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Analysis of Public Debt and Revenue Allocation of Various States in Nigeria

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ABSTRACT

This study determined the effect of public debt on revenue allocation of various states in Nigeria. The study adopted *Ex Post Facto* research design. Data were extracted from Federal Account Allocation Committee (FAAC) from 2020 to 2022. Using regression analysis, the study established that does not significantly influence debt of states in Nigeria. Therefore, this study recommended that the federal government should set a benchmark for debt accumulation at the state level based on their ability to generate revenue internally and also assess national debt management limits across the country to promote resource management.

Keywords: Public debt, FAAC and State revenue allocation

Introduction

The federal allocation is an important expression of the tax structure of states using a federal system of government. That is because the federal appropriation is approximately the amount distributed to each level of government (federal, provincial/state and regional/local government) of revenue streams that accrue to the government from resources collectively owned and managed by the federal government. union account (Ricardo and Eme, 2015). For example, Nigeria has three levels of government with a federal account balance divided into federal appropriations. These levels are Federal Government, State Government (including FCT) and Local Government. According to fiscal federalism, responsibility (in the form of national expenditure) and resources (federal income) are divided between the levels of government of the countries in which it operates. In this regard, the federal appropriation indicates the amount that the state levels of government receive to support the achievement of the subdivision.

 The increase in public debt in many developing countries has attracted global attention. this experience of falling oil prices, fluctuating exchange rates, rising interest rates, etc. negatively affected the economies of developing economies around the world, especially Nigeria (Favour, Ideniyi, Oge and Charity, 2017). Debt or loans have been described as an important tool of fiscal policy available to the government to finance the development of the country. Debt is used to finance expenditures that ultimately increase productivity and improve economic growth (Muhammad, Ruhaini, Nathan, & Arshad, 2017). Countries borrow when they are unable to generate enough domestic savings for their productive activities. The purpose of the borrowed funds is to accelerate economic growth and development of the country, which will raise the standard of living of citizens. Governments usually borrow by issuing securities, government bonds and bills. Countries could also borrow directly from supranational organizations such as the World Bank and international financial institutions (Essien, Agboegbulem, Mba, & Onumonu, 2016). Although studies have shown the negative effect of public debt, usually at a certain level, on economic growth in most developing countries (Panizza and Presbitero, 2012); Reinhart and Rogoff, 2010). A budget deficit shows that the expenses of the public sector are high compared to their income; public debt has been found to fill that gap (Mankiw, 2013). Public debt, which includes both domestic (domestic) and external debt, is taken into account when government revenues are insufficient to cover expected expenditures (Rahman, 2012). The decline in federal allocations to states in Nigeria has continued to affect the ability of states to effectively manage their debts. Debt over burden was a common feature in many states in Nigeria. Adegoke (2017) argued that the inadequacy of federal government financial allocations, especially from the sale of petroleum and other revenues collected by the federal government, has increased Nigeria's debt profile. Ojo (2017) effectively captures this scenario when he reveals that the ability of allied entities to manage their debt profile has been weakened due to reduced revenues from the centre. Debt management depends on the adequacy of the federal allocation. Inadequate distributions due to insufficient income could leave the government at the mercy of another round of debt, which is necessary to meet government obligations. Adigun and Ojo (2019) note that many states may be left with nothing after debt reduction due to reduced federal allocations, requiring state debt restructuring or negotiation.

Ideally, a federal system should be a division of power between levels of government in generating revenue and providing public services to the people. According to Anyafo (1996, cited in Dang, 2013), a federal system is a system of government where each level of government has the power to earn and spend revenue. In other words, the levels of government are independent of each other in terms of revenue generation and expenditure activities. But in

Nigeria, the federal government allocates money to the federal government, state government including the Federal Capital Territory and local government as federal appropriations. That federal allocation became the largest source of revenue for most states of the federation, thus the internally generated revenue was relatively low (Olowolaju, Ajibola, Ishola, & Falayi, 2014). Saifullahi and Abubakar (2013) confirmed this in their study that federal devolution has thus made most of the states of the federation largely dependent on monthly revenue from the federal government to meet the expenses of their states. Nigeria's failure to mobilize domestic resources to meet the country's regular fiscal deficits experienced in the country for years has resulted in continued reliance on public debt, especially external debt, often characterized by adverse credit conditions, exchange rate volatility and possible default, creating an excessive debt with negative implications for the economic growth of Nigeria (Akinwunmi and Adekoya, 2018). Previous studies characterize federal revenue allocation and debt management in Nigeria, studies such as; Olaoye Akintayo and Yakubu (2022); Olaoye and Akintayo (2022) examine the impact of federal allocation on debt management in Nigeria. Opara, Nzotta and Kanu (2021) examine the impact of domestic public debt on economic growth in Nigeria. Imoisi (2020) assesses the relationship between fiscal policy and public debt sustainability in Nigeria using data collected between 1970 and 2019. Ajayi and Edowusi (2020); Owolabi and Awoyinka (2020); Ohiomu and Oluyemi (2018); Ajayi, Okunlola, Nnwanji, Otekunrin, Oladipo and Awonusi (2016) examined the impact of public debt on economic growth in Nigeria. These studies reflect little or no attention in many states across the country, Nigeria. Therefore, this study specifically examines the relationship between public debt and income distribution in the 36 states of Nigeria.

Review of Related Literature

The growth of public debt, especially in developing countries, has been alarming since the beginning of the 21st century. This is undoubtedly because the increase in public debt in any country can harm its economic growth, especially if not properly managed (Favor et al., 2017). However, the national debt increases when the government constantly suffers from a budget deficit. In other words, the total amount of public debt at all levels is called public debt; such loans can be taken for services such as pension payments to its employees or from a government contract under which the debt is owed (Favor et al., 2017). The government can also borrow by issuing government bonds, bonds, securities and directly from international financial institutions. Loan funds are generally used to increase productivity and develop human capital by providing employment opportunities, providing adequate infrastructure and expanding opportunities for private investment, thereby increasing economic growth and development. Although national public debt peaked in the 1980s, a significant number of countries with high public debt received financial support from international financial groups. This aid aims to increase productivity in less developed countries, reduce external debt, improve people's living standards and ultimately increase economic growth in Nigeria (Idris and Ahmad, 2017). Public Debt, also known as national debt or the total amount of borrowings of all public sector government units such as federal, state and local governments (Idenyi, Igberi and Anoke, 2016). National debt is described as the total amount of loans obtained by the governing bodies of the country; this includes properties owned by private organizations, public bodies, foreign authorities, etc. The debate on national debt takes into account future pension payments, national debts, and goods and services obtained through government loans. Idenyi, Igberi and Anoke (2016) asserted that public debt is one of the many approaches to public sector financing; although governments can instruct the central bank to create and release funds to avoid paying interest on government debt, this method is supposed to control interest costs but not get rid of debt. In fact, the authors argued that the end result of such activity is hyperinflation. Government can also raise taxes to service its debt (Idenyi, Igberi & Anoke, 2016).

The federal appropriation is generally the income in the federal account based on the collective resources of the nation (especially natural resources such as oil) and distributed between the three levels of government, federal, state, and local governments. Dang (2013) explained the federal allocation as the amount that is divided among the three levels of government to meet government expenditures at each level of government. For state government, the federal appropriation, also called the statutory appropriation, is the portion of federal revenue that the federal government distributes to the state government. According to Olaoye and Bankole (2019), federal appropriation is an amount received by the state government from the federal government to assist the state government in meeting its fiscal obligations under the jurisdiction of the state. Federal appropriation is an amount distributed from the federal account to the state government and other levels to support national unity and rapid growth in all states, local governments and the federal government, based on revenues earned from state resources and credited to the federal government (Ohiomu & Oluyemi, 2019).

Empirical studies

Olaoye Akintayo and Yakubu (2022) investigated the impact of federal allocation on debt management in Nigeria. Both descriptive and inferential Auto-Regressive Distributed Lag (ARDL) statistics were used. Secondary data for the period 1990-2021 was collected from reliable government sources for various variables in the study. The ARDL result obtained showed that there was a significant positive relationship between federal distribution and debt management in the long run. The result further revealed that the determinants of debt management were as follows; federal distribution, population size, interest rate, outstanding debt and corruption. Olaoye and Akintayo (2022) investigated the impact of federal allocations on public debt management in Nigeria. Specifically, the study analyzed both the static and dynamic effects of federal allocation on debt management in 18 states selected from the six geopolitical zones of Nigeria. The data used in the study were obtained from the Nigerian Debt Management Agency; FAAC distribution reports and statistics office for 10 years covering 2010-2019. Data were analyzed using a two-step generalized method of moments (GMM). The result revealed that federal allocation has an insignificant negative static effect on debt-IGR ratio (-0.6027023, $p > 0.05$); an insignificant positive dynamic effect on the debt to IGR ratio (1.238224, p andgt; 0.05), while the lagged measure of debt management has a significant effect on its current value (0.5479158, p andgt; 0.05). Opara, Nzotta and Kanu (2021) examine the impact of domestic public debt on economic growth in Nigeria. The two regression models used in the study included private investment (credit to the private sector) and human development index as dependent variables, household debt servicing, federal household debt and state household debt as explanatory variables. The survey data spanned the years 1981 to 2018 and were analyzed using

Johansen's cointegration approach and ordinary least squares. The result of the study showed that there is no long-term relationship between the variables of the two models used. Debt management has a negative effect on the dependent variables. The result also showed that federal and state domestic debt had a positive effect on private investment and human development index, but the effect of federal domestic debt on human development index was insignificant. Imoisi (2020) assesses the relationship between fiscal policy and public debt sustainability in Nigeria using data collected between 1970 and 2019. The extracted data was analyzed using an ARDL (Autoregressive Distributed Lag) related test cointegration method, which showed that there is a long-run relationship between the variables. The result also showed that the budget deficit has a significant positive effect on the national debt both in the long term and in the short term. However, the result showed that the interest rate, inflation and real GDP did not have a significant impact on the national debt. Ajayi and Edowusi (2020) examined the impact of public debt on economic growth in Nigeria. Specifically, the study determined the impact of household debt on economic growth in Nigeria; assesses the impact of foreign debt on Nigeria's economic growth and analyzes the relationship between national debt and Nigeria's economic growth. During the study, secondary time series data were collected for 37 years (1982-2018). Data collected in the study were evaluated using descriptive statistics, unit root test, Johansen cointegration test and vector error correction model. The results of the study suggest that external debt has a negative effect on Nigeria's economic growth in both the long and short term, and domestic debt has a positive effect on Nigeria's economic growth in the long and short term. Owolabi and Awoyinka (2020) investigated the federal government's forced allocation and infrastructural development in Ogun State, Nigeria. The study used environmental development, education sector development, agricultural sector development, and health sector development as proxies for infrastructure development, and national compulsory allocation as an explanatory variable. The data of the study covered the years 2000-2018, and the analysis used the cointegration method of the Autoregressive Distributed Lag (ARDL) correlation test. The result showed that federal statutory allocation has a significant negative impact on mediating infrastructure development in Ogun State. Olaoye and Bankole (2019) examine statutory allocation and budget execution in southwestern Nigeria. The study used data from the period 2008-2017 and was analyzed using static panel regression analysis and Granger causality test. The result revealed that the positive effect of compulsory appropriations on realized costs is small. The findings of the study also showed that there is no causal relationship between statutory allocations and actual expenditure in the South West states of Nigeria. Ohiomu and Oluyemi (2018) examined the structure and pattern of income distribution in Nigeria and highlighted its implications for the sustainable development of the country. The paper uses an error correction model (ECM) methodology with diagnostic tests of the variables using Johansen cointegration tests to derive robust policy recommendations using gross domestic product (GDP) and income distribution across three levels as dependent variables. Government, inflation and interest rate as independent variables, the findings of the study show that income distribution and other variables have a significant relationship with economic growth in Nigeria. Chukwu, Ogbonnaya-Udo and Ubah (2017) investigated the impact of public debt on public investment in Nigeria. The linear model used in the study included fixed investments as a dependent variable, public debt, public debt to GDP, budget deficit as an explanatory variable. The research used data from 1985-2018, which were analyzed using the ARDL correlation test cointegration approach. The result of the study showed that there is a long-term relationship between the variables. The result also showed that the effect of national debt on state investments is small both in the short term and in the long term. Sa'ad, Umar, Waziri and Maniam (2017) investigated the external debt burden and its determinants in Nigeria. The model used included foreign debt as a dependent variable, consumer price index, interest rate, gross domestic product and money supply as explanatory variables. Data were collected between 1973 and 2013 and analyzed using the ARDL correlation test cointegration method. The result showed that the consumer price index and gross domestic product had a negative effect on external debt, but the effect of the consumer price index was small. The result also showed that interest rate and money supply had a positive and small effect on external debt. Ajayi, Okunlola, Nnwanji, Otekunrin, Oladipo and Awonusi (2016) conducted a comparative analysis of public debt management and economic growth in Nigeria using the 1983-2015 period. the data of the year. The study used real gross domestic product as the dependent variable, external debt balance, domestic debt balance, external debt servicing, domestic capital formation and labor force as explanatory variables. The study analyzed Johansen's co-integration approach, which showed a long-term relationship between public debt management and economic growth during military rule, but little effect during civilian rule. Therefore, the study recommended the acquisition of public debt for manufacturing activities and development projects favorable to the economic growth of the country. Essien, Agboegbulem, Mba and Onumonu, 2016) examine the impact of public sector borrowing on prices, interest rates and output in Nigeria. It used Vector Autoregressive framework, Granger causality test, impulse response and variance decomposition of different innovations to examine the effects. It argued that a shock to the external debt position would raise the prime lending rate, but with a delay. However, the amount of external and internal debt did not significantly affect the general price level and production during this study. Odo, Igberi and Anoke (2016) studied public debt and public sector expenditure in Nigeria. The study used a model that included total national debt as the dependent variable, government capital expenditures, public sector expenditures, and interest rates as explanatory variables. The data used covered the years 1980 to 2015 and were estimated using the Johansen cointegration method, which showed that government capital and current expenditure had a significant positive effect on public debt. The result also showed a unidirectional relationship between public sector expenditure components and national debt. Therefore, the study concluded that the government incurs debt due to the budget deficit. Ojide and Ogbodo (2015) assessed the distribution of union accounts in Nigeria. In particular, the study assessed evidence of statistical growth in federal government, state government allocations and state government internal revenue in Nigeria. The research used data from the period 1970-2009. The study analyzed the data using regression and correlation analysis. The study found that the share of federal government appropriations and internally generated revenue of state governments has a positive and significant relationship with growth, while the share of state governments has a negative and significant relationship with growth.

Methodology

This study utilized *Ex-Post Facto* research design. The choice of the design is based on the idea that the method provides discovery on trends and pattern of change. The study employed time series data on federal allocation covering a period 2020 to 2022 from thirty six (36) states in Nigeria, and FCT Abuja.

Data extracted from Federal Account allocation Committee (FAAC). The data collected includes; Gross revenue allocation and external debts from each states

Model Specification

This study adapted the model of Odoh, Igberi and Anoke (2016) which specified public debt as a function of h government capital expenditure, government recurrent expenditure and interest rate as explanatory variable which were specified as:

$PD = b0 + b1GCEX + b2GREX + b3INTR + e$ -   -   -   - (i)

Where;

PD is Public Debt,

GCEX =Government Capital Expenditure,

GREX = Government Recurrent Expenditure

INTR as interest rate,

b's represents coefficients of estimation and

e = Stochastic error term

This study modified equation (i) by specifying debt (measured in terms of public debt), and gross federal allocation,

$EXD = \delta 0 + \delta_1 FRA it + u$ − − − − − − − -   --   -   -   -   (ii)

Where;

PDT = Public Debt

FRA = Federal revenue allocation

δ's = coefficients of estimates

u stands for stochastic error term

Data Analysis and Results

Table 1: Descriptive Statistics

	FRA	PDT
Mean	3.10E+09	7794748.
Median	2.78E+09	0.000000
Maximum	6.13E+09	31178991
Minimum	7.29E+08	0.000000
Std. Dev.	2.26E+09	15589496
Skewness	0.463776	1.154701
Kurtosis	1.969180	2.333333
Jarque-Bera	0.320490	0.962963
Probability	0.851935	0.617867
Sum	1.24E+10	31178991
Sum Sq. Dev.	1.54E+19	7.29E+14
Observations	4	4

Table 1 shows the mean (average) for each of the variables, their maximum values, minimum values, standard deviation and Jarque-Bera (JB) Statistics (normality test). The results in table 1 provided some insight into the nature of the public debts among the thirty six states and FCT in Nigeria that were used in this study.

It was observed that on the average over the three (3) years periods (2020-2022) were characterized by positive external debt (7794748.0). Also, the large difference between the maximum and minimum value of the revenue allocation of various states show that the debts are not dominated by more debt.

In this table, the Jarque-Bera (JB) which test for normality or the existence of outliers or extreme values among the variables shows that most of the variables are normally distributed at 5% level of significance. This means that any variable with outlier are not likely to distort our conclusion and are therefore reliable for drawing generalization.

Test of Hypothesis

Ho: Public debt has no significant effect on revenue allocation of states in Nigeria.

Dependent Variable: PDT
Method: Least Squares
Date: 12/28/23   Time: 11:18
Sample: 2020 2023
Included observations: 4

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7255613.	17874028	0.405931	0.7241
ALC	0.000174	0.004868	0.035674	0.9748

R-squared	0.000636	Mean dependent var		7794748.
Adjusted R-squared	0.499046	S.D. dependent var		15589496
S.E. of regression	19087083	Akaike info criterion		36.67377
Sum squared resid	7.29E+14	Schwarz criterion		36.36692
Log likelihood	71.34755	Hannan-Quinn criter.		36.00041
F-statistic	0.001273	Durbin-Watson stat		1.379607
Prob(F-statistic)	0.974783			

Source: E-view 9.0 statistical package

Interpretation of Regression Result

In Table 2, R-squared and adjusted Squared values were (0.00) and (0.50) respectively. This indicates that all the independent variable explain about 50% of the systematic variations in revenue allocation over the ten years periods (2020-2022). Table 2 reveals an adjusted R^2 value of 0.50. The adjusted R^2, which represents the coefficient determinations imply that 50% of the total variation in the dependent variable (revenue allocation) in Nigeria explained by the explanatory variable (public debt). The adjusted R^2 of 50% did not constitute a problem to the study because the F- statistics value of 0.001273 with an associated Prob.>F = 0.975 indicates that the model is fit to explain the relationship expressed in the study model and further suggests that the explanatory variable is properly selected and used. The value of adjusted R^2 of 50% also shows that 50% of the variation in the dependent variable is explained by other factors not captured in the study model.

Test of Autocorrelation: using Durbin-Waston (DW) statistics which we obtained from our regression result in table 2, it is observed that DW statistics is 1.380 and an Akika Info Criterion and Schwarz Criterion which are 36.674 and 36.367 respectively also further confirms that our model is well specified. In addition to the above, the specific findings from each explanatory variable are provided as follows:

The results in table 2 illustrated that public debt has a positive and insignificant relationship with revenue allocation of various states in Nigeria with a beta coefficient (β_1) and t- value of 0.000174 and 0.035674 respectively and p- value of 0.975 which is not statistically significant at 5%:

Based on the empirical evidence that suggests that public debt has no significant effect on revenue allocation of various states in Nigeria at 5% level of significance, thus, the alternative hypothesis of the study is accepted.

Discussion and Conclusion

This study determined the effect of public debt on revenue allocation of various states in Nigeria. Data were extracted from Federal account allocation committee (FAAC) from 2020 to 2022. Using regression analysis, the study concluded that it does not significantly affect the debt of states in Nigeria. Indirectly, this result showed that a the state could control the level immediately debt if more appropriations are made for it to the federal account, even though the debt is so great the control is not statistically significant. This means that the level of government debt does not reflect the improvement in income distribution due to a reduction in the level of debt. Therefore, this study recommended that the federal government should set a benchmark for debt accumulation at the state level based on their ability to generate revenue internally and also assess national debt management limits across the country to promote resource management.

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