Impact of Sub National Public Debt on Economic Growth in Nigeria

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Abstract

The study investigated the relationship between sub national public debt and economic growth in Nigeria from 1981-2019. This study adopted the endogenous growth theory as the theoretical framework guiding the study. An OLS multiple regression model was used. All variables were found to be normally distributed and free from autocorrelation, heteroskedasticity as well as multicollinearity. The study provided evidence of a positive relationship but not significant between sub national public debt and economic growth in Nigeria. Population growth and sub national capital expenditure also has a positive relationship but not significant relationships with economic growth. Sub national government budget deficit have a negative impact on economic growth although not significant. When the exchange rate was introduced a moderating variable in the model there was a negative relationship between sub national public debt and economic growths. This means that foreign exchange rate is important in determining the direction of sub national public debt in Nigeria. The study recommends that state governments should direct borrowings to capital projects which will improve the growth through employment and income generation.

Keywords: Public debt, Budget deficit, Economic growth, Nigeria.

JEL Classification Codes: F43, H60, H63, O47.

1. Introduction

Nigeria is a federal republic in which sub-national governments have a considerable level of control over revenue, expenditure and debt. Public expenditure is managed by governments to ensure economic growth and stability, to enhance the welfare of its citizens. If revenues are inadequate to finance public expenditures the government will have to borrow (Bulus, 2020; Kur et al., 2021). Yusuf & Mohammed (2021) reported that currently Nigeria ranks among heavily indebted countries in the SSA region with a low GDP growth rate, dwindling income per capita and growing poverty level.

 The public debt portfolio in Nigeria has grown over the recent years resulting public discuss on the sustainability of public debt. Nigeria like most countries rely on public debt to fund expenditures (Didia & Ayokunle, 2020). Sub-national public debt has been growing in relevance given the increasing share of their debt in the overall debt in many countries (Delgado-Téllezet et al., 2017). Dey and Tarequ (2020) posit that debt is not a harmful for a country if the country can generate higher returns than the cost of borrowing, but it can become vicious if it is not used well. The growth enhancing feature of public debt has important policy implications for economic growth. Economic growth requires investment in infrastructure, education, social welfare, health and other sectors of the economy (Owusu-Nantwi & Erickson, 2016).

In Nigeria sub national public debt accounts for about 20% of the total public debt and as at the end of December 2019. The total sub national external debt as at December 2019 is 4.56 billion dollars or 1.48 trillion naira while domestic debt stood at 12.59 billion dollars or 4.106 trillion naira. A pointer that Nigeria's states are in financial crisis was in 2016 when at least two-thirds of the states demanded a federal government bailout. This is because of their inability to pay salaries and wages to government workers for months due to fall in oil prices. Over the years sub- national governments have fewer reasons to be concerned with the macroeconomic impact of their public debts than the central governments because these debts are usually guaranteed by the central governments (Renjith & Shanmugam, 2018). The ability of sub national government to collect revenue and make independent expenditure can improve accountability and responsiveness. Some countries disallow borrowing by sub-national governments while other countries allow it because some advantages associated with it (Martinez-Vazquez &Vulovic, 2017). Fiscal decentralization can aid in enhancing sub national governments to provide better services to the people (Razlog, et al., 2020).

Okoye et al. (2016) stated that the existence of fiscal federalism in Nigeria implies the presence of more than one level of government. There are three level of government each with different expenditure responsibilities, taxing powers and borrowing capacities. Nigeria comprise of three

strata of government i.e. the Federal , 36 states Governments, 774 Local Governments and six area councils in the Federal Capital Territory (FCT). The federally collected revenues are shared amongst the three tiers of government i.e. the federal, state and local governments. There is conferment of borrowing powers to both federal and state governments to borrow domestically. All external borrowing must be approved by the parliament. The Nigerian constitution provides that the national legislature make laws of borrowing outside Nigeria.

The borrowing powers by the sub national's especially local debt have resulted in deepening of their debt profile. Most times successive sub national government inherits a huge debt profile with an empty treasury (Okoye, et al., 2016). The Debt Management Office (DMO) is responsible for the management of Nigeria's public debt and sets out guides for sub national borrowing. The guide for sub national borrowing requires that the total public debt including new borrowing needs shall not exceed fifty percent of the actual revenue of the sub national government for the preceding twelve months. Many sub national's internally generated revenue are poor thus, any time there is a reduction in the federally collected revenues many states find it difficult to meet up with their financial obligations. This makes them resort to different forms of borrowing ranging from short-term borrowing from financial institution; domestic bond issuance to external borrowing (Adedoyin et al., 2019).The lack of proper framework for the management of public debt at the sub-national level in Nigeria is part of the debt management problems in Nigeria.

A budget deficit can be financed by borrowing from both the domestic market and externally (Abbas &Christensen, 2010). Imandojemu (2019) reported that giving borrowing autonomy to sub national to have the right and responsibility of sourcing finance for developmental purpose despite receiving allocation from the central government is showing a changing paradigm in fiscal relation in intergovernmental finance in Nigeria.

Table 1: Nigeria's Public Debt in December 31, 2019

	Debt Classification	Amount (US$'M)	Amount (N'T)	Percentage of Total
A	Total External Debt	27.7	9.02	33%
	Federal Government Only	23.1	7.5	28%
	States and FCT	4.5	1.5	6%
B	Total Domestic Debt	56.3	18.3	67%
	Federal Government Only	3.7	14.3	52%
	States and FCT	12.5	4.1	15%
C	Total Public Debt(A+B)	84	27.40	100%

Source: DMO: The Official Exchange Rate of US$1 to NGN326 as at December 31, 2019 was used in converting the Domestic Debts to dollars.

The purpose of the study was to investigate the relationship among public debt of sub national government in Nigeria and economic growth from 1981-2019. Over the years, subnational governments in developing and developed countries have gained more fiscal autonomy revenue generation and the capacity to incur debt (Liu & Webb, 2011). Therefore, their fiscal behavior has become very important to the the overall macro econonmic analyis (Liu & Webb, 2011). The relationship between public debts and economic growth had been carried out in Nigeria and other countries. However in the past many studies have looked at national sovereign debt and ignored the sub national debts that have been growing over the years. This research will attempt to close this literature gap by examining the impact of sub national public debt on economic growth in Nigeria.

2. Literature Review

2.1. Conceptual Review

2.1.1. Public Debt

Public debt is the set of a Nations commitments and obligations to other parties. A narrow definition of public debt covers only the central government. A wider definition covers the central government, state and local government and all government agencies as well as publicly guaranteed debt (IMF, 2017). Public debt is classified as internal when the debt is issued in the domestic market. It is considered external when issued abroad notwithstanding the currency and the nationality of the creditors (Veiga et al. ,2016).

2.1.2. Sub -National Government

Sub-national government is defined as state, local or regional governments (Liu &Webb, 2011). The subnational government in this study are the State governments in Nigeria. Nigerian States operate with a high level of independence in services provision of social service and financing (World Bank, 2019). The Nigerian Constitution stipulate the responsibilities of the three tiers of government, and intergovernmental fiscal transfers which is derermined by a revenue allocation formula (World Bank, 2019).

2.1.3. Fiscal Federalism

Fiscal federalism refers to arrangement in federal system where there are multiple governments in the same economy. It allows all level of governments perform constitutional assigned duties. The Nigerian Constitution and other additional legislations determine the collections and sharing of revenue (Imandojemu, 2019; Razlog, et al., 2020). Revenues collected at the federal level accrue to the federation account and are shared by all the tiers of government.

2.2. Theoretical Review

2.2.1. The Keynesian Theory

Keynes theory postulates that borrowing for consumption is vital as borrowing for investment because consumption stimulates investment (Lwanga & Mawejje, 2014). Essien et al (2016) stated that according to Keynes, governments use fiscal policies to influence aggregate demand in the economy for price stability and economic growth. Keynesians argue that increase in government expenditure and reducing taxes raises aggregate demand Abubakar and Mamman (2020). They believe that this method can be used in times of recession to support economic growth. This means that in theory, any deficit financing would be compensated by the expansion of the economy in the long run (Essien et al., 2016 The Keynesian theory posit that governments can improve macro-economic conditions by borrowing from the private sector and make expenditure. The government spending will ensure the funds return to the private sector (Eze & Ogiji, 2016).

2.2.2. The Endogenous Growth Theory

This study adopted the endogenous growth theory as the theoretical framework guiding the study. This theory posits that economic growth relies on factors within the economy and not factors outside the economy (Greiner, 2007). The endogenous theory was propounded because of the shortcomings of the neoclassical growth model that believes exogenous factors determine long-term economic growth (Murched 2016; Filippakis & Stamatopoulos, 2021) According to this theory labour and capital investments are major contributors to economic growth. The theory also posits that that the use of technology alone cannot lead to growth. This is because economic output per individual depends on each individual productivity levels. Although the productivity depends on technological change, technological change relies on quality human capital which is an internal factor that drives the technology.

2.3. Empirical Reviews

Makin and Pearce (2014) investigated the economic stability of sub-national governments in Australia and confirmed that debt levels were not sustainable for all sub-national governments in Australia. Also Maurya (2015) in India studied the relationship between public debt of Uttar Pradesh (a state in India) and growth. The study confirmed an inverse relationship between public debt Uttar Pradesh and economic growth in India. While, Sánchez-Juárez and García-Almada (2016) examined the impact of public debt in 32 states in Mexico using data from 1993 to 2012 provided evidence that sub-national government's public borrowing has a positive relationship with economic growth

Xiao (2018) studying Gangdong province in China concluded that the rapid accumulation of local liabilities is driven by the convergence of policy imperatives and political economy incentives.

Adedoyin,et,al. (2019) examined the federal government bailout program for the sub national governments in Nigeria The study adopted a sustainable debt index as the basis of study. They found out that states that are fiscally sustainable are due to their capacity to generate internal revenue to meet their obligations. The study also provided evidence that the bailout had political undertone as the bailout fund was skewed towards state governments governed by the ruling party.

Imandojemu (2019) using a fully modified Ordinary Least Squares (OLS) model found out that state governments debt in Nigeria has a significant positive relationship with the economic growth. The period of the study was from 1996 to 2018.

Renjith and Shanmugam (2020) investigated the public debt sustainability of 22 Indian states in the period of 2007 to 2016.The study relied on extended Bohn sustainability framework as the model. The study revealed that budget deficit of sub national governments in India is positively related to economic growth. AlHalebić and Moćević, (2020) studied 10 sub national government of Bosnia and Herzegovina. The study relied on panel data from 2012 to.2018. The study provided evidence public debt is positively associated with budget deficit but negatively associated with trade balance, the size of population and institutional changes

Cabral and Hernández-Trillo (2021) investigated public debt sustainability in all 32 sub nationals Mexico from 1993 to 2016. The method of estimation was dynamic panel data methods The study showed that sub national public debt in Mexico was sustainable generally. Take into consideration political indicators introduced by the study, the study confirmed that these factors do not affect public debt accumulation.

In China Gao, et al (2021) provided another dimension of sub national debt and economic growth debate. The study provided evidence that Government aided loans perform remarkably better than commercial loans. Distressed sub national governments usually default on commercial bank loans but avoid default on Government aided loans for political reasons.

Efayena and Olele (2021) also confirmed that public debt have a negative impact on economic growth. The study was based on the six states in the oil rich region of Nigeria. The study utilized data between 2014 and 2019 and employed the dynamic panel OLS technique for the analysis.

3. Research Methodology

3.1. Sources of Data

This study used secondary data. Data was collected from various secondary sources. The data was collected from the Central Bank of Nigeria, DMO, World Bank and the United Nations Conference on Trade and Development. A comprehensive data base on public debt and economic growth data on Nigeria were accessed from these sources.

3.2. Model Specification

The major goal of the study was to determine the relationship between economic growth and sub national public debt. Many literature reviewed assume a linear relationship between public debt and economic growth so the study adopted an OLS multiple regression model.

$$GDPG = \beta_0 + \beta_1(SBD) + \beta_2(SEXT) + \beta_3(SDMD) + \beta_4(SCE) + \beta_5(POPG) + \beta_6 EXCH + e_i \quad \ldots(1)$$

Where:

GDPG = GDP growth: dependent variable

β_1 to β_6 = coefficient of the independent variables

β_0 = Intercept/Regression Constant

SBD = State government budget deficits

SEXT = State government external debt

SDMD = State government domestic debt

SCE = State government capital expenditure   proxy for investment (Control variable)

POPG = Population growth in Nigeria as a proxy for labour (Control variable)

EXCH = Exchange rate (Moderating variable)

e_i = random error term.

Annual GDP growth was used as a proxy for economic growth with three independent variables, two control variables and one moderating variable. The control variables capital expenditure and population growth were selected based on the position endogenous growth model that posit that investment and population are the internal factors that spur economic growth. Specifically, each of the control variables was introduced one at a time then the two control variables were used. This was to determine the effect of each of the control variables and also establish which has the most and strongest effect on economic growth. Also, a moderating variable foreign exchange rate was also included in the model. This is to measure the strength of the relationship between the variables when exchange rate was also included.

4. Results and Discussions

4.1. Introduction

This section covers the analysis secondary data for the variables. The data was tested for multicollinearity, heteroskedasticity normality, stationarity and autocorrelation.

4.2. Descriptive Statistics and Normality Test

It important to established that variables are normally distributed. This was done with descriptive statistics using Jargue Bera (JB) probability. Also descriptive statistics was used to measure the central tendencies of mean, median and mode and other variability.

H0: JB = 0 (normally distributed)

H1: JB ≠ 0 (not normally distributed)

Table 4.2: Descriptive Statistics and Normality Test

	Mean	Maximum	Minimum	Std. Dev.	Jarque-Bera	Probability
SEC	536.1965	1965.3	1.034	656.3543	5.683661	0.058319
POP	2.581738	2.709843	2.488785	0.066914	2.621443	0.269626
GDPG	3.149929	15.32916	-13.1279	5.467388	9.225836	0.009923
SDMD	100.5573	536.8715	-0.737	166.7509	16.92344	0.000211
SEXD	14.8144	112.8667	0	26.33618	65.67451	0
SBD	-133.842	5.5421	-866.77	243.6488	34.13039	0
EXCH	94.14346	306.921	0.617708	92.82186	4.300915	0.116431

Table 4.2 shows the results of the descriptive statistics of the variables from 1981 to 2019. Table 4.2 shows that SEC,POP, GDPG,SDMD and EXCH JB probabilities are greater than 0.1. Therefore they are all normally distributed. While, SEXD and SBD with JB probabilities of zero are not normally distributed.

4.3. Multicollinearity Test

The Variance Inflation Factor (VIF) test was conducted to ascertain the presence and existence of multicollinearity problem among the independent variables (explanatory variables) and the result presented in Table 4.3.

Decision rule

VIF = 1 (Not correlated)

1 < VIF < 5 (Moderately correlated)

VIF >=5 (Highly correlated)

Table 4.3: Variance Inflation Factors

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
C	1218.438	1803.601	NA
D(SDMD)	0.000223	1.495597	1.429866
D(SEXD)	0.020033	5.228742	4.972518
D(LOG(SBD))	0.085163	1.195129	1.186559
D(EXCH)	0.003421	1.871454	1.542420
D(LOG(EXCH_SMD2))	0.123701	1.241250	1.154526
EXCH_SBD2	3.91E-21	1.656049	1.461324
D(EXCH_SEXD1)	2.55E-06	5.065885	4.910751
D(SCE)	2.77E-05	1.544642	1.502813
POP	184.3331	1815.070	1.100773

Variance inflation factors (VIF) measure how much the variance of the estimated regression coefficients is inflated as compared to when the predictor variables are not linearly related. The results from Table 4 show that the variables are not suffering from multicollinearity (no correlation between predictors) since the VIF are less than 5. The tolerance level is also within the acceptable range of 1. This shows that the independent variables are appropriate and well fit into the model.

4.4. Heteroskedasticity Test

Table 4.4: Breusch-Pagan-Godfrey was used test for heteroskedasticity

F-statistic	0.208997	Prob. F(10,27)	0.9935
Obs*R-squared	2.730117	Prob. Chi-Square(10)	0.9871
Scaled explained SS	3.522735	Prob. Chi-Square(10)	0.9663

H_0: Homoskedasticity

H_1: Heteroskedasticity

The result on Table 4.4 tests that the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. Since chi-square probability is greater than the levels of significant it means that there is no . Heteroskedasticity. Thus the model is seen to have not violated the assumption of non-constant variance of the error term.

4.3. OLS Models

Table 4.3.1: OLS Model with without control variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.585131	0.846261	4.236437	0.0002
D(SDMD)	0.005210	0.012708	0.409993	0.6844
D(SEXD)	-0.015031	0.064484	-0.233092	0.8171
D(LOG(SBD))	-0.138798	0.265326	-0.523122	0.6043
R-squared	0.012728	Mean dependent var		3.578293
Adjusted R-squared	-0.074384	S.D. dependent var		4.832236
S.E. of regression	5.008734	Akaike info criterion		6.159544
Sum squared resid	852.9722	Schwarz criterion		6.331922
Log likelihood	-113.0313	Hannan-Quinn criter.		6.220875
F-statistic	0.146108	Durbin-Watson stat		0.861506
Prob(F-statistic)	0.931469			

Table 4.3.2: OLS Model with control variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-37.05872	33.73037	-1.098675	0.2801
D(SDMD)	0.007108	0.013857	0.512903	0.6115
D(SEXD)	-0.018717	0.063827	-0.293244	0.7712
D(LOG(SBD2))	-0.145642	0.262232	-0.555395	0.5825
D(SEC)	0.004441	0.004582	0.969307	0.3397
POP	15.70290	13.10893	1.197878	0.2398
R-squared	0.092866	Mean dependent var		3.578293
Adjusted R-squared	-0.048874	S.D. dependent var		4.832236
S.E. of regression	4.948912	Akaike info criterion		6.180152
Sum squared resid	783.7353	Schwarz criterion		6.438718
Log likelihood	-111.4229	Hannan-Quinn criter.		6.272148
F-statistic	0.655188	Durbin-Watson stat		0.982260
Prob(F-statistic)	0.659764			

Table 4.3.3: The OLS model with control and moderating variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-34.92433	34.90613	-1.000522	0.3256
D(SDMD)	0.011658	0.014931	0.780810	0.4415
D(SEXD)	0.021118	0.141538	0.149202	0.8825
D(LOG(SBD))	-0.108270	0.291827	-0.371007	0.7134
D(EXCH)	0.012249	0.058490	0.209413	0.8356
D(LOG(EXCH_SDB))	-0.425577	0.351711	-1.210020	0.2364
EXCH_SDB	-7.07E-11	6.25E-11	-1.129679	0.2682
D(EXCH_SEXD)	-1.33E-05	0.001597	-0.008332	0.9934
(SCE)	0.004594	0.005263	0.872971	0.3901
POP	15.03435	13.57693	1.107345	0.2776
R-squared	0.168032	Mean dependent var		3.578293
Adjusted R-squared	-0.099386	S.D. dependent var		4.832236
S.E. of regression	5.066678	Akaike info criterion		6.304182
Sum squared resid	718.7942	Schwarz criterion		6.735125
Log likelihood	-109.7795	Hannan-Quinn criter.		6.457508
F-statistic	0.628350	Durbin-Watson stat		0.881967
Prob(F-statistic)	0.763079			

4.4. Discussion of Findings

The result indicates that state domestic debts have a positive relationship with economic growth although not significant. The coefficient of external debt is 0.211 which is positive, however t-statistic at 5 percent significance level is 0.88 indicates that this not significant. These are in line with Keynesian theory which postulated that public debt has positive relationship with economic growth. This is similar to the findings of Cabral and Hernández-Trillo (2021); Imandojemu (2019); Sánchez-Juárez and García-Almada (2016).

The state governments' budget shortfall has a negative impact on economic growth although not significant. This is consistent with the a priori expectation. However contrary to the findings of Renjith and Shanmugam (2020) in India. The introduction of the control variables of population growth and capital expenditure in the model shows positive relationship although not significant.

Capital expenditure by state government increases output level by 0.004. The low coefficient is probably because of low public investments in infrastructure, education, healthcare by the sub national government.

Population has a positive coefficient 15.03 which supports the endogenous growth theory that posits population can drive economic growth. Also capital expenditure has positive relationship with growth this is also consistent with the endogenous growth theory. When the moderating variable of exchange rate was introduced, the coefficient of the domestic and external debt had negative coefficient of -.0425 and -7.07 respectively although not significant. This shows that exchange rate has a negative impact on public debt. The state primary budget balance has a negative impact on economic growth. This was more severe when the moderating variable exchange rate was introduced.

The R-squared is 16.82% which means the total variation in GDP growth is explained by independent variables the remaining 72.18 % are variables not captured by the model. This is probably because the sub national government debt accounts for only about 20 % of total public debt in Nigeria.

5. Summary, Conclusion and Recommendations

5.1. Summary

Public debt will continue to be vital to the Nigeria economic growth. Nigeria state governments like most sub national governments depend on borrowing to meet up revenue shortfall. Thus it becomes imperative to examine the relationship between economic growth and sub national governments' public debt. This study investigated the relationship between state public debt and economic growth in Nigeria. The study was based on the endogenous growth theory. The research covered a period of 1981-2019.A multiple linear regression model, (OLS) was used to estimate the relationship between state government public debt and economic growth

5.2. Conclusion

This study reveals that there is positive impact of sub national public debt and economic growth. This is despite the fact that states in Nigeria generate little revenue outside federal shared revenues. This study reveals that there is a positive impact of total public debt on growth at the sub national level. This finding is consistent Keynesian theory of public debt which posits that public borrowing leads to economic growth. The endogenous growth theory posited that other internal variables as aside public debt variables like population growth and investment can influence economic growth. The findings is consistent with the stand of the endogenous theory

5.3. Recommendations

Having found out that debt has a positive relationship with the GDP growth, state governments as a matter of policy bid should direct what was borrowed to capital projects which improve economic growth. Borrowing should be consistent with fiscal plans. Borrowing should be carefully set to keep public debt on a sustainable path. Sub national governments should evaluate the return from contracting debt with the cost. Borrowing should finance productive infrastructure spending that leads to higher productivity that may ultimately offset the cost of debt service. Public borrowing (internal and external) should be invested in productive sectors of the economy and more specifically in the real sector to create employment and reduce poverty incidence in the states.

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