EXTERNAL DEBT AND NIGERIA'S ECONOMIC GROWTH

Endurance Gabriel Udo (Ph.D) and Ofonime Moses Akpan

Department of Economics
College of Education, Afaha Nsit,
Akwa Ibom State, Nigeria
E-mail: udoendurance715@gmail.com, ofonadolf@gmail.com

Abstract
This study examined the impact of external debt on economic growth in Nigeria, utilizing annual time series data from 1980 to 2019 and employing the Ordinary Least Squares (OLS) technique. The Result of the estimation showed that external debt has a significant negative impact on economic growth in Nigeria. Also, domestic debt and debt service exerted an insignificant negative effect on economic growth in Nigeria. Meanwhile, the causality test result showed that there was unidirectional causality running from economic growth to external debt. Based on the results, the study recommended that the government should ensure that any debt procured is invested in productive activities rather than in consumption.
Key Words: External debt, Domestic debt, Debt service, Economic growth, Nigeria

Introduction

The nexus between debts and economic growth has been a very hot topic of discuss over the years. It is argued by one view point that external borrowing is a crucial factor that could fill savings-investment gap that exist in poor countries by providing necessary funds needed for growth and development purposes. However, an opposing view has argued that external debt beyond certain set threshold can negatively affect economic growth (Hameed, Ashraf & Chaudhary, 2008). The negative effect of external debt on economic growth could pass through several channels, including debt overhang and crowding-out or liquidity channels. Debt overhang channels holds that debt beyond the country's repayment ability is likely to impact negatively on a country's output level (*Karagöl, 2002)*. The liquidity constraint or the crowding-out effect holds that external debt has negative effect on growth debt servicing constitutes resource drain which could have been available for investment to increase the level of economic growth.

In Nigeria, episode of high level of debt was not alarming in the 1960s and 1970s. From 1958 to 1977 Nigeria had a minimal level of foreign debt, as those debts were from bilateral and multilateral sources with longer repayment periods with low interest rate. For instance, Nigeria borrowed $28 million in 1958 from the World Bank to fund the construction of railway from Kuru in Jos through Bauchi and Bornu.But towards the end of 1970s, the country started accumulating heavy debts following decline in oil export revenue.This led to the country to borrow the sum of ₦1.25 billion in 1978. As part of the IMF engineered structural adjustment programme (SAP) in 1986, Nigeria was forced to borrow the sum of ₦100.79 billion in 1987. By 1990, external debt had reached an alarming level of ₦298.61billion.Between 1999 and 2005, the level of external debt has gone wild, which required efforts from all directions on how to tame it. Following the debt deal with the

Paris club of creditors and London club of creditors, which led to debt relief of 2005, the level of external debt declined sharply to ₦451.46 billion in 2006. But beginning from 2008, the level of debt has continued to rise consistently. External debt rose from ₦523.25 billion in 2008 to ₦689.84 billion in 2010 and further to ₦2,111.51 billion in 2015. By 2019, the level of external debt stood at ₦9,022.42 billion (CBN, 2019).

The continued rise in the level of external debt has generated arguments as the effect of such rising level of debt on economic growth. On the empirical ground, many studies have been carried out on the effect of external debt on economic growth with no consensus findings. Arising from lack of consensus as regards the impact of external debt on economic growth, this study is also contributing to the prevailing debate by attempting to examine the effect of external debt on Nigeria's economic growth. Specifically, it seeks to :(1) examine the effect of external debt on economic growth and (2) determine the causal relationship between external debt and Nigerian's economic growth. This study is significant in that it will benefit the government, the central bank of Nigeria, debt management office and other policy makers when formulating external debt management policies in Nigeria. This study is organized into five (5) sections. Section one is the introduction. The review of literature and theoretical framework is the focus of section two. Methodology of the study is presented in section three. Analysis of empirical results is the focus of section four, and section five concludes the study.

Theoretical framework

The theoretical underpinning of this study is the Neo-classical growth theory and Debt Overhang theory. According to the neoclassical growth theory, debt has both positive and negative effect on economic growth. Debt can affect economic growth positively if the amount borrowed is utilized productively. As long as countries use the borrowed funds for productive investment and do not suffer from macroeconomic instability, then growth should increase and allow for timely debt repayment. On the other hand, debt can have a negative effect on economic growth via its crowding-out effect on investment, by reducing the resources available for investment. An increase in debt procurement increases interest rate, thereby crowding out private investments necessary for productivity growth.

Debt overhang theory states that if debts exceed the country's repayment ability, expected debt service is likely to be an increasing function of the country's output level (*Karagöl, 2002)*. According to the theory, debt overhang problem is linked to the transfer of resources from capital scarce to capital surplus countries (Krugman, 1988, Sachs, 1989).Thus some of the returns from investing in the domestic economy are effectively taxed away by existing foreign creditors and investment by domestic and new foreign investor is discouraged.Basically, the debt overhang hypothesis indicates that the accumulated debt act as a tax on future output, discouraging productive investment plans of the private sector, leading to decline in the level of economic growth.

Literature review

Many studies have been carried on the relationship between external debt and economic growth. Malik, Hayat and Hayat (2010) in their studies explore the relationship

between external debt and economic growth in Pakistan for the period of 1972- 2005, using the Ordinary Least Squares (OLS). The results showed that external debt and debt servicing has negative and significant effect on economic growth. Saddique, Selvanathan and Selvanathan (2015) examined the impact of foreign debt on economic growth of 40 highly indebted poor countries from 1970-2007. The study employed Panel data estimation technique and found that the external debt of these poor countries had negative impact on economic growth both in the long run and short run. Udeh, Ugwu and Onwuka (2016) examined the relationship between external debt and the Nigerian economy from 1980 to 2013, using the ordinary least squares (OLS) method. The result showed that external debt had a positive relationship with economic growth in the short run but negative relationship in the long run. Paul (2017) carried out investigation on the impact of external debt on economic growth of Nigeria, using data that spanned from 1985 to 2015. Adopting the ordinary least square (OLS) technique, result showed that external debt stock has positive and significant impact on economic growth in Nigeria. The causality test showed that there was unidirectional causality running from external debt to economic growth. Elwasila (2018) investigated the effect of external debt on the economic growth of Sudan from 1969-2015, using vector error correction method (VECM). Findings revealed that external debt had impacted positively on Sudan's economic growth. Ndubuisi (2017) examined the impact of external debt on economic growth of Nigeria from 1985 to 2015 using ordinary least square (OLS) method. Result revealed that debt service payment had an insignificant negative impact on economic growth, while external debt stock had a significant positive impact on economic growth in Nigeria. Using the ordinary least squares regression (OLS) technique, Omodero and Alpheaus (2019) examines the effect of foreign debt on economic growth of Nigeria from 1997 to 2017. The regression results indicated that foreign debt exerts a significant negative influence on economic growth while foreign debt servicing has a strong and significant positive impact on economic growth. Al-Tamimi and Jaradat (2019) investigated the impact of external debt on economic growth in Jordan using annual time series data covering a period from 2010 to 2017. Result of this study revealed a negative impact of external debt on economic growth.

Methods

Research design

This study adopted ex-post facto research design. This is the type of research design in which the researcher examines possible antecedent of events that have already occurred which cannot be controlled by the investigator (Cohen, Manion, & Morison, 2000). Under ex-post design, an investigator investigates possible cause-and-effect relationships between the dependent and the independent variables by observing an existing condition and searching back in time for plausible causal factors.

Model Specification

The empirical model for this study is anchored on the neoclassical growth theory and the debt-overhang theory. The dependent variable for this study is economic growth, represented by real gross domestic product. The independent variables include external debt stock, domestic debt stock, debt service, gross domestic investment and exchange rate. Gross domestic investment and exchange rate are control variables. The model in its functional form can be specified as:

$$RGDP = f(GDI, EXTD, DOTD, DSEV, EXCH) \quad \ldots\ldots(1)$$

Where:

RGDP= Real gross domestic product in Nigeria (in billion naira)

GDI = gross domestic investment in Nigeria (in billion naira)

EXTD = external debt stock in Nigeria (in billion naira)

DOTD = domestic debt stock in Nigeria (in billion naira)

DSEV = public debt service in Nigeria (in billion naira)

EXCH = exchange rate in Nigeria (units of naira per 1US dollar)

Equation (1) in its econometric semi-log linear form can be expressed as:

$$LOG(RGDP) = \beta_0 + \beta_1 LOG(GDI) + \beta_2 LOG(EXTD) + \beta_3 LOG(DOTD + \beta_4 LOG(DSEV) + \beta_5 LOG(EXCH) + U \quad \ldots\ldots(2)$$

Where: β_0 is the intercept of the model, β_1 to β_5 are the parameters to be estimated and U is the error term. The theoretical expectations about the signs of the coefficients are as follows: $\beta_1>0, \beta_2<, >0, \beta_3<,>0, \beta_4<0; \beta_5<0$

The data for the study was obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin (2019). Data were collected on annual basis from 1980 to 2019.

Estimation technique and procedures

The Ordinary Least Square (OLS) technique was used as the estimation method for this study because of its BLUE properties. The unit root test using the Augmented Dickey Fuller(ADF) test was conducted to determine the integrating order of the series. The cointegration test was carried out using the Johansen multivariate approach to determine the existence or otherwise of the long run relationship among the variables. Furthermore, causality test based on the Granger Pairwise approach was used to ascertain the direction of causality of the concerned variables. Lastly, the error correction model (ECM) was specified to estimate the short run dynamics and to establish the speed of adjustment of the system. The error correction model based on (1) can be written as:

$$+\sum_{i=1}^{k} \beta_4 \Delta LDOTD_{t-i} + \sum_{i=1}^{k} \beta_5 \Delta LDSEV_{t-i} + \sum_{i=1}^{k} \beta_6 \Delta LEXCH_{t-i} + \emptyset ECM_{t-i} + U_t$$

Where: U_t is the white noise error term; and ECM is the error correction variable.

Result

Unit root test

The result of the unit root test using the Augmented Dickey-Fuller (ADF) test as presented in Table 1 showed that no variable was stationary at the level. This is because the computed ADFstatisticvalues for all the variables at the level were less than the critical values at the 5% level of significance. Therefore, the null hypothesis of no unit root cannot be rejected.However, at first difference, the series was stationary, and hence the variables were integrated of order I(1).

Table 1: Unit root test

Variable	ADF statistics				
	Level	Critical value at 5% level	1st difference	Critical value at 5% level	Remarks
LRGDP	- 0.894066	-2.941145	-7.42436	-2.941145	I(1)
LGDI	-0.636550	-2.938987	-4.804565	-2.943427	I(1)
LEXTD	-2.619502	-2.941145	-4.408308	-2.941145	I(1)
LDOTD	-2.192723	-2.938987	-4.581025	-2.941145	I(1)
LDSEV	-1.360626	-2.941145	-8.422099	-2.941145	I(1)
LEXCH	-1.949064	-2.938987	-5.259523	-2.941145	I(1)

Source: Author's computation

Co-integration test

The co-integration test results are presented in Tables 2 and 3.The results of the cointegration test employing both the trace test and maximum eigenvalue test indicated the existence of six co-integrating equations, respectively. This is so because the trace test and the maximum eigenvalue test statistic values in each of the six cointegrating equations were greater than the critical values at the 5% level of significance. From the two test results, we draw conclusionthat there was existence of long run relationship among the variables.

Table 2: Trace test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.938396	286.7351	95.75366	0.0000
At most 1 *	0.871928	183.6149	69.81889	0.0000
At most 2 *	0.727687	107.5740	47.85613	0.0000
At most 3 *	0.568058	59.44424	29.79707	0.0000
At most 4 *	0.432674	28.38404	15.49471	0.0004
At most 5 *	0.181526	7.411627	3.841466	0.0065

Trace test indicates 6 cointegratingeqn(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

Table 3: Maximum eigenvalue test

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.938396	103.1202	40.07757	0.0000
At most 1 *	0.871928	76.04091	33.87687	0.0000
At most 2 *	0.727687	48.12976	27.58434	0.0000
At most 3 *	0.568058	31.06020	21.13162	0.0015
At most 4 *	0.432674	20.97241	14.26460	0.0038
At most 5 *	0.181526	7.411627	3.841466	0.0065

Max-eigenvalue test indicates 6 cointegratingeqn(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

Causality test

The result of the granger causality test to determine the direction of causality between external debt and economic growth is presented in Table 4. The result showed that there was a unidirectional causality running from real gross domestic product to external debt. This means that economic growth granger caused external debt but external debtdoes not granger cause economic growth.

Table 4: Granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.
EXTD does not Granger Cause RGDP	38	1.74272	0.1908
RGDP does not Granger Cause EXTD		3.40213	0.0454

Source: Author's computation

Error correction estimates

The result of the parsimonious error correction model is presented in Table 5.

Table 5: Parsimonious error correction result

Dependent Variable: D(LRGDP)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.240921	0.085052	2.832624	0.0082
D(LRGDP(-1))	0.141552	0.167348	0.845853	0.4043
D(LGDI)	0.237051	0.106536	2.225064	0.0337
D(LEXTD)	-0.169982	0.066994	-2.537281	0.0166
D(LDOTD(-1))	-0.291367	0.212941	-1.368301	0.1814
LDSEV(-1)	-0.013538	0.011321	-1.195804	0.2411
D(LEXR)	0.253237	0.106643	2.374618	0.0242
ECM(-1)	-0.709919	0.173398	-4.094157	0.0003
R-squared	0.508911	Adjusted R-squared	0.394324	
F-statistic	4.441251	Durbin-Watson stat	1.964738	
Prob(F-statistic)	0.001728			

Source: Author's computation

The results as presented in table 5 showed that the error correction variable is correctly signed and is statistically significant as expected theoretically. Its coefficient of 0.709 showed that about 71% of the disequilibrium in the system has been corrected within a year. This is a fast speed of adjustment to long run equilibrium. The adjusted R-squared of 0.394 showed that only about 39% of the total variation in economic growth was explained by its determinants. The high F-statistic value of 4.441with its low probability value of 0.001 showed that the overall model is statistically significant at the conventional 1%, 5% and 10% levels of significance. The Durbin-Watson statistic value of 1.964 showed that there is no issue of auto-correlation in the model.

Analysis of the short run coefficients showed that external debt has a negative impact on economic growth in Nigeria, given its negative coefficient of -0.169. With a 1%increase in external debt, economic growth declined by about 0.17%. External debt was also statistically significant at the 5% level of significance, given its low p-value of 0.0166. Similarly, domestic debt has negative effect on economic growth in Nigeria, given its negative coefficient of -0.291. That is, a 1% increase in one period lagged of domestic debt resulted in a decline in economic growth by about 0.29%. The variable was however not statistically significant given its high p-value of 0.1814. Furthermore, debt service impacted negatively on economic growth, given its negative coefficient of -0.01. With a 1%increase in debt service, economic growth declined by about 0.01%. The variable was not statistically significant, given its high p-value of 0.2411. Other results of the study showed that gross domestic investment and exchange rate have positive effect on economic growth in Nigeria. In real terms, a 1% increase in gross domestic investment and 1% appreciation in exchange rate resulted in an increase in economic growth by about 0.24% and 0.25%, respectively. Both gross domestic investment and exchange rate were statistically significant at the 5% level of significance, given their p-values of 0.0337 and 0.0242, respectively.

4.5 Diagnostic checks

The results of the diagnostic tests are summarized in Table 6. The Ramsey RESET test value of 2.043959 with its high probability value of 0.1635 showed that the estimated equation is stable. The Breusch-Godfrey serial correlation LM test value of 0.463928 with its high probability value of 0.6336 showed that the residuals terms are independent and there is no problem of autocorrelation in the model. The Breusch-Pagan-Godfrey Heteroscedasticity test value of 1.045147 with its high probability of 0.4216 showed that there is no problem of heteroscedasticity and hence the disturbance terms are normally distributed.

Table 4.9: Diagnostic test

Test statistic	Value(prob.)
Ramsey RESET Test	2.043959
	(0.1635)
Breusch-Godfrey Serial Correlation LM Test	0.463928
	(0.6336)
Breusch-Pagan-Godfrey Heteroscedasticity Test	1.045147
	(0.4216)

Note: values in parenthesis are probability values
Source: Author's computation

Conclusion and policy recommendations

This study was carried out to empirically examine the impact of external debt on economic growth in Nigeria for the period, 1980-2019. The results obtained found that external debt has negative and significant impact on economic growth in Nigeria. This means that external debt procurement impact negatively on economic growth in Nigeria. The result also showed that domestic debt and public debt service exerted negative and insignificant effect on economic growth in Nigeria. Other results of the study showed that gross domestic investment and exchange rate have significant positive impact on economic growth in Nigeria during the evaluation period. Result of the causality test showed that there was unidirectional causalityrunning from economic growth to external debt. This means that external debt did not granger cause economic growth during the evaluation period.

Based on the results, the study recommended that there is need for reduction in both external debt and domestic debt in Nigeria. However, any debt procured should be invested in productive activities rather than in consumption. There is also need for reduction in public debt service by reducing public debts. This is because if the government keeps on channeling its funds to servicing her outstanding debts, there may be inadequate funds left for development projects. Therefore the government needs to reduce its debt profile if economic growth is to be achieved.

References

AL-Tamimi, K.A.M. & Jaradat, M.S. (2019). Impact of external debt on economic growth in Jordan for the period (2010-2017). *International Journal of Economics and Finance,* 11(4), 114-118.

Central Bank of Nigeria (2019).Statistical Bulletin. Vol.30, December, 2019.

Cohen, L., Manion, L. & Morison, K. (2000).Research methods in education. London: Routledge Falmer.

Elwasila, S.E.M. (2018). Effect of external debt on economic growth of Sudan: empirical analysis (1969-2015).*Journal of Economic Cooperation and Development, 39*(1), 39-62.

Hameed, A., Ashraf, H., and Chaudhary, M. (2008).External debt and its impact on economic and business growth in Pakistan. *International Research Journal of Finance and Economics,* 20: 132-140.

Karagöl, E. (2002). The causality analysis of external debt service and GNP: The case of Turkey. *Central Bank Review,* 85(5), 1106-1117.

Krugman, P. (1988). Financing vs. forgiving a debt overhang.*Journal of Development Economics*, 29: 253 – 268.

Malik, S., Hayat, M. & Hayat, U. (2010). External debt and economic growth: Empirical evidence from Pakistan.*International ResearchJournal of Finance and Economics,* 44: 88 – 97.

Ndubuisi, P. (2017). Analysis of the impact of external debt on economic growth in an Emerging economy: evidence from Nigeria. *African Research Review, 11*(4), 156-173. doi: 10.4314/afrrev.v11i4

Omodero, C.O., and Alpheaus, O. E(2019).The effect of foreign debt on the economic growth of Nigeria. *Management Dynamics in the Knowledge Economy*,7 (3) ,291-306; doi 10.25019/mdke/7.3.01

Paul, N. (2017). Analysis of the impact of external debt on economic growth in an emerging economy: evidence from Nigeria. *African Research Rreview*,11 (4), 156-173.

Sachs, J. (1989).The debt overhang of developing countries in *debt stabilization and development: essay in memory of Carlos Diaz Alejandro*, ed. by Calvo, A.

Guillermo. and others, (Basil Blackwell: Oxford), p. 80-102.

Siddique. A.. Selvanathan, E.A., and Selvanathan, S. (2015). The impact of external debt on economic growth: Empirical evidence from highly indebted poor countries. Economics Discussion/Working Papers 15-10.University of Western Australia.

Udeh, S .N., Ugwu, J. I., and Onwuka, I.O. (2016). External debt and economic growth: The Nigeria experience. *European Journal of Accounting, Auditing and Financial Research, 4*(2),33-48.