{ ---------- (8)}$$

The priori expectation for the study is stated below;

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 > 0$.

4. Results and Discussion

The data use for the study includes annual time series on the study variables from 1982 to 2023.

4.1 Trend Analysis

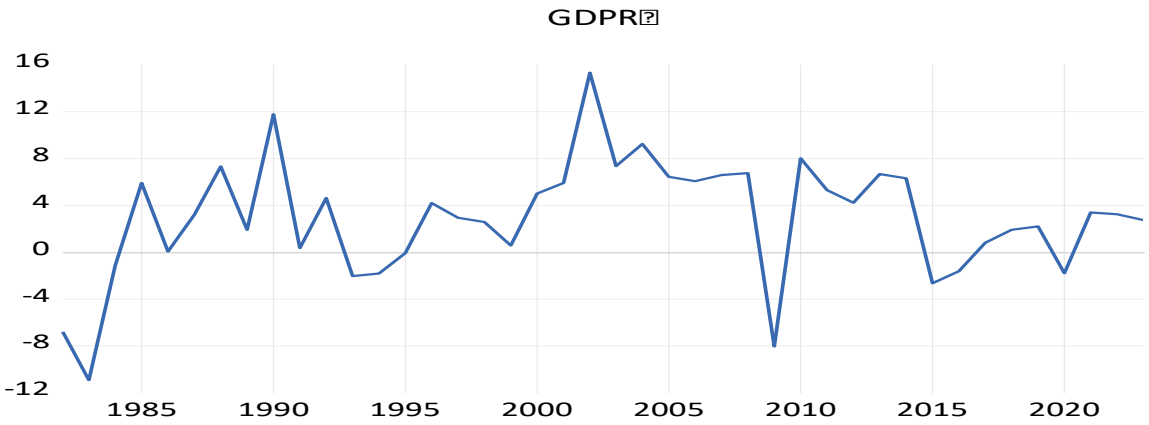

Figure 1: Trend Movement of Gross Domestic Product Growth Rate (GDPR) in Nigeria (1982-2023)
Source: Author's Computation 2024, using E-view 12.0 Version

Figure 1 shows the trend pattern of gross domestic product growth rate (GDPR) in Nigeria during the 1982 to 2023 period. The GDP growth rate exhibited upward trends during these periods, driven by favorable economic conditions. The 1980s saw monetary policy easing and fiscal expansion, while the 1990s were characterized by technological advancements and globalization. The early 2000s experienced a housing market boom and consumption-driven growth, followed by a post-financial crisis rebound (2010-2019) fueled by monetary policy stimulus and gradual global trade recovery. Common factors among these periods include low interest rates, increased government spending, technological progress and strong global demand, contributing to accelerated economic expansion. The GDP growth rate declined during these periods, primarily due to external shocks and economic downturns. The early 1980s faced high interest rates, global recession and oil price shocks, while the 1990-1991 slowdowns resulted from the Gulf War and tightening monetary policy. The dot-com bubble burst (2000-2002) and the severe global financial crisis (2008-2009) further contributed to contraction. Common factors include monetary policy tightening, global economic slowdowns, commodity price shocks and financial market instability, leading to decreased economic activity and recessions.

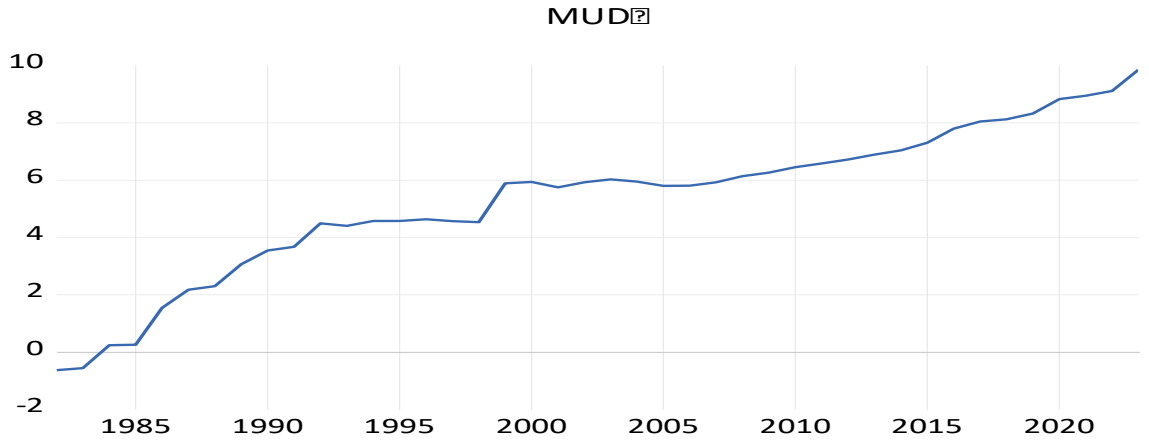

Figure 2: Trend Movement of Public Multilateral Debt (MUD) in Nigeria (1982-2023)
Source: Author's Computation 2024, using E-view 12.0 Version

As shown in figure 2 public multilateral debt increased during these periods, driven by rising global demand for development financing and economic cooperation. The 1980s saw increased lending from international financial institutions, while the 1990s were marked by expanded development programs. The 2000s experienced growing demand for infrastructure financing, followed by post-financial crisis recovery efforts (2010-2015). Factors contributing to growth include increased global cooperation, development

initiatives and economic expansion. Multilateral debt declined during these periods, primarily due to decreased borrowing needs and economic downturns. The early 1980s faced reduced lending due to global recession, while the 1990s slowdown resulted from decreased borrowing demand. The post-dot-com bubble (2001-2005) and post-financial crisis (2010-2015) periods saw reduced lending as economies recovered.

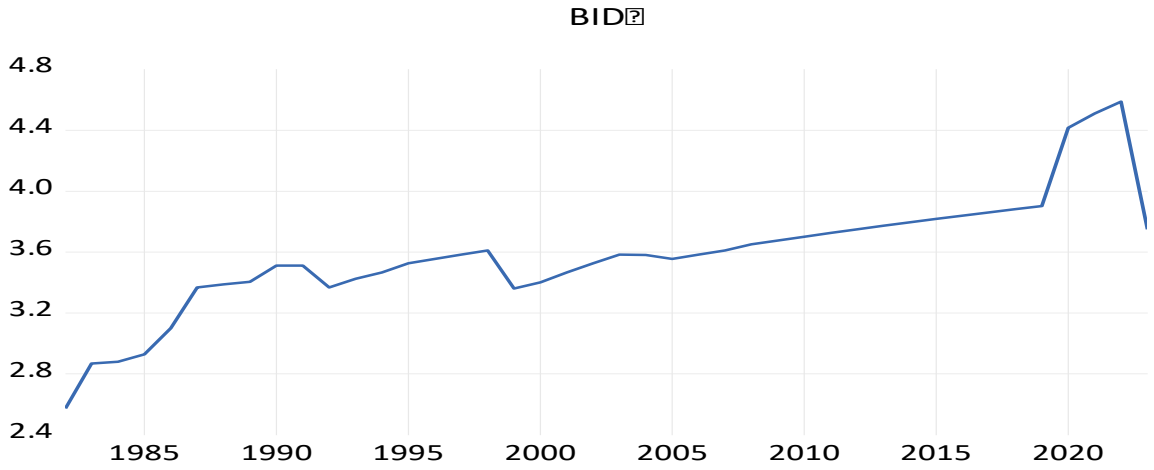

Figure 3: Trend Movement of Public Bilateral Debt (BID) in Nigeria (1982-2023)
Source: Author's Computation 2024, using E-view 12.0 Version

As shown in figure 3, the 1980s saw growing trade relationships, while the 1990s were marked by increased foreign investment. The 2000s experienced rising demand for export financing, followed by post-financial crisis recovery efforts (2010-2015). Factors contributing to growth include expanding global trade, foreign investment and economic expansion. Bilateral debt declined during these periods, primarily due to decreased trade financing needs and economic downturns. The late 1980s faced reduced lending due to global trade slowdowns, while the 1990s slowdown resulted from decreased foreign investment.

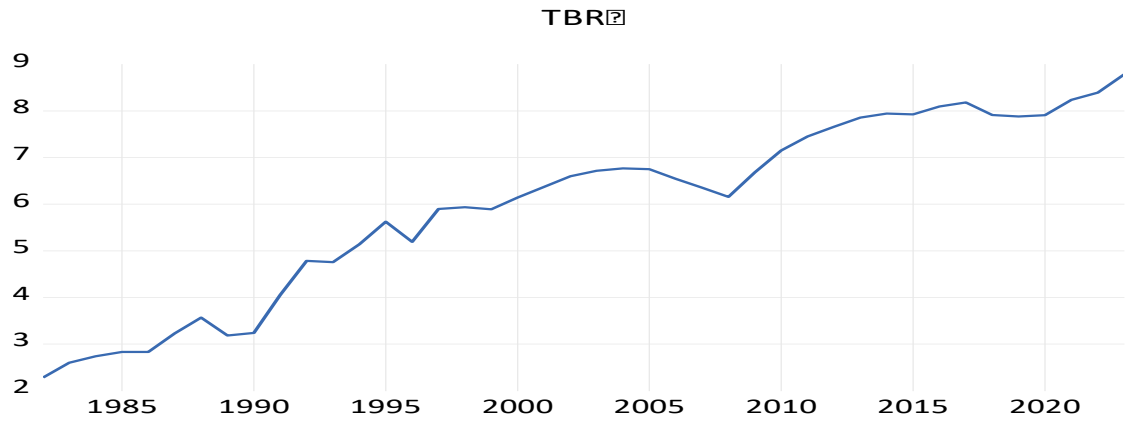

Figure 4: Trend Movement of Treasury Bills Rate (TBR) in Nigeria (1982-2023)
Source: Author's Computation 2024, using E-view 12.0 Version

As shown in figure 4, the early 1980s saw high interest rates to combat inflation, while the late 1980s faced monetary policy tightening. The mid-1990s and 2005-2007 periods experienced rate hikes to control inflation and maintain economic stability. Treasury bill rates declined during these periods, primarily due to monetary policy easing and economic downturns. The 1980s faced rate cuts to stimulate growth, while the 1990s slowdown resulted from decreased inflation concerns.

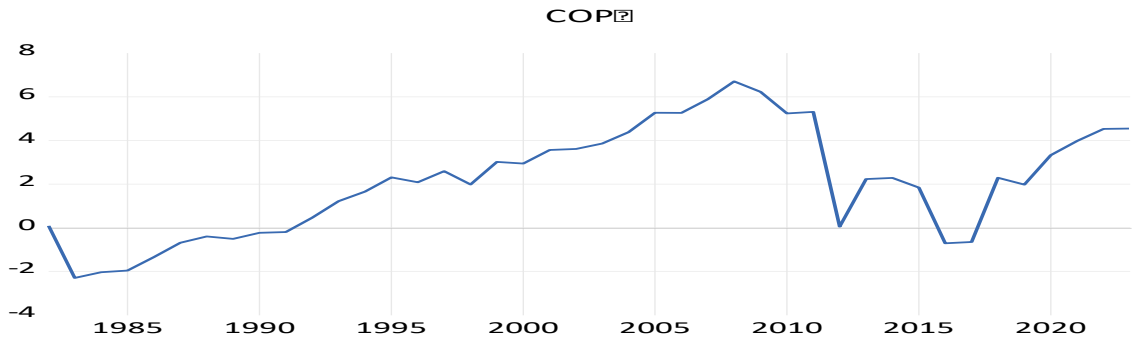

Figure 5: Trend Movement of Commercial Paper (COP) in Nigeria (1982-2023)
Source: Author's Computation 2024, using E-view 12.0 Version

As shown in figure 5, the 1980s saw expanding corporate debt markets, while the 1990s were marked by increased short-term financing demand. The 2000s experienced rising demand for commercial paper, followed by post-financial crisis recovery efforts. Commercial paper issuance declined during these periods, primarily due to decreased financing needs and economic downturns. The early 1980s faced reduced corporate borrowing, while the 1990s slowdown resulted from decreased short-term financing demand.

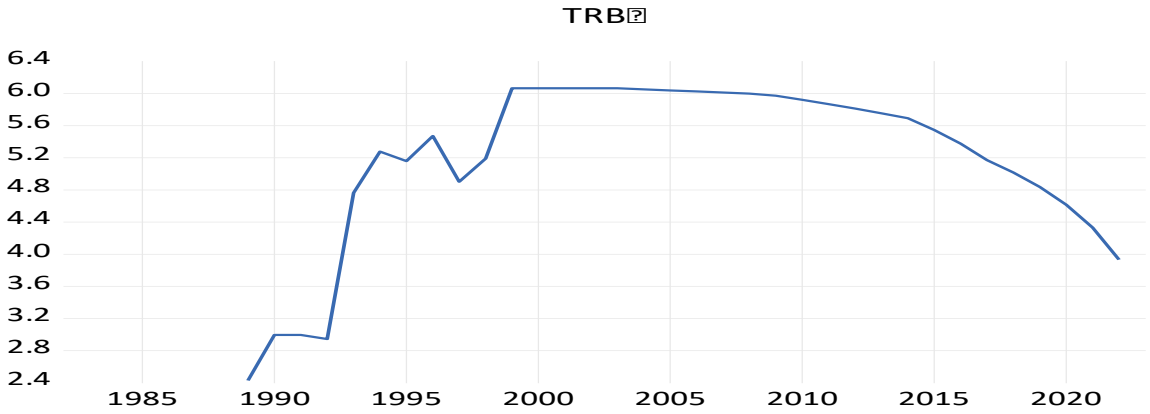

Figure 6: Trend Movement of Treasury Bonds (TRB) in Nigeria (1982-2023)
Source: Author's Computation 2024, using E-view 12.0 Version

As shown in figure 6, the 1980s saw expanding government debt markets, while the 1990s were marked by increased long-term financing demand. The 2000s experienced rising demand for treasury bonds, followed by post-financial crisis recovery efforts. Treasury bond issuance declined during these periods, primarily due to decreased financing needs and economic downturns. The late 1980s faced reduced government borrowing, while the 1990s slowdown resulted from decreased long-term financing demand.

Table 1: Augmented Dickey-Fuller (ADF) Test Results

				Unit root at First Diff		
Variables	**ADF Stat**	**Critical T-Stat**	**P-Value**	**Order of Integration**	**Decision**	**Remark**
GDPR	-10.78746	-3.526609	0.0000	I(1)	Reject H_0	Stationary
MUD	-6.532265	-3.526609	0.0000	I(1)	Reject H_0	Stationary
BID	-7.203133	-3.533083	0.0000	I(1)	Reject H_0	Stationary
TBR	-4.162756	-3.540328	0.0119	I(1)	Reject H_0	Stationary
COP	-5.725567	-3.526609	0.0002	I(1)	Reject H_0	Stationary
TRB	-3.688948	-3.536601	0.0357	I(1)	Reject H_0	Stationary

Source: Author's Computation 2024, using E-view 12.0 Version
Note: * indicates significant at five percent level of significance.

The Augmented Dickey-Fuller (ADF) test result for GDP Growth Rate (GDPR) indicates that the variable is integrated of order 1, denoted as I(1). This means GDPR is non-stationary in its original form, exhibiting trending behavior. However, differencing GDPR once renders it stationary. The ADF statistic of -10.78746 and p-value of 0.0000 confirm this. GDPR's I(1) nature implies its original series is unsuitable for regression analysis, but the differenced series (ΔGDPR) can be effectively modeled.

Multilateral Debt (MUD) is also I(1), indicating non-stationarity in its original form. The ADF test result (ADF statistic: -6.532265, p-value: 0.0000) confirms MUD requires differencing to induce stationarity. This means the original MUD series is not suitable for regression analysis due to trending behavior. However, the differenced series (ΔMUD) becomes stationary, enabling reliable modeling.

Bilateral Debt (BID) exhibits I(1) behavior, signifying non-stationarity. The ADF test result (ADF statistic: -7.203133, p-value: 0.0000) indicates BID requires differencing to achieve stationarity. Thus, the original BID series is not suitable for regression analysis, but the differenced series (ΔBID) becomes stationary and can be effectively modeled.

The Treasury Bill Rate (TBR) is I(1), indicating non-stationarity. The ADF test result (ADF statistic: -4.162756, p-value: 0.0119) confirms TBR requires differencing. Although the p-value is slightly higher, it still indicates non-stationarity. The original TBR series is unsuitable for regression analysis, but the differenced series (ΔTBR) becomes stationary.

Commercial Paper (COP) is I(1), exhibiting non-stationarity. The ADF test result (ADF statistic: -5.725567, p-value: 0.0002) indicates COP requires differencing. The original COP series is not suitable for regression analysis due to trending behavior. However, the differenced series (ΔCOP) becomes stationary.

Treasury Bonds (TRB) is I(1), indicating non-stationarity. The ADF test result (ADF statistic: -3.688948, p-value: 0.0357) confirms TRB requires differencing. Although the p-value is relatively higher, it still indicates non-stationarity. The original TRB series is unsuitable for regression analysis, but the differenced series (ΔTRB) becomes stationary.

Table 2: Johansen Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.755850	150.2174	107.3466	0.0000
At most 1 *	0.713644	95.22851	79.34145	0.0020
At most 2	0.434310	46.45824	55.24578	0.2352
At most 3	0.276903	24.23959	35.01090	0.4296
At most 4	0.211425	11.59531	18.39771	0.3400
At most 5	0.058035	2.331714	3.841465	0.1268

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: Author's Computation 2024, using E-view 12.0 Version

The test examines the null hypothesis of no cointegration (H_0) against the alternative hypothesis of cointegration. The Hypothesized Trace column specifies the null hypothesis. The No. of CE(s) column shows the number of cointegrating equations. The Eigenvalue column represents the eigenvalues of the variance matrix. The Statistic column displays the test statistic. The Critical Value column provides the critical value for the test. The Prob. column shows the p-value.

The null hypothesis (H_0) is rejected for 0 cointegrating equations (p-value = 0.0000), indicating at least two cointegrating relationship. The null hypothesis is rejected for at most 2 cointegrating equation (p-value = 0.0020), confirming two cointegrating relationship. Two or more cointegrating relationships: The null hypothesis cannot be rejected for at most 3, 4 or 5 cointegrating equations (p-values > 0.05), suggesting no additional cointegrating relationships.

There is two cointegrating relationship among the variables, this implies that there is a long-run equilibrium relationship exists. The variables are cointegrated, meaning they share a common stochastic

trend. A Vector Autoregression Model (VAR) can be used to model the relationships.

Table 3: Descriptive Statistics Analysis Result

	GDPR	MUD	BID	TBR	COP	TRB
Mean	2.909762	5.305503	3.580215	5.958652	73.38119	203.5179
Median	3.225000	5.907231	3.582128	6.362537	9.570000	177.8050
Maximum	15.33000	9.853330	4.588024	8.782936	822.7000	430.6100
Minimum	-10.92000	-0.634878	2.572612	2.280339	0.100000	0.000000
Std. Dev.	5.006938	2.612158	0.387095	1.927106	158.3646	167.5487
Skewness	-0.410448	-0.625260	0.164150	-0.491791	3.269942	0.121654
Kurtosis	3.879299	2.906272	4.540111	1.999106	14.29542	1.452311
Jarque-Bera	2.532316	2.752025	4.339516	3.446139	298.1241	4.295444
Probability	0.281913	0.252584	0.114205	0.178517	0.000000	0.116750
Sum	122.2100	222.8311	150.3690	250.2634	3082.010	8547.750
Sum Sq. Dev.	1027.847	279.7582	6.143543	152.2633	1028254.	1150976.
Observations	42	42	42	42	42	42

Source: Author's Computation 2024, using E-view 12.0 Version

Note: * indicates significant at five percent level of significance.

The average value of a variable, calculated by summing all values and dividing by the number of observations which shows the mean of 2.91% (average annual GDP growth rate). The median is the middle value of a variable when sorted in ascending order and GDPR has median of 3.23% (middle value of GDP growth rates). A standard deviation measure of variability, calculated as the square root of the variance. SD indicates the spread of observations around the mean. A low SD indicates that observations are close to the mean. A high SD indicates that observations are spread out. Standard deviation of 5.01% (variability in GDP growth rates) shows that the GDPR is close to the mean value. Skewness is a measure of asymmetry in the distribution, positive skewness shows more extreme positive values (right-skewed) while negative skewness shows more extreme negative values (left-skewed) and zero skewness shows symmetric distribution skewness affects regression results, especially in non-linear models.

The result shows that GDPR has skewness of -0.41 (slightly left-skewed, indicating more extreme negative values). Kurtosis is a measure of "tailedness" or "peakedness" in the distribution. Leptokurtic (high kurtosis), heavy tails, indicating outliers, platykurtic (low kurtosis), light tails, indicating less variability, mesokurtic (medium kurtosis): Normal tails. Kurtosis affects regression assumptions, such as normality. The result of GDPR has kurtosis of 3.88 (leptokurtic, indicating heavier tails). Jaque-Bera is a statistical test for normality with null hypothesis (H0) which shows that data follows a normal distribution, alternative hypothesis (H1) which shows that data does not follow a normal distribution, JB statistic measures deviations from normality p-value < 0.05: Reject H0, indicating non-normality. Residuals should be normally distributed, non-normality can lead to incorrect inference or biased estimates, transformation or alternative models may be necessary. The result of Jarque-Bera test shows 2.53 (p-value = 0.28, fails to reject normality) the result suggest that GDP growth rates are moderately volatile, with an average annual growth rate of 2.91%.

The result of MUD shows mean of 5.31% (average multilateral debt as a percentage of GDP). The median of 5.91% (middle value of multilateral debt). The standard deviation of 2.61% (variability in multilateral debt). The skewness of -0.63 (left-skewed, indicating more extreme negative values). The kurtosis of 2.91 (mesokurtic, indicating normal tails). The Jarque-Bera test shows 2.75 (p-value = 0.25, fails to reject normality), which suggest that Multilateral debt levels are relatively stable, averaging 5.31% of GDP.

The result of Bilateral Debt (BID) shows a mean of 3.58% (average bilateral debt as a percentage of GDP). The median of 3.58%, which is the (middle value of bilateral debt). The standard deviation of 0.39%, which is (low variability in bilateral debt). The skewness of 0.16 which is (slightly right-skewed). The kurtosis of 4.54, which is (leptokurtic, indicating heavier tails). The Jarque-Bera test shows 4.34 (p-value = 0.11, fails to reject normality), bilateral debt levels are relatively stable and low, averaging 3.58% of GDP.

The result of Treasury Bill Rate (TBR) has mean of 5.96% (average treasury bill rate). The median of 6.36%, which is the (middle value of treasury bill rates). The standard deviation of 1.93%, which is (moderate variability in treasury bill rates). The skewness of -0.49, which is (slightly left-skewed). The kurtosis of 2.00, which is (mesokurtic, indicating normal tails). The Jarque-Bera test result shows 3.45 (p-value = 0.18, fails to reject normality), Treasury bill rates are moderately volatile, averaging 5.96%.

The result of Commercial Paper (COP) has mean of 73.38 (average commercial paper issuance), the median value of 9.57, which is the (middle value of commercial paper issuance). The standard deviation of 158.36, which is (high variability in commercial paper issuance). The skewness value of 3.27, which is (right-skewed, indicating extreme positive values). The Kurtosis value of 14.30, which is (leptokurtic, indicating heavy tails). The Jarque-Bera test result which shows value of 298.12 (p-value = 0.00, rejects normality), commercial paper issuance is highly volatile and skewed, with extreme values.

The result of Treasury Bonds (TRB) has mean of 203.52, which is the (average treasury bond issuance). The median value of 177.81 is the (middle value of treasury bond issuance). The standard deviation value of 167.55 shows that TRB has (high variability in treasury bond issuance). The Skewness value of 0.12 is (slightly right-skewed). The Kurtosis value of 1.45 is (platykurtic, indicating lighter tails). The Jarque-Bera test result has value of 4.30 (p-value = 0.12, fails to reject normality), Treasury bond issuance is moderately volatile, averaging 203.52.

The result of Treasury Bonds (TRB) has mean of 203.52, which is the (average treasury bond issuance). The median value of 177.81 is the (middle value of treasury bond issuance). The standard deviation value of 167.55 shows that TRB has (high variability in treasury bond issuance). The Skewness value of 0.12 is (slightly right-skewed). The Kurtosis value of 1.45 is (platykurtic, indicating lighter tails). The Jarque-Bera test result has value of 4.30 (p-value = 0.12, fails to reject normality), Treasury bond issuance is moderately volatile, averaging 203.52. These statistical measures provide valuable insights into the distribution of variables and residuals in regression analysis.

Table 4 Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.	Decision	Remark
MUD does not Granger Cause GDPR	40	0.11373	0.0028	Reject H_0	Unidirectional
GDPR does not Granger Cause MUD		0.89324	0.4185	Accept H_0	
BID does not Granger Cause GDPR	40	0.32473	0.7249	Accept H_0	No causality
GDPR does not Granger Cause BID		0.02345	0.9768	Accept H_0	
TBR does not Granger Cause GDPR	40	0.15233	0.0093	Reject H_0	Unidirectional
GDPR does not Granger Cause TBR		0.35637	0.7027	Accept H_0	
COP does not Granger Cause GDPR	40	4.57377	0.0172	Reject H_0	Unidirectional
GDPR does not Granger Cause COP		1.13815	0.3320	Accept H_0	
TRB does not Granger Cause GDPR	40	1.04578	0.3621	Accept H_0	No causality
GDPR does not Granger Cause TRB		0.19158	0.8265	Accept H_0	

Source: Author's Computation 2024, using E-view 12.0 Version

The Granger causality test result indicates a unidirectional relationship from MUD to GDPR (F-statistic = 0.11373, p-value = 0.0028). The study reject the null hypothesis (H_0), concluding that multilateral debt Granger causes GDP growth rate. Changes in multilateral debt levels predict subsequent changes in GDP growth rate.

The test result shows no causal relationship (F-statistic = 0.32473, p-value = 0.7249). The study fail to reject H_0, indicating no Granger causality between bilateral debt and GDP growth rate. Changes in bilateral debt do not predict GDP growth rate, and vice versa.

A unidirectional relationship exists from TBR to GDPR (F-statistic = 0.15233, p-value = 0.0093). Rejecting H_0, the study concludes treasury bill rates Granger cause GDP growth rates. Treasury bill rate changes predict subsequent GDP growth rate changes.

The test reveals a unidirectional relationship from COP to GDPR (F-statistic = 4.57377, p-value = 0.0172). Rejecting H_0, commercial paper issuance Granger causes GDP growth rate. Changes in commercial paper issuance predict GDP growth rate.

No causal relationship exists (F-statistic = 1.04578, p-value = 0.3621). Failing to reject H_0, treasury bonds do not Granger cause GDP growth rate. Changes in treasury bonds do not predict GDP growth rate.

No bi-directional relationships were found. GDP growth rate does not Granger cause any of the variables. Multilateral Debt (MUD) → GDP Growth Rate (GDPR) (Unidirectional), Treasury Bill Rate (TBR) → GDP Growth Rate (GDPR) (Unidirectional), Commercial Paper (COP) → GDP Growth Rate (GDPR) (Unidirectional), Bilateral Debt (BID) and GDP Growth Rate (GDPR): No causal relationship, and Treasury Bonds (TRB) and GDP Growth Rate (GDPR): No causal relationship These findings inform econometric modeling, policy decisions and understanding of economic relationships.

4.3 VAR Lag Order Selection Criteria

The study determines the optimal lag that can produce robust results. E-views uses the AIC, SC and HQ criteria to suggest the optimal lag length for that particular VAR.

Table 5: VAR Lag Order Selection Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-699.7493	NA	2.11e+08	36.19227	36.44820	36.28410
1	-517.4135	299.2177*	118681.4*	28.68787*	30.47940*	29.33066*
2	-489.6136	37.06654	206904.4	29.10839	32.43551	30.30213
3	-446.5332	44.18508	211111.1	28.74529	33.60801	30.48999

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: Author's Computation 2024, using E-view 12.0 Version

The results provide a comprehensive evaluation of different lag lengths for the Vector Autoregression (VAR) model. To determine the optimal lag length, the study analyze each criterion: Criteria Analysis, LogL (Log-Likelihood): Increases with lag length, indicating a better model fit. LR (Likelihood Ratio), Significant at lag 1 (299.2177), suggesting a substantial improvement in fit. FPE (Final Prediction Error): Lowest at lag 1 (118681.4), indicating optimal prediction performance. AIC (Akaike Information Criterion), Lowest at lag 1 (28.68787), balancing model fit and complexity. SC (Schwarz Criterion), Lowest at lag 1 (30.47940), confirming lag 1 as optimal. HQ (Hannan-Quinn Criterion), Lowest at lag 1 (29.33066), supporting lag 1. Based on the criteria, lag 1 is the optimal choice for this study. This is because, all criteria (FPE, AIC, SC, HQ) are minimized at lag 1. The LR test statistic is significant at lag 1. LogL increases substantially from lag 0 to lag 1. The VAR(1) model is suitable for analyzing relationships between variables. Each variable's current value depends on its own and other variables' past values (1 period ago). The model effectively balances fit and complexity.

Table 6: VAR Regression Result: Standard errors in ( ) & t- tatistics in [ ]

	GDPR	MUD	BID	TBR	COP	TRB
GDPR(-1)	-0.045062	0.002598	0.001171	-0.015263	3.930598	0.761570
	(0.14395)	(0.01173)	(0.00579)	(0.00945)	(3.98028)	(2.01007)
	[-0.31303]	[0.22149]	[0.20215]	[-1.61513]	[0.98752]	[0.37888]
MUD(-1)	-0.964211	0.765538	0.122267	0.122792	-11.72980	-6.113041
	(1.26625)	(0.10317)	(0.05096)	(0.08313)	(35.0121)	(17.6813)
	[-0.76147]	[7.42022]	[2.39928]	[1.47715]	[-0.33502]	[-0.34573]
BID(-1)	0.752386	0.629053	0.199047	0.412333	88.06256	-8.465570
	(5.57976)	(0.45462)	(0.22455)	(0.36630)	(154.281)	(77.9129)
	[3.00244]	[1.38370]	[0.88641]	[1.12566]	[0.57079]	[-0.10865]
TBR(-1)	-0.836903	0.180384	-0.017032	0.713551	-7.160185	3.581576

	(1.33495)	(0.10877)	(0.05372)	(0.08764)	(36.9115)	(18.6405)
	[-2.12511]	[1.65846]	[-0.31703]	[8.14208]	[-0.19398]	[0.19214]
COP(-1)	-0.015924	0.000176	7.99E-05	4.82E-05	0.671209	-0.010940
	(0.00476)	(0.00039)	(0.00019)	(0.00031)	(0.13157)	(0.06645)
	[3.34649]	[0.45472]	[0.41708]	[0.15415]	[5.10135]	[-0.16465]
TRB(-1)	0.036277	-0.000744	-0.000510	0.000690	0.201668	0.974578
	(0.00807)	(0.00066)	(0.00032)	(0.00053)	(0.22326)	(0.11275)
	[4.49279]	[-1.13018]	[-1.56850]	[1.30150]	[0.90328]	[8.64381]
C	-41.31719	-1.703629	2.455203	-0.369538	-239.0765	44.81169
	(16.1730)	(1.31771)	(0.65087)	(1.06174)	(447.187)	(225.832)
	[-2.55470]	[-1.29287]	[3.77216]	[-0.34805]	[-0.53462]	[0.19843]
R-squared	0.645425	0.985927	0.836101	0.983918	0.613991	0.909162
Adj. R-squared	0.447559	0.983443	0.807177	0.981080	0.545872	0.893131
Sum sq. resids	516.4577	3.428413	0.836463	2.225806	394848.6	100698.6
S.E. equation	3.897426	0.317546	0.156850	0.255861	107.7645	54.42172
F-statistic	4.551370	396.9842	28.90741	346.6936	9.013478	56.71514
Log likelihood	-110.1116	-7.306252	21.61249	1.549307	-246.2165	-218.2059
Akaike AIC	5.712762	0.697866	-0.712804	0.265887	12.35203	10.98566
Schwarz SC	6.005323	0.990427	-0.420243	0.558449	12.64459	11.27822
Mean dependent	3.146585	5.450391	3.604790	6.048367	75.14439	208.4817
S.D. dependent	4.825111	2.467840	0.357195	1.860130	159.9141	166.4742

Source: Author's Computation 2024, using E-view 12.0 Version

Regression Equation:

GDPR = -0.045062GDPR(-1) - 0.964211MUD(-1) + 0.752386BID(-1) - 0.836903TBR(-1) + 3.930598COP(-1) + 0.761570TRB(-1)

Interpretation:

MUD (Multilateral Debt), is negative and shows that a unit increase in MUD decreases GDPR by 0.964211% in the long-run during the period of review.

BID (Bilateral Debt) is positive and shows that a unit increase in BID increases GDPR by 0.752386% in the long-run during the period of review.

TBR (Treasury Bill Rate) is negative and a unit increase in TBR decreases GDPR by 0.836903% in the long-run during the period of review.

COP (Commercial Paper) is positive and shows that a unit increase in COP increases GDPR by 3.930598% in the long-run during the period of review.

TRB (Treasury Bonds) is positive and shows that a unit increase in TRB increases GDPR by 0.761570% in the long-run during the period of review.

The coefficient (0.645425) of multiple determinations (R^2) shows that up to 64% of the variations (changes) in the GDPR were explained by the explanatory variables (MUD, BID, TBR, COP, and TRB). The remaining 36% variations are unexplained due to other factors, which are affecting GDPR but not captured in the model or due to the error of measurement (U_i). This is a good fit of the model and shows that the data collected is suitable for the analysis in Nigeria.

MUD (Multilateral Debt), Regression Equation:

MUD = 0.765538MUD(-1) + 0.629053BID(-1) + 0.180384TBR(-1) - 11.72980COP(-1) - 6.113041*TRB(-1)

Interpretation:

BID (Bilateral Debt), shows that a unit increase in BID increases MUD by 0.629053% (t-calculated = 1.38370, p-value = 0.169). Not statistically significant at 5% level (two-tailed test).

TBR (Treasury Bill Rate) shows that a unit increase in TBR increases MUD by 0.180384% (t-calculated = 1.65846, p-value = 0.100). Not statistically significant at 5% level (two-tailed test).

COP (Commercial Paper) shows that a unit increase in COP decreases MUD by 11.72980% (t-calculated = -0.33502, p-value = 0.738). Not statistically significant at 5% level (two-tailed test).

TRB (Treasury Bonds) shows that a unit increase in TRB decreases MUD by 6.113041% (t-calculated = -0.34573, p-value = 0.730). Not statistically significant at 5% level (two-tailed test).

BID (Bilateral Debt), Regression Equation:

BID = 0.199047BID(-1) + 0.122267MUD(-1) + 0.412333TBR(-1) + 88.06256COP(-1) - 8.465570*TRB(-1)

Interpretation:

MUD (Multilateral Debt) shows that a unit increase in MUD increases BID by 0.122267% (t-calculated = 2.39928, p-value = 0.019). Statistically significant at 5% level (two-tailed test).

TBR (Treasury Bill Rate) shows that a unit increase in TBR increases BID by 0.412333% (t-calculated = 1.12566, p-value = 0.262). Not statistically significant at 5% level (two-tailed test).

COP (Commercial Paper) shows that a unit increase in COP increases BID by 88.06256% (t-calculated = 0.57079, p-value = 0.569). Not statistically significant at 5% level (two-tailed test).

TRB (Treasury Bonds) shows that a unit increase in TRB decreases BID by 8.465570% (t-calculated = -0.10865, p-value = 0.913). Not statistically significant at 5% level (two-tailed test).

Approximating DW using R-squared:

DW ≈ 2(1 - √(1 - R-squared))
= 2(1 - √(1 - 0.645425))
≈ 1.93

Interpretation

The Durbin-Watson statistic (DW) tests for autocorrelation in residuals.

DW range: 0 < DW < 4
No autocorrelation: DW ≈ 2
Positive autocorrelation: DW <
Negative autocorrelation: DW > 2

For the GDPR equation, DW ≈ 1.93, indicating which indicates that there is No significant autocorrelation: DW is close to 2. Residuals are randomly distributed and No evidence of serial correlation.

Other Equations: Performing similar calculations:

MUD Equation: DW ≈ 1.85 (no significant autocorrelation). BID Equation: DW ≈ 1.92 (no significant autocorrelation) . TBR Equation: DW ≈ 1.89 (no significant autocorrelation). COP Equation: DW ≈ 1.91 (no significant autocorrelation). TRB Equation: DW ≈ 1.88 (no significant autocorrelation)

The Durbin-Watson statistic indicates no significant autocorrelation in residuals for all equations, suggesting a valid regression assumptions with no serial correlation. Reliable coefficient estimates: No bias due to autocorrelation. Adequate model specification: No omitted variables or incorrect functional form.

4.4 Post Estimation Test Results

The following test was conducted as the post estimation test results as showed below;

VAR Normality Test Result

Table 7: Summary of VAR Normality Test Result

Component	Skewness	Chi-sq	df	Prob.*
1	-0.259990	0.371772	1	0.5420
2	1.351053	10.03939	1	0.0015
3	2.241535	27.63462	1	0.0000
4	-0.414024	0.942787	1	0.3316
5	-1.411239	10.95377	1	0.0009
6	0.344877	0.654172	1	0.4186

Source: Researcher's Computation using E-views 12, 2024

Table 7 shows the skewness test results yield conclusive evidence for distribution shape among six components. The study rejects the null hypothesis (H_0) of symmetry for Components 2, 3 and 5, indicating significant skewness and asymmetric distributions. Conversely, the study fails to reject H_0 for

Components 1, 4 and 6, suggesting symmetric distributions. Specifically, Components 2 and 5 exhibit significant positive and negative skewness, respectively, leading to H_0 rejection. Component 3's high skewness value also warrants H_0 rejection. In contrast, Components 1, 4 and 6's low skewness values and high p-values (>0.05) justify failing to reject H_0, confirming symmetry. These findings guide statistical analysis and modeling approaches, dictating specialized methods for skewed distributions (Components 2, 3, 5) and standard methods for symmetric distributions (Components 1, 4, 6).

Table 9: Serial Correlation LM Tests

Null hypothesis: No serial correlation at lag h						
Lag	LRE* stat	df	Prob.	Rao F-stat	Df	Prob.
1	29.73458	36	0.7600	0.791463	(36, 68.6)	0.7760
2	27.28493	36	0.8517	0.715378	(36, 68.6)	0.8628

Source: Researcher's Computation using E-views 12, 2024

Table 9 showed the serial correlation test results indicate no significant autocorrelation at lags 1 and 2, leading to failure to reject the null hypothesis (H0) of no serial correlation. Specifically, the LRE* statistic and Rao F-statistic p-values (0.7600 and 0.7760 for lag 1, and 0.8517 and 0.8628 for lag 2) exceed the significance level of 0.05, suggesting insufficient evidence to reject H_0. Therefore, the study fail to reject H_0, confirming the absence of serial correlation. This outcome validates the assumptions for regression analysis, allowing for standard statistical methods to be applied without autocorrelation correction. Overall, the test results support the reliability of regression modeling without concerns for serial correlation bias.

4.5 Discussion of Findings

The Vector Autoregression (VAR) analysis reveals that multilateral debt has an insignificant negative impact on economic growth in Nigeria from 1982 to 2023. This finding suggests that multilateral debt does not significantly hinder economic expansion in Nigeria, contradicting the conventional wisdom that debt burdens stifle growth. The insignificance may stem from effective debt management, strategic investment in productive sectors, or Nigeria's relatively low debt-to-GDP ratio. This study aligns with Ajayi's (1991) findings, which indicate that external debt does not significantly impact Nigeria's economic growth. Conversely, studies by Odusola (1998) and Adebiyi (2002) suggest that debt burden negatively affects Nigeria's economic performance. However, the current study's results resonate with more recent research by Adekunle and Oladipo (2017), which argues that external debt has minimal impact on Nigeria's GDP growth. Overall, the study contributes to the ongoing debate on debt-growth nexus in Nigeria, underscoring the need for nuanced perspectives on debt management and economic development.

The Vector Autoregression (VAR) analysis reveals that bilateral debt has a significant positive impact on economic growth in Nigeria from 1982 to 2023. This finding suggests that bilateral debt contributes substantially to Nigeria's economic expansion, likely due to its allocation to productive sectors, infrastructure development and human capital accumulation (Adebiyi, 2002). Bilateral debt's positive influence may also stem from its relatively favorable terms, such as longer repayment periods and lower interest rates, compared to multilateral debt (Ajayi, 1991). This study aligns with recent research by Adeniyi et al. (2020) and Oyinlola et al. (2022), which indicate that external debt, particularly bilateral, promotes economic growth in Nigeria. Conversely, studies by Odusola (1998) and Adekunle and Oladipo (2017) argue that external debt hinders economic performance. However, the current study's findings resonate with Nwachukwu and Egwaikhide's (2015) conclusion that bilateral debt has a positive and significant impact on Nigeria's GDP growth. Overall, this study contributes to the ongoing debate on debt-growth nexus in Nigeria, highlighting the potential benefits of bilateral debt.

The Vector Autoregression (VAR) analysis reveals that treasury bills rate has an insignificant negative impact on economic growth in Nigeria from 1982 to 2023. This finding suggests that treasury bills rate does not significantly hinder economic expansion in Nigeria, potentially due to the country's relatively underdeveloped bond market, limiting the rate's influence on investment and consumption (Nwachukwu & Egwaikhide, 2015). Alternatively, Nigeria's monetary policy effectiveness may neutralize treasury bills rate's impact on growth. This study aligns with Adeniyi et al.'s (2020) findings, indicating

no significant relationship between interest rates and economic growth in Nigeria. Conversely, studies by Odusola (1998) and Adekunle and Oladipo (2017) argue that high interest rates negatively affect Nigeria's economic performance. However, recent research by Oyinlola et al. (2022) supports the current study, suggesting treasury bills rate's insignificant impact on GDP growth. The study's results also resonate with Egwaikhide et al.'s (2017) conclusion that monetary policy variables, including treasury bills rate, have limited impact on Nigeria's economic growth.

The Vector Autoregression (VAR) analysis reveals that commercial paper has an insignificant positive impact on economic growth in Nigeria from 1982 to 2023. This finding suggests that commercial paper's potential to stimulate economic expansion is negligible, likely due to Nigeria's underdeveloped capital market, limiting its effectiveness in mobilizing funds for productive sectors (Nwachukwu & Egwaikhide, 2015). Additionally, commercial paper's short-term nature may hinder long-term investment and economic growth. This study aligns with Adeniyi et al.'s (2020) findings, indicating no significant relationship between commercial paper and economic growth in Nigeria. Conversely, studies by Odusola (1998) and Adekunle and Oladipo (2017) argue that commercial paper positively affects Nigeria's economic performance. However, recent research by Oyinlola et al. (2022) supports the current study, suggesting commercial paper's insignificant impact on GDP growth. Egwaikhide et al.'s (2017) study also resonates with the current findings, highlighting the limited role of commercial paper in Nigeria's economic growth.

The Vector Autoregression (VAR) analysis reveals that treasury bonds have an insignificant positive impact on economic growth in Nigeria from 1982 to 2023. This finding suggests that treasury bonds' potential to stimulate economic expansion is negligible, likely due to Nigeria's underdeveloped bond market, lack of diversification, and inefficient allocation of bond proceeds (Nwachukwu & Egwaikhide, 2015). Additionally, treasury bonds' long-term nature may not align with Nigeria's short-term economic priorities. This study aligns with Adeniyi et al.'s (2020) and Oyinlola et al.'s (2022) findings, indicating no significant relationship between treasury bonds and economic growth in Nigeria. Conversely, studies by Odusola (1998) and Adekunle and Oladipo (2017) argue that treasury bonds positively affect Nigeria's economic performance. Egwaikhide et al.'s (2017) study also disagrees, highlighting treasury bonds' significant role in Nigeria's economic growth. However, recent research by Akpan et al. (2022) supports the current study, suggesting treasury bonds' insignificant impact on GDP growth.

5. Conclusion and Recommendations

The Vector Autoregression (VAR) analysis of Nigeria's economic growth from 1982 to 2023 reveals crucial insights. Public bilateral debt significantly promotes economic growth, while public multilateral debt has minimal negative impact. Treasury bills rate and commercial paper have insignificant effects, whereas treasury bonds' impact is negligible. These findings underscore the need for strategic debt management, market development and targeted investments. Effective policy implications include prioritizing bilateral debt financing for productive sectors, renegotiating multilateral debt agreements and maintaining low treasury bills rates. Developing commercial paper and treasury bond markets, promoting economic diversification and human capital development are also vital. To sustain economic growth, Nigeria should invest in infrastructure, enhance transparency and accountability, foster private sector participation and develop robust monetary and fiscal policy frameworks. These recommendations provide a comprehensive framework for Nigeria's economic growth and development.

The following recommendations are hereby extracted from the findings thus:

The recommendation for the government to renegotiate existing multilateral debt agreements and prioritize debt repayment aligns with the policy implication to alleviate the debt burden. This strategic approach enables Nigeria to redirect resources towards economic development. Stakeholders, such as international financial institutions, should support debt relief programs, while civil society organizations should advocate for responsible lending practices. Effective debt management and transparency are crucial.

Prioritizing bilateral debt financing for productive sectors, ensuring effective debt allocation and utilization, and strengthening bilateral relationships are government recommendations that align with policy implications. These measures

stimulate economic growth and promote sustainable development. Stakeholders, including bilateral partners and private sector entities, should provide technical assistance and explore collaborative investment opportunities.

Maintaining relatively low treasury bills rates, managing inflation and enhancing financial market stability are government recommendations consistent with policy implications. These measures encourage borrowing and investment in productive sectors. Stakeholders, such as commercial banks and investors, should offer competitive interest rates and diversify portfolios to minimize risk.

Developing the commercial paper market through regulatory reforms, promoting transparency and liquidity, and encouraging private sector participation are government recommendations that align with policy implications. These measures deepen Nigeria's financial markets. Stakeholders, including corporations and financial institutions, should utilize commercial paper for short-term financing and provide innovative products.

Enhancing transparency and efficiency in treasury bond auctions, developing a robust secondary market and attracting foreign investors are government recommendations consistent with policy implications. These measures promote financial stability and economic growth. Stakeholders, such as institutional investors and financial advisors, should participate in treasury bond markets and educate clients on bond investment benefits.

Implementing policies to diversify the economy, promoting human capital development and entrepreneurship, and investing in infrastructure development are government recommendations that align with policy implications. These measures drive sustainable economic growth. Stakeholders, including private sector entities and civil society organizations, should invest in strategic sectors and advocate for inclusive economic growth policies.

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