

Debt Service Payments and Economic Growth in Nigeria

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Abstract

The problems of accumulating capital for the provision of basic infrastructures in the less developed countries (LDCs), Nigeria in particular, have been the challenges deterring their consistent growth. This is also compounded by the accumulation of debt service payment areas which constitute one of the serious obstacles to the inflow of external resources into the economy. From the foregoing, there is need to examine the impact of debt service payments on economic growth in Nigeria. The study made use of data collected from Central Bank of Nigeria (CBN) and World Bank Database from 1981 to 2019 using ARDL regression method of analysis. The results showed that debt service payment (TDS_GNI), exchange rate (EXR), external debt (EXTD_GNI) and foreign direct investment (FDI_GDP) have positive relationship with economic growth (GR) in Nigeria. All these variables except exchange rate have significant impact on economic growth within the period under consideration. The ECM coefficient of -0.205 indicates that any deviation from the long-term equilibrium between variables will be corrected by about 20.5% each year. Based on the findings the study suggests that debt service obligation should not be allowed to rise more than foreign exchange earnings and that the loan contracted should be invested in profitable venture, which will generate a reasonable amount of money for debt repayment. The study recommended amongst others the needs for the country to develop a framework and strategy for closing its resource gap in order to achieve the objective of halving poverty by 2030.

Keywords: debt service payments, economic growth, external debt, foreign direct investment, less developed countries

JEL: H63, O40

Introduction

Basically, most of the less developed countries (LDCs) are characterized by a shortage of capital resources to meet the increasing public expenditures which made them to resort to huge external debt. This occurs as a result of declining in the agricultural export base of these developing countries which invariably reduced their foreign reserves ultimately use for financing external payments (Siddique, Selvanathan and Selvanathan, 2015). Although external debt may be used to stimulate the economy but whenever a nation accumulates substantial debt, a reasonable proportion of public expenditure and foreign exchange earnings will be absorbed by debt servicing and repayment with heavy opportunity costs (Albert, Brain and Palitha, 2005).

Many reasons have been adduced to increase in the accumulation of external debt most especially high debt service payments in developing countries. In his own opinion, Chenery (1996) observed that developing countries take the foreign debts in order to fulfill lack of "saving-investment" gap. Another reason given by the Soludo (2003) & Gohar, Bhutto and Butt (2012) are to fill the gap of balance of payment deficit due to low investment. Also, Aliko and Arowolo (2010); Momodu (2012) & Sulaiman and Azeez (2012) observed that LDCs acquire external debt (which is a major source of aid) to supplement domestic saving for development.

Furthermore, the persistent current accounts deficit of LDCs has exposed them to heavy borrowing from the international money and capital markets. This has made a sizeable chunk of the LDCs hard earned foreign exchange to be appended on debt servicing which has caused some setback in their economies. Monogbe, (2016) opined that the inability of the present generation to service the borrowed fund may be transfer to the future generation as a debt burden. Most of them if not all embarked on dead weight debt rather than productive debt finance investment which if well manage enough will earn a rate of return higher than the cost of debt servicing (Ijirshar, Fefa & Godoo, 2016).

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Nigeria like most highly indebted poor countries has low economic growth (Udeh, 2013) and low per capita income, with domestic savings insufficient to meet developmental and other national goals. Compounding the problem is Nigeria's drift to mono economy of the oil sector which generates about 95% of foreign exchange earnings and about 80 percent of budgetary revenue (Adegboyega, 2018). The inability to diversify country's revenue sources coupled with corruption and mismanagement compels Nigeria to have inadequate fund for growth and developmental projects.

In Nigeria the economy productive capacity runs below expectation as a result of inadequate savings and deteriorating terms of trade which makes the growth rate of the economy remaining sluggish. Nigerian economy has unprecedented debt crises and it's magnitude with associated adverse effect have become concern to the government. The issue of debt burden in Nigeria cannot be overemphasized because the quest for developmental plans and the need to finance the flamboyant lifestyle of government leaders in Nigeria surged up the country's external debt (Ayadi and Ayadi, 2008; Olasode and Babatunde, 2016). Despite the government continuous effort on managing external debt though several measures such as debt rescheduling, debt conversion, debt equity, debt forgiveness or cancellation, etc. yet there exist no solution.

One of the serious obstacles to the inflow of foreign direct investment (FDI) into the economy was as a result of nation's inability to meet all her debt service payment. The accumulation of debt service arrears which is being compounded with penalty interest has not permitted reduction in the debt stock, despite the fact that government has been servicing its external debt annually.

From the foregoing, the evidence from literature has shown that external debt with attendance debt servicing is a burden to development in developing countries most especially in Nigeria, so this necessitate the need to carry out the study of this nature in order to determine the way forward by which external debt service payments can be reduced.

The rest of the paper includes section two which deals with literature review, section three is methodology, while section four is analysis and section five contain conclusion and recommendations.

Literature Review

Theoretical Review

The appropriate theories which are relevant to this study are: the debt overhang theory, crowding-out effect theory and dual gap model which explains the growth aspect. The general effect of external debt on the Solow growth model was analyzed by the individual effects of the debt overhang and debt crowding theories on the Solow growth model.

The debt overhang hypothesis considers the investment channel and the disincentive effects on government policies that led to poor macro-economic policies. Debt-overhang occurs when a nation's debt is more than its debt repayment ability (Krugman, 1988). Debt overhang is a phenomenon where substantial resources are used for debt servicing such that it stifles the economic growth as it becomes burden on domestic production (Adedoyin, Babalola, Otekinri, and Adeoti, 2016 & Udeh, Ugwu and Onwuka, 2016). The "debt overhang effect" occurs when accumulated debt stock discourages investors from investing in the private sector for fear of heavy tax placed on them by government. This is known as tax disincentive. This is what Adam Smith (1776) referred to as inflation tax which reduced public investment and uncertainty (option of waiting and misallocation of investments) are likely to occur with a large debt stock. The tax disincentive here implies that because of the high debt and as such huge debt service payments, it is assumed that any future income accrued to potential investors would be taxed heavily by government so as to reduce the amount of debt service and this scares off the investors thereby leading to disinvestment in the overall economy and as such a fall in the rate of growth and poverty aggravation (Nakatami and Herera, 2007). This will lead to a reduction in total (private and public) investment in the economy and a shift downward of both the investment and production function curves in Solow growth model.

This is further reiterated by Keynesian theory that capital accumulation serves as a catalyst for economic growth, Clement, Bhattacharya and Nguyen (2003) agreed that external debt accumulation can promote investment up to a certain point where debt overhang sets it and the willingness of investors to provide capital starts to deteriorate. In Nigeria, debt service burden has prevented rapid growth and also worsened the social issues. The country expected debt service supposed to be increasing function of output and as such resources that are to be used for developing the

economy are indirectly taxed away by foreign creditors in form of debt service payments. This has further increased uncertainty in the Nigerian economy which discourages foreign investors and also reduces the level of private investment in the economy.

As for the crowding-out effect theory, it explains that the negative effect of debt on growth works not only through the impact of the stock of debt, but also via the flows of debt service payments, which are likely to crowd out public investment (Cohen, 1993; Elmendorf & Mankiw, 1999; Eberhardt & Presbitero, 2015). The crowding-out effect refers to a situation whereby a nation's revenue which is obtained from foreign exchange earnings is used to meet up debt service payments. This limits the resources available for use for the domestic economy as most of it is soaked up by external debt service burden which reduces the level of investment. The impact of debt servicing on growth is damaging as a result of debt-induced liquidity constraints which reduces government expenditure in the economy. These liquidity constraints arise as a result of debt service requirements which shift the focus from developing the domestic economy to repayments of the debt. Public expenditure on social infrastructure is reduced substantially and this affects the level of public investment in the economy. This in turn will decrease economic growth and will shift both the investment and production function curves in Solow growth model downward (Dereje, 2013).

Dual gap model was developed in the context of foreign aid or foreign borrowing of capital required by developing countries for achieving rapid economic development. The major assumption of this model is that most developing countries either face a shortage of domestic savings to augment for investment opportunities (Omoruyi, 2005; Hunt, 2007 & Ajayi and Oke, 2012).or they are faced with foreign exchange constraints to finance the needed capital and intermediate goods. Todaro and Smith (2004) claimed that most Two-Gap models assume that the savings gap and the foreign-exchange gap are unequal in magnitude and independent in nature. The implication of this is that one of the Two-Gaps would be "binding" or "dominant" for any less developed country at any point in time.

The model actually addressed the constraints that are affecting the acceleration of investment which is required to achieve a certain target growth rate of economic development in the developing countries. Dual-Gap Model of development is contained in the Post-Keynesian growth models for closed economies as designed by Harrod (1939) and Domar (1946). They identified two pre-conditions for the economic growth of market economies which are essentially rooted in the Nigerian economy. Internally, the savings constraint would definitely translate to investment and creates savings gap which can only be corrected by foreign direct investment (FDI) (Ogbeifin, 2007). Externally, shortage of foreign exchange earnings arising from excess of import over export which is foreign exchange constraint creates trade gap which can be corrected by foreign aid.

Thus, according to Harrod-Domar model:

$$g = s/k$$

Where, g is the growth rate of GDP, s is the saving rate of the economy (i.e., ratio of saving to national income) and k is the capital-output ratio. Capital-output ratio (which is the reciprocal of output-capital ratio) in this model is taken as given and rate of investment and therefore rate of economic growth depends on the domestic saving rate of the economy.

Furthermore, Chenery (1996) extending Harrod-Domar Model explained that development is a function of investment but the savings require for such investment is not sufficient to ensure that development takes place. Therefore, there is need of foreign aid to bridge the two gaps that prevail in developed and developing countries vis-a vis savings and trade gap in order to achieve the target rate of the economy (Jhingan, 2007). The two-gap model of growth has been adopted as a tool to bring the economy back on the path of growth and if possible, salvage the economy.

Conceptual Review

Basically, it has been observed that domestic savings, if properly mobilized, can encourage an improvement in the economic activities through investment. However, one of the major economic problems of many developing countries, Nigeria inclusive, is inadequate savings which has overcrowded debt structure became an obstacle to development and full refund almost hypothetical (Hadhek and Mrad, 2014). Although external debt may be used to stimulate the economy but in most cases, a reasonable proportion of public expenditure and foreign exchange earnings are absorbed by debt servicing and repayment with heavy opportunity costs (Adegboyega, 2018). Thus, debt servicing severely affects economic growth by shrinking major share of resources for macro-economic development objectives. Also, Nigeria as a nation driven by debt structure has been caught in the trap of debt servicing which hindered major macro-economic reforms and achievements.

In Nigeria like any other developing countries, in order to salvage the economy from total collapse the government has resorted to foreign aid assistance from developed countries, multilateral and bilateral international organizations (Izedonmi and Ilaboya, 2012) & Kadiu, 2015). Although a typical observation of the Official Development Assistance directed to Nigeria was very low between 1970 and 1987 but a considerable rise occurred consequent to adoption of the Structural Adjustment Programme (SAP) in 1986 which confirmed the relative importance of economic reform in the determination of aid. Contrary to this, Knack (2000) argued that high level of aid erodes institutional quality, increases rent seeking and corruption, thereby negatively affecting growth (Uma, Eboh & Obidike, 2013).

In another perspective, Ojo (1989) was of the belief that it is no exaggeration to claim that Nigeria huge external debt is one of the hard knots of the Structural Adjustment Programme (SAP) introduced in 1986 to put the economy on a sustainable path of recovery. The corollary of this statement is that if only the high level of debt service payment could reduce significantly; Nigeria would be in a position to finance larger volume of domestic investments, which would enhance growth and development, but more often than not, a debtor has only limited room to manage a debt crisis to advantage.

The Debt Management Office (DMO) of Nigeria (2017) also explained the factors that led to Nigeria's external debt burden as inefficient trade and exchange rate policies; adverse exchange rate movements; adverse interest rate movements; poor lending and inefficient loan utilization; poor debt management practices; and accumulation of arrears and penalties. All these made debt service to revenue ratio to be 45% as at December 2017 (Nelson, 2017).

In the same vein, Gohar, Bhutto and Butt (2012) observed that the repayment or "debt service" creates problems for many countries especially for developing countries because a debt has to be serviced at the cost more than the actual amount borrowed. Therefore, large debt service payments impose a number of constraints on a country's growth. This also drains out limited resources and restricts financial resources for the development of these countries. This was corroborated by the CBN (2016), that there was astronomical increase in the cost of debt services between 2014 and 2016 in Nigeria.

Furthermore, Benedict and Nguyen (2003) and Urama, Ekeocha and Iloh (2018) opined that foreign borrowing has a positive impact on investment and growth of a country up to a threshold level but external debt service can potentially affect the growth as most of the funds will go in the repayment of the debt rather than the investments. In his own view, Fosu (2009) observed that debt servicing shifts spending away from the social sector, health and education because debt service payments do normally cut up most of the resources rather than development. As a result creates a great hindrance in the economic growth of a country due to high interest payments on the external debt, heavy public expenditures and foreign exchange to repay that debt. More so, Roche (2019) has pointed out that while the country's debt as a proportion to GDP is a reasonable twenty percent, debt servicing costs make up fully two-thirds of retained government revenue, a startlingly high figure and a datum its government goes some lengths to de-emphasize.

However, the quest for economic growth and development compelled Nigeria to acquire external debt (Nweke, 1990) but Nigeria's public debt stock rose to N25.7 trillion in June 2019 and the payment for servicing the debt of \$1.12 billion to World Bank and others in 10-month continues to be a major source of concern (Adesoji, 2019). Therefore, this necessitates the need to carry out the study of this nature in order to examine the extent of debt service payments on economic growth in Nigeria.

Empirical Review

The literature is replete with various studies on the impact of debt service payments on economic growth with mixed results and inconclusive. For instance, Cohen (1993) and Ejigayehu (2013) results rejected the debt overhang hypothesis in support of the crowding out effect. Cohen found no significant correlation between the debt-to-export ratio and the investment variable, while the debt service is significant but negatively correlated with investment. So, a large stock of debt seems not to be a good predictor of the low investment ratio experienced in the 1980s. Similar results are obtained by Clements, Bhattacharya and Nguyen (2003) study which showed that debt service has no direct effect on growth, but they find support for the “crowding out” effect of debt service on public investment. Despite some evidence in favour of the crowding out effect, some empirical works did not find a significant impact of debt service on growth. For example, Pattillo and Ricci (2002, 2004) included a debt service indicator in the growth regression, but found it not significant and argued for the relevance of the adverse effect of the stock of debt. However, Hansen (2004), Presbitero (2005) studies found evidence of a liquidity constraint on total investment, especially in Low Income Countries (LIC). Also, Iyoha (1997) in a study on “Nigeria External Debt Overhang” found out that Nigeria External Debt stock rose at an average of 17% per annum between 1982 and 1994 and that excessive high stock of external debt depresses Nigeria’s investments and lowers the rate of economic growth. In another perspective, Elbadawi, Ndulu and Ndung’u, (1999); Chowdhury (2004); Ayadi and Ayadi (2008); Ogege and Ekpudu (2010); Boboye and Ojo (2012); Shah and Pervin (2012), Kasidi and Said (2013) Adeniran, Azeez and Aremu (2016) & Nwannebuike, Ike and Onuka (2016) confirmed the negative effect of debt service on growth because debt service payments reduced import capacity and available credit, creating a disincentive for investors. Furthermore, Karagol (2002) and Senibi (2017) found that debt service is relatively related to economic growth in the long-run. Patrawimolporn (2007) findings revealed that exchange rate volatility affects debt services since a significant amount of debt services was saved when the exchange rate was adjusted. In addition, Ijeoma (2013) study found that there is a significant relationship between Nigerian debt service payment and gross fixed capital formation. Similarly, Kasidi and Said (2013) study revealed that there is significant impact of the external debt and debt service on GDP growth. Whereas total external debt stock has a positive effect of about 0.36939, debt service payment has a negative effect of about 28.517. Furthermore, Momodu (2015) study revealed that debt service payment to Nigeria’s creditors has significant impact on the GDP and GFCF. Also, Mingiri, Ikhida and Tsegaye (2016) found that external financial flows have a significant impact on economic growth in the Southern African Development Community (SADC). Whereas, Odubuasi, Uzoka and Anichebe (2018) study showed that external debt service payment has no significant impact on economic growth. Finally, Siddique, Selvanathan and Selvanathan (2015); Akram (2016); Ijirshar, Fefa and Godoo (2016); Matthew and Mordecai (2016); Ndubuisi (2017); Shkolnyk and Koilo (2018); AL-Tamimi and Jaradat, (2019); Festus and Saibu (2019); Ndubuisi (2019) & Ogbonna, Ibenta, Chris- Ejiogu and Atsanan (2019) studies showed that debt service payment has negative impact on economic growth. But in their own study, Omodero and Alpheaus (2019) study found foreign debt servicing has a strong and significant positive impact on economic growth.

It appears that most of the empirical studies reviewed on the impact of debt servicing payment on economic growth used Debt Service/GDP ratio and are largely inconclusive, so, this informed the need to carry the study of this nature for proper investigation in Nigeria. This study went further to use Debt Service/GNI on growth by anchored on the Harod-Domar dual gap model that brings forth a counter proposition.

Methodology

The Study made use of time series data from 1981 to 2019 obtained from the Central Bank of Nigeria (CBN) and World Bank data base. The data were subjected to Autoregressive Distributed Lag statistical method of analysis to determine the long run and short relationship among the variables. The variables analyzed were growth rate (GR), external debt to gross national income ratio (EXTD_GNI), total debt service payment to gross national income ratio (TDS_GNI), exchange rate (EXR) and foreign direct investment to gross domestic product (FDI_GDP).

Model Specification

In line with the study theoretical review our model specification is based on two-gap model of economic development popularized by Chenery which is an extension of Harrod Domar growth model. In the Harrod-Domar model, where production technology and the capital-labor ratio are fixed, capital accumulation is essential for growth. The production function in this case can be stated accordingly as:

$$g = s/k \quad (1)$$

Where, g is the growth rate of GDP, s the saving rate of the economy (i.e., ratio of saving to national income) and k is the capital-output ratio. Capital-output ratio (which is the reciprocal of output-capital ratio) in this model is taken as given and rate of investment and therefore rate of economic growth depends on the domestic saving rate of the economy.

By extension, this study is underpinned by the standard endogenous growth model in which economic growth is influenced by the external debt as a result of savings and investment gap. Catrinescu et al. (2009) and Driffield and Jones (2013) also assumed that financial flow drives investment that determines economic growth. Therefore, this study adopts the model of Patanio and Tan-Cruz (2007) with slight modifications, for example, by replacement of savings with the external debt (EXTD_GNI) and total debt service payments (TDS_GNI).

The model is stated thus:

$$Y_i = \alpha_i + \sum \beta_i X_i + \varepsilon_i \quad (2)$$

Where:

Y_i = measure of economic growth.

X_i = external debt and total debt service payments.

In addition to the conventional model specified above, the study also considered other variables that determine economic growth and augments them with the different forms of external financial variables such as exchange rate (EXR) and foreign direct investment to gross domestic product (FDI_GDP).

Thus by incorporating these variables the model is stated as follows:

$$Y_i = \alpha_i + \sum \beta_i X + \sum \gamma Z + \varepsilon \quad (3)$$

Where:

Y_i = measure of economic growth

X_i = Conventional explanatory variables representing the external debt and service payment

Z_i = vector of explanatory variables affecting economic efficiency such as exchange rate and direct investment (FDI)

In line with the variables of the study equation (3) can be rewritten in this form:

$$GR = f (EXTD_GNI, TDS_GNI, EXR, FDI_GDP) \quad (4)$$

Using a time subscript (t) and first difference operator (Δ), we therefore model the relationship between economic growth and debt service payments as follows:

$$\ln \Delta GR_t = f (\ln \Delta EXTD_GNI_t, \ln \Delta TDS_GNI_t, \ln \Delta EXR_t, \ln \Delta FDI_GDP_t) \quad (5)$$

Equation (5) thus describes the changes in economic growth as a function of changes in the variables which appropriate technology influences. In order to empirically test the long-run relationship between economic growth and appropriate technology the transformation of equation (4) into a linear equation then becomes:

$$\begin{aligned} \ln \Delta GR_t = & \alpha + \varrho \ln \Delta EXTD_GNI_t + \psi \ln \Delta TDS_GNI_t + \gamma \ln \Delta EXR_t \\ & + \phi \ln \Delta FDI_GDP_t + \varepsilon_t \end{aligned} \quad (6)$$

where, \ln is the natural logarithm of the variables, and the estimates of ϱ , ψ , γ and ϕ represent elasticities. The error term ε_t is assumed to be white noise normally and identically distributed. The ARDL technique is used because it allows a mixture of I(1) and I(0) of integration and also suitable for small or finite sample size (Pesaran, Shin and Smith, 2001).

In order to conduct the bounds test, Equation (6) is converted into an unrestricted error correction model (UECM) form:

$$\begin{aligned} \ln \Delta GR_t = & \alpha + \delta_1 \ln \Delta GR_{t-k} + \delta_2 \ln \Delta EXTD_GNI_{t-k} + \delta_3 \ln \Delta TDS_GNI_{t-k} \\ & + \delta_4 \ln \Delta EXR_{t-k} + \delta_5 \ln \Delta FDI_GDP_{t-k} + \varrho \ln EXTD_GNI_{t-1} \\ & + \psi \ln TDS_GNI_{t-1} + \gamma \ln EXR_{t-1} + \phi \ln FDI_GDP_{t-1} + \varepsilon_t \end{aligned} \quad (7)$$

where, α is the drift component, Δ represents the first difference operator, and ε_t are white noise errors. In this setup, the short-run effects are inferred by the sign and significance of the estimates of δ_1 , δ_2 , δ_3 , δ_4 and δ_5 while the long-run effects are inferred by the sign and significance of the estimates of ϱ , ψ , γ and ϕ . Equation (7) indicates that economic growth tends to be influenced and explained by its past values. The structural lags are established by using minimum Akaike's information criteria (AIC). Since all the variables in the model appear to be trended, a second ARDL-UECM including a trend term (ξ_t) is presented in the form:

$$\begin{aligned} \ln \Delta GR_t = & \alpha + \xi_t + \delta_1 \ln \Delta GR_{t-k} + \delta_2 \ln \Delta EXTD_GNI_{t-k} + \delta_3 \ln \Delta TDS_GNI_{t-k} \\ & + \delta_4 \ln \Delta EXR_{t-k} + \delta_5 \ln \Delta FDI_GDP_{t-k} + \varrho \ln EXTD_GNI_{t-1} \\ & + \psi \ln TDS_GNI_{t-1} + \gamma \ln EXR_{t-1} + \phi \ln FDI_GDP_{t-1} + \xi_t \end{aligned} \quad (8)$$

In this case, the null hypothesis of no cointegration, that is, no long run relationship ($H_0 = \alpha = \psi = \gamma = \phi = 0$) is tested against the alternative of long run relationship ($H_1: \alpha \neq \psi \neq \gamma \neq \phi \neq 0$) using the familiar F-test with critical values tabulated by Pesaran, Shin, and Smith (2001). Accordingly, it is hypothesized that the estimates of α , ψ , γ and ϕ are positive and statistically significant, thus confirming the appropriate technology-led growth hypothesis.

Analysis of the Results

Descriptive Statistics

The results in table 1 below reveal that the series are in high level of consistency as all the mean and median values are within the max and min values of the series. It is also an evidence of significant variation in the trends of the variables over the sample period. On the average, the growth rate in Nigeria revolves around 0.8%, while the foreign exchange rate, external debt, foreign direct investment and total debt service accounted for 88.7%, 65.3%, 2.8% and 62.9% of economic growth respectively. The high standard deviation of all the series shows that the deviations of the actual data from their mean values are high. The series are not normally distributed because growth rate, foreign direct investment and total debt service are statistically significant. The Skewness coefficient indicates normal curves for all the variables except total debt service payments with the values ranging between -3 and +3. All variables had their entire kurtosis coefficient >0 which shows that they are leptokurtic.

Table 1. Descriptive Statistics

	GR	EXR	EXTD_GNI	FDI_GDP	TDS_GNI
Mean	3.395000	88.65497	65.33605	2.837105	62.93653
Median	3.600000	97.39928	60.56500	2.495000	4.587500
Maximum	33.70000	305.8140	228.3700	10.83000	2193.000
Minimum	-13.10000	0.610025	4.130000	0.500000	0.101000
Std. Dev.	7.423957	87.17354	59.83047	2.254709	354.9101
Skewness	1.286708	0.798233	0.831539	1.779199	5.916824
Kurtosis	9.142681	2.961483	3.126143	6.396856	36.01521
Jarque-Bera	70.22875	4.037794	4.404426	38.31797	1947.562
Probability	0.000000	0.132802	0.110558	0.000000	0.000000
Observations	39	39	39	39	39

Source: Author's Compilation, 2020

Correlation Test

The results in table 2 below indicate that all variables are not highly correlated. All the variables except external debt are positively correlated. Economic growth and external debt are negatively correlated at 13%, which indicates that reduction in external debt will lead to expansion of economic growth. Since all the values of the correlation coefficients were less than 0.8 in absolute terms this indicates the absence of a multicollinearity problem.

Table 2. Correlation Test

	GR	EXR	EXTD_GNI	FDI_GDP	TDS_GNI
GR	1.000000				
EXR	0.240706	1.000000			
EXTD_GNI	-0.130486	-0.666942	1.000000		
FDI_GDP	0.097772	-0.288158	0.624348	1.000000	
TDS_GNI	0.679218	0.076618	-0.030328	-0.048471	1.000000

Source: Author's Compilation, 2020

Unit Root Test

The unit root test results in table 3 below show that the Augmented Dickey Fuller (ADF) statistical values are greater than the critical values at 5% level of significant but the variables are stationary at both level and first difference order of integration, i.e. I(0) and I(1). Therefore, the hypothesis of non-stationary was therefore rejected. Since the time series are of mixed order of integration and according to Shrestha and Bhatta (2018) ARDL method of analysis is appropriate for this study in order to capture both long-run and short-run relationship among the variables.

Table 3. Unit Root Test

Variables	ADF Test statistics	critical level	Order of integration
GR	-4.946112	-3.621023*	I(0)
EXR	-4.221471	-3.626784*	I(0)
EXD_GNI	-5.727553	-3.626784*	I(0)
FDI_GDP	-3.429823	-3.621023**	I(1)
TDS_GNI	-6.079736	-3.621023*	I(0)

Source: Author's Compilation, 2020

Lag Order Selection

In the table 4 below the lag length for the study was determined based on the minimum Akaike Information Criterion (AIC) value which indicates lag length of one.

Table 4. Lag Order Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-807.9655	NA	1.03e+14	46.45517	46.67736	46.53187
1	-724.5244	138.2738*	3.71e+12*	43.11568*	44.44884*	43.57589*
2	-711.6941	17.59580	8.17e+12	43.81109	46.25521	44.65480
3	-677.2188	37.43036	6.14e+12	43.26965	46.82473	44.49686

* 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

Source: Author's Compilation, 2020

ARDL Bound Test

Table 5 below showed that the calculated F-statistic is higher than the Pesaran et al. (2001) lower bound critical value at 95% level of significance, therefore, the null hypothesis which states that there is no cointegration is rejected. This suggests that the variables under consideration are cointegrated and they have the long-run relationship.

Table 5. Bound Test Results

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	3.688302	4

Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Author's Compilation, 2020

Long and Short Run Estimates

The results of equation (7) above and table 6 below show that all the variables: EXR, EXTD_GNI, FDI_GDP and TDS_GNI have positive relationship with GR. This indicates that these variables contributed to economic growth rate during the period of the study, although total debt service contribution is minimal. Also, all these variables except EXR do have significant impact on GR in the current year. Thus, in line with theoretical postulations, an increase of one percent in foreign direct investment (FDI_GDP) increases growth rate (GR) by 6.64 percent. But in contrast to theoretical postulations, an increase of one percent in exchange rate (EXR), external debt (EXTD_GNI) and total debt service (TDS_GNI) led to an increase of 0.4 percent, 0.4 percent and 0.06 percent economic growth respectively. The results depict that all the variables contribute to economic growth of the nation but with small margin. It is also evident that some of the external debts are not dead weight debt because some of the loans contracted had been invested in profitable venture during the period of the study. The ECM coefficient of -0.205 indicates that any deviation from the long-term equilibrium between variables will be corrected by about 20.5% each year. Overall, the results show that in the long-run all the variables contributed to economic growth in Nigeria and also have significant effect on economic growth over the period of the study with the exception of EXR. The reason for this might be that foreign exchange earnings were not sufficient to meet debt service obligations. The findings are consistent with the previous studies, such as Karagol (2002), Ijeoma (2013), Kasidi and Said (2013), Momodu (2015), Mingiri, Ikhida and Tsegaye (2016), and Senibi (2017). The corollary is that external debt and debt service payments are not growth-neutral in Nigeria and there is a significant positive feedback from growth to debt service payments. This shows at least that debt service payments will lead to growth in Nigeria. From the foregoing, it is clear that debt service payment is important for growth in Nigeria especially if the country embarks on efficient loan utilization. Therefore, the country needs to improve its external debt policies and adopt an outward-oriented growth strategy.

Table 6. Long and Short Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GR(-1))	-0.709124	0.337684	-2.099964	0.0543
D(GR(-2))	-0.835476	0.280922	-2.974048	0.0101
D(EXR)	-0.094312	0.046030	-2.048909	0.0597
D(EXR(-1))	0.082222	0.062866	1.307895	0.2120
D(EXTD_GNI)	-0.227816	0.061959	-3.676855	0.0025
D(EXTD_GNI(-1))	-0.039179	0.050452	-0.776560	0.4503
D(EXTD_GNI(-2))	-0.155597	0.062866	-2.475055	0.0267
D(EXTD_GNI(-3))	0.028661	0.029994	0.955575	0.3555
D(FDI_GDP)	1.379973	0.614543	2.245528	0.0414
D(FDI_GDP(-1))	1.910765	0.653452	2.924110	0.0111
D(FDI_GDP(-2))	2.449809	0.877860	2.790659	0.0144
D(TDS_GNI)	0.012143	0.002097	5.789607	0.0000
D(TDS_GNI(-1))	0.006109	0.004162	1.467721	0.1643
D(TDS_GNI(-2))	0.014790	0.004922	3.004647	0.0095
CointEq(-1)	-0.205010	0.423390	-0.484210	0.6357
Cointeq = GR - (-0.3794*EXR -0.4345*EXTD_GNI -6.6371*FDI_GDP -0.0621*TDS_GNI + 92.1948) GR = -92.1948 + 0.3794*EXR + 0.4345*EXTD_GNI + 6.6371*FDI_GDP + 0.0621*TDS_GNI)				

Source: Author's Compilation, 2020

Pairwise Granger Causality Test

The results in table 7 below indicate that exchange rate (EXR) granger cause external debt (EXTD_GNI), which is uni-directional causality. This suggests that exchange rate promotes external debt in Nigeria. Therefore, the government should embark on foreign exchange and sound macroeconomic policies that will enable the country to service her debts conveniently. Also, foreign direct investment (FDI_GDP) granger cause external debt (EXD_GNI)

Table 7. Pairwise Granger Causality Test

Lags: 2			
Null Hypothesis:	Obs.	F-Statistic	Prob.
EXR does not Granger Cause EXTD_GNI	37	4.78432	0.0155
FDI_GDP does not Granger Cause EXTD_GNI	37	4.23121	0.0237

Source: Author's Compilation, 2020

Post-Estimation Diagnostic Tests

In order to confirm whether the utilized variables are jointly significant in explaining the effect of debt service payments on economic growth in Nigeria the study conducted the Auto-correlation, Heteroscedasticity, Normality and Ramsey stability tests. The results confirm that the model is free from auto-correlation because probability values are higher than the conventional 5 per cent critical value but not free from homoscedastic. Homoscedastic test does violate the

homoscedasticity assumption of the CNLRM, therefore the variances are not constant over time. Also, these variables are normally distributed because the probability is higher than 5% level of significant. In addition, with a probability value of 0.1835, the Ramsey specification test indicates that the model is not well specified. Therefore, Ramsey RESET specification test reflected that the model does suffer from the problem of omitted variables and linearity assumption. The model is still stable for policy implication.

Test	F-Statistic	t-Statistic	Obs.*R-Square	Prob. Value
Breusch-Godfrey				
Serial Correlation				
LM Test	0.012814		0.018226	0.9107
Heteroskedasticity Test				
Breusch-Pagan-Godfrey	2.835163		17.97739	0.0173
Jarque-Bera	0.844621			0.655531
Ramsey Stability Test	1.866923	1.366354		0.1835

Source: Author's Compilation, 2020

Conclusion and Recommendations

Conclusion

This study examined the impact of debt service payments on economic growth in Nigeria. The results from the empirical findings revealed that debt service payments (TDS_GNI) and other variables such as exchange rate (EXR), external debt (EXTD_GNI) and foreign direct investment (FDI_GDP) have positive relationship with economic growth (GR) in Nigeria. All these variables except exchange rate have significant impact on economic growth within the period under consideration. Based on the finding the study suggest that debt service obligation should not be allowed to rise more than foreign exchange earnings and that the loan contracted should be invested in profitable venture, which will generate a reasonable amount of money for debt repayment. Hence, it is important to maintain a healthy level of external debt and to utilize savings, foreign direct investment and reserves effectively.

Recommendations

The following recommendations are proposed in the light of the findings of the study:

- Debt service obligation should not be allowed to rise than foreign exchange earnings and that the loan contracted should be invested in profitable venture, which will generate a reasonable amount of money for debt repayment.
- It is important to review the country's external debt sustainability with total neglect of the level and constraint associated with domestic debt servicing which is underestimating the seriousness of indebtedness and the stress of debt servicing.
- By implication foreign direct investment should be encouraged so as to reduce debt burden.
- Finally, there is need for government to embark on programs that will promote political and economic stability so as to ensure effective debt management in Nigeria.

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