COMPARATIVE STUDY OF DEBT SERVICE PAYMENT AND ECONOMIC GROWTH RELATIONSHIP BETWEEN NIGERIA AND SOUTH AFRICA

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Abstract
The study examined the effect of external debt service payment on economic growth in Nigeria. The study used annual time series data on real gross domestic product growth rate as proxy for economic growth being the dependent variable while external debt, debt service payment, ratio of external debt to export, ratio of external debt to GDP, ratio of external debt service to export, oil revenue and manufacturing sectors output were the independent variables. Autoregressive distributed lag model (ARDL) was used to achieve the objective. Comparatively, the study revealed that external debt service payment had negative impact on economic growth in Nigeria while external debt service payment had positive impact on economic growth in South Africa. The study concluded based on the findings that increased in external debt service payment led to decline in economic growth in Nigeria while increased in external debt service payment will led to increase in economic growth in South Africa within the study period. The study recommended based on the finding that Nigerian government should ensure that borrowing from the rest of the world is reduced to the barest minimum level in order to minimize the level of service payment in terms of borrowing so as to achieve the desired level of economic growth in the Nigerian economy while South African government should ensure that borrowing from the rest of the world is increased on the average with a moderate increase in external debt service payment in order to achieve the desired level of economic growth.

1.0 Introduction

The performance of the Nigerian economy during the first two decades after independence was generally impressive than in the Pre – independence period in spite of the atmosphere of tumultuous political resurgence. The average GDP growth rate was 5.1 percent during first National Development Plan, 8.2 percent under the second and 5.0 percent under the Third. In the same vein the growth rate of capital formation (investment ration) rose from an average of 14.1 percent under the first plan to 26.7 percent in the third plan. Structural adjustment program (SAP) period 1986-1991 was designed to fit the standard IMF – World Bank structural adjustment packages and meant to effectively alter and restructure the consumption and production patterns of the Nigerian economy, as well, to dominate price distortions and heavy dependence on the export of crude oil and imports of consumer and producer good (Anyanwu 1997). The programme was proposed as an economy package designed to rapidly and effectively transform the national economy over a period of less than two years (Yesufu, 1996). According to Adeyemi (1996), the philosophy of SAP was predicted on demand management as a measure of curtailing external imbalance with a restrictive monetary policy. The ultimate objective was to achieve non- inflationary growth and to stimulate domestic production of tradable goods. In addition, SAP was to achieve a sustainable external debt service profile and hence, domestic savings and investment and the inflow of external resources. The economic performance under the structural adjustment programme appears to have performed better in terms of sectoral and over all GDP growth rates. This is attributable

to positive development in the agriculture, oil and financial sectors. The programme also corrected the over- valuation of the Naira which was amajor cause of cheap import, enchanced the Government revenue which consequently reduced the need to borrow.

However, the external debt burden increased from US $19.5 billion in 1985 to US $34.4 billion in 1991 as a result of new borrowings, increased in foreign interest rate, capitalization of unpaid interest charges as well as the appreciation of exchange rates of various European and Japanese Currencies against US dollar. The debt service ratio which stood at an average of 16.3% between 1982- 1985 increased to 26.7 percent between 1986-1994 creating a great strain on the foreign exchange earnings and reflecting the failure of the debt rescheduling programmes mapped out by the London and Paris club creditors (see Adepoju 2007).The pains of SAP however, include endemic inflation, foreign exchange shortage, sharp increases in unemployment, deterioration in health and educational standard, low capacity utilization and ever – rising fiscal deficits (Anyanwu et al 1997). There was no efficiency in resources mobilization as saving refused to translate into investment (Adeyemi 1996).Nigeria and South Africa as emerging countries in Africa had often faced huge volume of external debts which resulted to the increase of debt arrears at extreme cost of borrowing. Accumulated payment on debt collected resulted to many challenges across the economies particularly the emerging ones. This is because the servicing payment on external debt is over and above the amount of accumulated loans collected and this often reduces the stages of economic growth in such countries (Gohar & Butt, 2012).

Foreign borrowing has important effect on the growth and investment of a country to the extent, increased in the amount of foreign debt servicing affect the amount of economic growth as changes from engaging in private investment to repay the accumulated debts to the rest of the world. External debt is positively related to the growth rate of a nation if the amount of the accumulated debt is minimal and vice versa (Pattilo, Poirson & Ricci, 2002).

Debt service burden in Nigeria is traced back to 1978 after global fall in the crude oil price in the international market. The decline in global crude oil price, made Nigeria to incur external debts in 1978 from World Bank. This external debt amounted to US$28million dollars for railway construction. However, Nigeria incurred severe debt burden cost which invariably affected the welfare of the people. The debt service payment had severely affected the resources accessibility for sustainable reduction in the amount of poverty level. What seems undisputable is the progressively huge debt service obligation which levies substantial pressure on the Nigerian economy even when the enhanced resource inflow is factored into the country's cash flows (Odozi, 1996). Notwithstanding the government mindful determination in handling the nation's debt, the focus of debt has still been a problem to the Nigerian economy. Huge debt service payment responsibilities and debt burden has dejected the level of investment and economic growth due to reduction in the amount of liquidity cash available to both private and public investors to finance economic activities (Rapu, 2003).

Despite all the measures to source for external debt, Mbah, Umunna, and Agu (2016) revealed that most of the money was not used for the purposes for which they were borrowed. Furthermore, Bakare (2011) also confirmed that government failed to use these loans to achieve optimal growth in the Nigerian economy. The magnitude of this act has made the burden on debt service payment to hinder fast economic progress in Nigeria.

The magnitude of external debt and its related contrary consequence has become a major worry to any government. External debt burden is a multifaceted consistent problem. Notwithstanding the government sensible struggle in handling the external debt by boarding on numerous processes such as debt rescheduling, debt conversion amongst others. The problem of debt has been a drain in the Nigerian economy; the associated problem of debt has been due to huge debt service payment requirements and debt burden which has been the major bottleneck to sustainable growth in the Nigerian economy (Udeh, Ugwu & Onwuka, 2016).

Comparatively, the influence of external debt service payment on economic growth in South Africa is dated back to period of self-governing evolution of 1994. During this period, economic authorities were charged with the awful mission of getting rid of social challenges in the country. The government of South Africa has successfully reduced the ratio of debt to Gross Domestic Product which was recorded as 46% in 1994 to 22% in the year 2007. This made the amount of economic growth to improve meaningfully from 3% recorded in 1994to 5.6% recorded in 2006. International economic financial crisis had hiked the amount of external debt increased from 23% of Gross Domestic Product (GDP) recorded in 2008 to 45% of Gross Domestic Product (GDP) recorded in 2015 with economic growth rate worsened marginally from 3% recorded in 2008 to 1.3% recorded in 2015 (World Bank, 2017).

In South Africa, the economy has been faced with high fiscal deficit government which has accumulated high debt volume owed to foreign creditors. This reliance on external debt by South Africa economy resonated as a result of government failure to finance investment mainly via the generation of tax revenues to achieve economic growth (Baaziz, Guesmi, Heller & Lahiani, 2015). The government of South Africa over the years borrowed through treasury bills, issuing of bonds and amongst other debt securities to secure financial instruments for foreign investment towards achieving economic growth. However, external borrowing by South Africa government was intended to stimulate the nation's economic growth domestically through the investment of funds from foreign investors. In spite the level of external borrowing, South Africa is yet to achieve her desired level of economic growth due to huge external debt service payment.. Hence, it is extremely difficult to draw any definite conclusion on the relationship between external debt service payment and economic growth in Nigeria and South Africa.Majority of current studies on the relationship between external debt and economic growth in Nigeria and South Africa are country-specific. However, more informed policies on debt management may be obtained from a comparative analysis between these countries. Nevertheless, previous studies such as; Abbas and Christensen (2007) and Ayadi and Ayadi (2008) on external debt and economic growth relationship in Nigeria and South Africa utilized Ordinary Least Squares (OLS) technique of estimation. It is also another key reasons that motivated this study to employ Autoregressive Distributed Lag (ARDL) because it does not select the order of integration of the variables.

2.0 Literature Review

2.1 Empirical Literature Review

Adesola (2009) analyzed the effect of external debt service payment practices on sustainable economic growth and development with particular emphasis on Nigeria from 1981 to 2004.

The study employed ordinary least square multiple regression method. The result revealed that debt payment to foreign creditors has positive impact on sustainable economic growth.

Muhammad and Hira (2004) examined the impact of external debt servicing on the aggregate investment of Pakistan. A simple and sophisticated technique of classical econometrics is used for the analysis. The study revealed that debt servicing practices to multilateral financial creditors and other private creditors has a negative impact on investment while the bilateral creditors, IBRD (non-concessional debt) and IDA have shown a positive contribution to the investment.

Butts and Hector (2009) investigated the effect of external debt service payment practices on the economic growth of Nigeria. Ordinary Least Square method of multiple regressions was used to examine how debt payment to multilateral financial creditors, Paris club creditors, London club creditors, Promissory notes holders and other creditors relates to gross domestic product (GDP) and gross fixed capital formation (GFCF) using data from 1981 to 2004. The study showed that debt payment to Paris club creditors and Promissory notes holders are positively related to GDP and GFCF while debt payment to London club creditors and other creditors show a negative significant relation to GDP and GFCF. Malik et al. (2010) investigated the relationship between external debt and economic growth in Pakistan over the period 1972 to 2005 employing time series econometric technique. Their result revealed that external debt is negatively and significantly related to economic growth.

Using ADF unit root test, Phillip-Perron unit root test, Johansen Cointegration test and Ordinary Least Square estimating technique, Aderoju (2018) examined the relationships among external debt, internal debt, debt service payment and economic services provision in Nigeria over the period 1981 and 2016. Empirical findings from the study revealed that External Debt and Debt Servicing are inversely related with Economic Services Spending by the government. A one unit increase in External Debt and Debt Servicing would bring about 41.72 units and 40.92 units reduction in Economic Services Provision respectively. The results also showed that there exists a statistically significant positive relationship between Internal Debt and Economic Services Provision in Nigeria. A one percent increase in Internal Debt would lead to 27.29 percent rise in Economic Services delivery in Nigeria.

Udoka and Anyingang (2010) evaluated the impact of external debt on economic growth in Nigeria from 1970 to 2006 using Ordinary Least Square method of multiple regression analysis. The study revealed that external debt is positively related to economic growth in Nigeria. The study concluded that increased in external debt led to increase in economic growth.

Similarly, Ogege and Ekpudu (2010) investigated the relationship external debt burden and economic growth in Nigeria using time series data within the time frame of 1970-2007. The study used Ordinary Least Square (OLS) to ascertain the relationship between external debt burden and economic growth in Nigeria. The study showed that external debt burden is negatively related to economic growth in Nigeria. The study concluded external debt burden led to decline in economic growth in Nigeria.

Adofu and Abula (2010) carried out a study on domestic debt and economic growth in Nigeria. The study used Ordinary Least Squares (OLS) regression technique within the timeframe of 1986-2005.The result showed that domestic debt and economic growth are negatively related in Nigeria. The study concluded that domestic debt negatively affected economic growth in Nigeria.

Abbas and Christensen (2007) determined the relationship between external debt and economic growth in Nigeria and South Africa within the timeframe of 1975-2004. The study utilized Ordinary Least Squares method of multiple regression analysis. The study showed that external debt is positively related to economic growth in Nigeria and South Africa. The study concluded that increased in external debt resulted to economic growth in Nigeria and South Africa.

Ayadi and Ayadi (2008) investigated the impact of external debt on economic growth in Nigeria and South Africa. The study used the techniques of OLS and GLS. The study revealed that external debt is negatively related to economic growth in Nigeria and South Africa. The study concluded that increased in external debt led to decline in economic growth in Nigeria.

Abdullahi (2016) examined effects of external debt on capital formation, assess impact of debt overhang and crowding out effects on capital formation and investigate causal relationships between external debt and capital formation in Nigeria and South Africa. Autoregressive distributive lag (ARDL) and Vector Autoregressive (VAR) modeling on time series data covering three decades were employed in the study. The results have established that, interest rate and external debt service are the most statistically significant variables explaining external debt accumulation scourge in the selected countries. Additionally, the study also revealed that, external debt has significant negative effects on capital formation in the same manner with debt overhang and crowding out effects. It is also established that external debt and capital formation Granger -causes each other.

Ncebakazi and Andrew (2017) evaluated the effect of external debt on economic growth in South Africa for the period of 2002-2016. The study employed Autogressive Distributed Lag (ARDL) model to determine the effect of external debt on economic growth in South Africa. The study found that external debt has effect on economic growth in South Africa. The study concluded that enlargement in external debt led to turn down in economic growth in the short run and increase in economic growth in the long run.

Baaziz, Guesmi, Heller and Lahiani (2015) investigated the impact of external debt on economic growth in South Africa. The study employed smooth transition regression. The study revealed that external debt has negative impact on economic growth in South Africa. The study concluded that increased in external debt resulted to decline in economic growth in South Africa.

Ezeabasili, Isu, and Mojekwu (2011) investigated the relationship between Nigeria's external debt and economic growth for the period of 1975 to 2006 using the Ordinary Least Squares Two Stage method. The results showed that external debt is negatively related to economic

growth in Nigeria. The study concluded external debt contributed negatively to economic growth in Nigeria.

2.3 Theoretical Framework

The empirical model for this study was anchored on the dual gap theory. Unlike the other theories, the dual gap theory according to Chenery and Bruno (1962) stated that the shortage of savings and investment to enhance economic growth results to external borrowing. The theory also stated that the economic growth of a country is determined by investment and such investment is necessitated by the amount of domestic savings (Oloyede, 2002). The theory also stated that excess import over export results to low savings and low investment. Hence, the gap between import and export leads to external borrowing.

This gap is therefore represented mathematically as demonstrated in Equation 3.1

Investments-Savings=Import-Export

……..3.1

In order to incorporate economic growth (Q), Equation 3.1 was represented as showed in Equation 3.1.1

$Q = \beta_0 + \beta_1 I + \beta_1 S$ ……3.1.1

The Equations 3.1 shows that excess import over export results to low savings and low investment. Thus, implies the reason for external borrowing by such country due to high ratio of import to export and low ratio of investment to savings. Equation 3.1.1 implies that economic growth is driven by investment and saving gap which is bridged through external debt.

3.0 Methodology

For the purpose of achieving the stated objective, this study adapt the methodology of Ncebakazi and Andrew (2017) with modification. The research work made use of secondary data within the period of 1980-2017, which is obtained from central bank of Nigeria statistical bulletin and world development indicators (WDI). The study engaged a three step procedures in order to determine the impact of external debt service payment-economic in Nigeria and South-Africa. These procedures are unit root test, ARDL bound-coingration test and Autoregressive Distributed Lag Model. The Augmented Dickey fuller (ADF) tests were used to test for the stationarity of the time series data used in this study.

Furthermore, bounds cointegration test and Autoregressive distributed lag model were employed to find out the long run equilibrium convergence and the impact respectively.

In building the ARDL model for the study for Nigeria, the model is mathematically represented linearly as shown in Equation 2

$\ln RGDP = \beta_0 + \beta_1 \ln EXD + \beta_2 \ln EDSP + \beta_3 \ln REXDGDP + \beta_4 \ln REXDX + \beta_5 \ln REXDSGDP + \beta_6 \ln REXDSX + \beta_6 LNOR$…….....1

while the econometric form is represented in Equation 3 below

$\ln RGDP = \beta_0 + \beta_1 \ln EXD + \beta_2 \ln EDSP + \beta_3 \ln REXDGDP + \beta_4 \ln REXDX + \beta_5 \ln REXDSGDP + \beta_6 \ln REXDSX + \beta_7 \ln OR + \mu_t$……2

The ARDL model was used to examined effect of external debt service payment on economic growth in Nigeria. The ARDL model based on the linear model specification in Equation 1and 2 is shown in Equation 3

$$\Delta LRGDP_t = \alpha_0 + \sum_{i=1}^{p} \delta_i \Delta LRGDP_{t-1} + \sum_{k=0}^{p} \beta_k \Delta LEXD_{t-k} + \sum_{k=0}^{p} \in_k \Delta LEDSP_{t-k} + \sum_{l=0}^{p} \gamma_l \Delta REXDGDP_{t-l} + \sum_{m=0}^{p} \varphi_m \Delta LREXDX_{t-m} + \sum_{n=0}^{p} \Psi_n \Delta LREXDSGDP_{t-n} + \sum_{k=0}^{p} \varrho_k \Delta LREXDSX_{t-k} + \sum_{k=0}^{p} \varrho_k \Delta LOR_{t-k} + \lambda_1 LRGDP_{t-1} + \lambda_2 LEXD_{t-1} + \lambda_3 LEDSP_{t-1} + \lambda_4 REXDGDP_{t-1} + \lambda_5 REXDX_{t-1} + \lambda_6 REXDSGDP_{t-1} + \lambda_7 REXDSX_{t-1} + \lambda 8lOR + \mu_t ------$$

$$---3$$

In building the ARDL model for the study for South Africa, the model is mathematically represented linearly as shown in Equation 4

$\ln RGDP = \beta_0 + \beta_1 \ln EXD + \beta_2 \ln EDSP + \beta_3 \ln REXDGDP + \beta_4 \ln REXDX + \beta_5 \ln REXDSGDP + \beta_6 \ln REXDSX + \beta_7 \ln MSO$…….....4

while the econometric form is represented in Equation 3 below

$\ln RGDP = \beta_0 + \beta_1 \ln EXD + \beta_2 \ln EDSP + \beta_3 \ln REXDGDP + \beta_4 \ln REXDX + \beta_5 \ln REXDSGDP + \beta_6 \ln REXDSX + \beta_7 \ln MSO + \mu_t$…….5

The ARDL model was used to examined effect of external debt service payment on economic growth in South Africa. The ARDL model based on the linear model specification is shown in Equation 6 below

$$\Delta LRGDP_t = \alpha_0 + \sum_{i=1}^{p} \delta_i \Delta LRGDP_{t-1} + \sum_{k=0}^{p} \beta_k \Delta LEXD_{t-k} + \sum_{k=0}^{p} \in_k \Delta LEDSP_{t-k} + \sum_{l=0}^{p} \gamma_l \Delta REXDGDP_{t-l} + \sum_{m=0}^{p} \varphi_m \Delta LREXDX_{t-m} + \sum_{n=0}^{p} \Psi_n \Delta LREXDSGDP_{t-n} + \sum_{k=0}^{p} \varrho_k \Delta LREXDSX_{t-k} + \sum_{k=0}^{p} \varrho_k \Delta MSOt-k + \lambda_1 LRGDP_{t-1} + \lambda_2 LEXD_{t-1} + \lambda_3 LEDSP_{t-1} + \lambda_4 REXDGDP_{t-1} + \lambda_5 REXDX_{t-1} + \lambda_6 REXDSGDP_{t-1} + \lambda_7 REXDSX_{t-1} + \lambda 8lMSOt - 1 + \mu_t --$$

$$--------6$$

Where α_0 and μ_t is the autonomous component and white noise respectively. The expression with the signs of summation in the equation is error correction. The parameter coefficient denotes the short run effects while lambda (λ) is the corresponding relationship in the long run. Real Gross Domestic Product (R*GDP*) will be the proxy for economic growth, external debt (*EXD*), external debt service payment (E*DSP*), ratio of external debt to export (*REXDX*),

ratio of external debt to GDP (*REXDGDP*), ratio of external debt service to export (*REXDSX*), ratio of external debt service to GDP (*REXDSGDP*) and manufacturing sector output (MSO)

4.0 Discussion of Results and Findings

Unit Root Test Results

To ascertain the order of integration of the variables, this test was carried out to account for the presence of unit roots (that is whether the variables are stationary or not) using the Augmented Dickey Fuller (ADF) test.

Table4.1: Unit Root Test Results for Nigeria

Variables	ADF Statistic at level	ADF Statistic at first difference	Order of integration	ADF Statistic at level	ADF Statistic at first difference	Order of integration
	Nigeria			South Africa		
LnRGDP	-5.897477***	-	I(0)	-1.353872	-8.382392***	I(1)
LnEXD	2.629323	-4.605607***	I(1)	-1.493736	-6.398763***	I(1)
LnEDSP	-1.523104	-6.398559***	I(1)	-3.487392**	-	I(0)
lnREXDGDP	-2.025979	-5.236945***	I(1)	-2.349839	-5.483923***	I(1)
LnREXDX	-1.587266	-5.155098***	I(1)	-1.587463	-7.493736***	I(1)
lnREXDSGDP	-2.184524	-4.098906**	I(1)	-3.454839**	-	I(0)
LnREXDSX	-1.676635	5.429971***	I(1)	-1.345324	-6.389282***	I(1)
LnOR	-5.676635**	-	I(0)	-1.676635	5.529971***	I(1)

Note: ***, **, and * indicate statistical significance at 1%, 5% and 10% respectively
Source: Researcher's Computation

It is obvious from the ADF results in table 4.1 above that, some of the data sets are integrated of (I (0)) or (I (1)) for Nigeria and South Africa. In level, the unit root test (ADF) results obtained indicate that only LnRGDP and LnOR are stationary for Nigeria while only LnEDSP and LnREXDSGDP for South Africa. In addition, the results also indicate that other variables became stationary at the first difference.

ARDL Bound Co-integration Test

Table4.2. Bound Co-integration Test on External Debt-Economic Growth Relationship in Nigeria

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	3.84808	10%	1.99	2.94
K	6	5%	2.27	3.22
		1%	2.88	3.78

Source: Researcher's Computation

Since the calculated F-statistic (3.84) is greater than all the lower bound and upper bound critical values at 1%, 5% and 10% level of significance, the null hypothesis of no long-run relationship among the variables of the selected ARDL (1, 1, 2, 0, 2, 2, 2) is to be rejected. Thus, the variables employed in this study are co-integrated.

Table4.4:3 Bound Co-integration Test on External Debt-Economic Growth Relationship in South Africa

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.453420	10%	1.89	2.89
K	6	5%	2.17	3.23
		1%	2.73	3.91

Source: Researcher's Computation

Since the calculated F-statistic (4.45) is greater than the lower bound and upper bound critical values at 1%, 5% and 10% level of significance, the null hypothesis of no long-run relationship among the variables of the selected ARDL (1, 1, 1, 1, 2, 2, 2) is to be rejected. Thus, the variables employed in this study are co-integrated.

Estimated Results of Short Run and Long-Run Models for Nigeria

The objective of the study is to examine the effect of external debt service payment on economic growth in Nigeria and South Africa. However, these results only applied to the case of Nigeria.

Table4.4: Estimated ARDL Model for Objectives for Nigeria

Dependent Variable: D(LNRGDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.541775	1.486232	0.364529	0.7213
Short Run Model				
D(LNRGDP(-1))	0.311307	0.023240	9.092384	0.0002
D(LNEXD(-1))	-0.482112	0.079131	-6.092580	0.0043
D(LNEDSP(-1))	-0.542168	0.102511	-5.288876	0.0055
D(LNREXDGDP(-1))	-0.348470	0.054381	-6.407937	0.0006

D(LNREXDX(-1))	-0.374271	0.080461	-4.651582	0.0094
D(LNREXDSGDP(-1))	-0.097542	0.056443	-1.728148	0.1076
D(LNREXDSX(-1))	-0.536825	0.631203	-0.850479	0.4105
D(LNOR(-1))	0.649470	0.354581	7.407937	0.0007
ECT(-1)	-0.842069	0.411890	-2.287162	0.0396
Long Run Model				
LNRGDP	0.236191	0.251784	0.938071	0.3653
LNEXD	-0.568151	0.088120	-6.447469	0.0010
LNEDSP	-0.710387	0.098502	-7.211904	0.0002
LNREXDGDP	-0.541696	0.066938	-8.092504	0.0000
LNREXDX	-0.454563	0.079429	-5.722885	0.0091
LNREXDSGDP	-0.366797	0.087315	-4.200847	0.0027
LNREXDSX	-0.298656	0.059571	-5.013446	0.0030
LNOR	0.548480	0.054381	-6.407937	0.0003

Source: Researcher's Computation

The result of the short run and the long run models in table4.4, revealed that the independent variables (external debt (*EXD*), external debt service payment (E*DSP*), ratio of external debt to export (*REXDX*), ratio of external debt to GDP (*REXDGDP*), ratio of external debt service to export (*REXDSX*), ratio of external debt service to GDP (*REXDSGDP*) and oil revenue (OR) explained about 74% of the total variations in real gross domestic product growth rate as proxy for economic growth while the remaining 26% unexplained is captured by the error term. Considering the prob (F-statistic) of 0.000043, the entire model is robust.

The short run model accounts for the speed of adjustment to long run equilibrium of the variables employed. Hence, the speed of adjustment of the model to long run equilibrium is measured by the coefficient of the first lag of the error correction term (ECT (-1)). The error correction term (-0.84) has the right a priori sign and it is statistically significant. Hence, the result of the ECT (-1) showed that 84% of the deviation of the variables in the short run will be restored in the long run within one year.

Based on the long run model, External debt (*EXD*) has an estimated coefficient value of -0.57 meaning a 1% increase in external debt led to 57% decrease in RealGross Domestic Product (R*GDP*) growth rate in Nigeria. This revealed that external debt (*EXD*) has negative impact on RealGross Domestic Product (R*GDP*) growth rate in Nigeria. Hence, External debt had negative impact on economic growth in Nigeria within the study period. This finding is in line with the submissions of Ezeabasili, Isu and Mojekwu (2011), David and Etido (2016) and Sajuyigbe, Odetayo and Adeyemi (2018) who examined the impact of external debt on economic growth in Nigeria that revealed that external debt had negative impact on economic growth in Nigeria. External debt service payment (E*DSP*) has an estimated coefficient of -0.71 meaning a 1% increase in external debt service payment led to 71% decrease in RealGross Domestic Product (R*GDP*) growth rate in Nigeria. This implied that external debt

service payment (E*DSP*) has negative effect on RealGross Domestic Product (R*GDP*) growth rate in Nigeria. Hence, external debt service payment (E*DSP*) had negative effect on economic growth in Nigeria within the study period. This finding is in line with the work of Momodu (2012), Aderoju (2018) and Adesola (2009) who revealed that debt service payment is negatively related to economic growth in Nigeria in his study on the effect of debt servicing on economic growth in Nigeria. The ratio of external debt to export (*REXDX*), ratio of external debt to GDP (*REXDGDP*), ratio of external debt service to export (*REXDSX*), ratio of external debt service to GDP (*REXDSGDP*) and oil revenue(OR) have estimated coefficients of -0.54, -0.45, -0.37, -0.30 and 0.55 respectively. This implied that 1% increase in the ratio of external debt to export (*REXDX*), ratio of external debt to GDP (*REXDGDP*), ratio of external debt service to export (*REXDSX*), ratio of external debt service to GDP (*REXDSGDP*) and oil revenue(OR) led to 54%, 45%, 37% and 30% decrease in Real Gross Domestic Product (R*GDP*) growth rate in Nigeria while oil revenue with 55% will leads to increase in Real Gross Domestic product which will in turn lead to rise in economic in Nigeria . Hence, an increase in the ratio of external debt to export (*REXDX*), ratio of external debt to GDP (*REXDGDP*), ratio of external debt service to export (*REXDSX*) and ratio of external debt service to GDP (*REXDSGDP*) led to decline in economic growth in Nigeria within the study period while increase in oil revenue (OR) will led to increase in economic growth in Nigeria within the study period..

Estimated Results of Short Run and Long-Run Models for South Africa

The objective of the study is to examine the impact of external debt service payment on economic growth in Nigeria and South Africa. However, these results only applied to the case of South Africa.

Table 4.5: Estimated ARDL Model for South Africa

Dependent Variable: D(LNRGDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.658743	1.598473	0.412108	0.7213
Short Run Model				
D(LNRGDP(-1))	0.345769	0.024763	13.96313	0.0001
D(LNEXD(-1))	0.529584	0.084349	6.278486	0.0278
D(LNEDSP(-1))	0.474893	0.108732	4.367556	0.0164
D(LNREXDGDP(-1))	0.401348	0.064453	6.226987	0.0019
D(LNREXDX(-1))	0.303933	0.075930	4.002805	0.0034
D(LNREXDSGDP(-1))	0.587573	0.087432	6.720343	0.0165
D(LNREXDSX(-1))	0.742493	0.631203	1.176314	0.7654
D(LNMSO(-1))	0.529584	0.084349	6.278486	0.0278
ECT(-1)	-0.645983	0.091562	7.044221	0.0093
Long Run Model				
LNRGDP	0.328749	0.287564	1.143221	0.6213
LNEXD	0.457853	0.085153	5.376828	0.0042

LNEDSP	0.538473	0.074532	7.224722	0.0152
LNREXDGDP	0.483456	0.053463	9.042815	0.0061
LNREXDX	0.505678	0.064345	7.858854	0.0004
LNREXDSGDP	0.393523	0.087315	4.506935	0.0007
LNREXDSX	0.622474	0.074326	8.374916	0.0000
LNMSO	0.639674	0.094359	6.878480	0.0018

Source: Researcher's Computation using Eviews 10, 2021

The result of the short run and the long run models in table 4.5, revealed that the independent variables (external debt (*EXD*), external debt service payment (E*DSP*), ratio of external debt to export (*REXDX*), ratio of external debt to GDP (*REXDGDP*), ratio of external debt service to export (*REXDSX*), ratio of external debt service to GDP (*REXDSGDP*) and MSO explained about 82% of the total variations in real gross domestic product growth rate as proxy for economic growth while the remaining 19% unexplained is captured by the error term. Considering the prob (F-statistic) of 0.000012 the entire model is robust and is devoid of the presence of autocorrelation problem.

The short run model accounts for the speed of adjustment to long run equilibrium of the variables employed. Hence, the speed of adjustment of the model to long run equilibrium is measured by the coefficient of the first lag of the error correction term (ECT (-1)). The error correction term (-0.65) has the right a priori sign and it is statistically significant. Hence, the result of the ECT (-1) showed that 65% of the deviation of the variables in the short run will be restored in the long run within one year.

Based on the long run model, External debt (*EXD*) has an estimated coefficient value of -0.46 meaning a 1% increase in external debt led to 46% increase in Real Gross Domestic Product (R*GDP*) growth rate in South Africa. This revealed that external debt (*EXD*) has positive impact on Real Gross Domestic Product (R*GDP*) growth rate in South Africa. Hence, External debt had significant positive impact on economic growth in South Africa within the study period. Hence, this finding is in line with the works of Abass and Christensen (2007) and Ncebakazi and Andrew (2017) who revealed that external debt had positive impact on economic growth in South Africa. External debt service payment (E*DSP*) has an estimated coefficient of -0.54 meaning a 1% increase in external debt service payment led to 45% increase in Real Gross Domestic Product (R*GDP*) growth rate in South Africa. This implied that external debt service payment (E*DSP*) has significant positive effect on Real Gross Domestic Product (R*GDP*) growth rate in South Africa. Hence, external debt service payment (E*DSP*) had significant positive effect on economic growth in South Africa within the study period. The ratio of external debt to export (*REXDX*), ratio of external debt to GDP (*REXDGDP*), ratio of external debt service to export (*REXDSX*), ratio of external debt service to GDP (*REXDSGDP*) and manufacturing sector output (MSO) have estimated coefficients of 0.48, 0.50, 0.39, 0.62 0.64 respectively. This implied that 1% increase in the ratio of external debt to export (*REXDX*), ratio of external debt to GDP (*REXDGDP*), ratio of external debt service to export (*REXDSX*), ratio of external debt service to GDP (*REXDSGDP*) and manufacturing sector output (MSO) led to 48%, 51%, 39%, 62% and 64% increase in Real Gross Domestic Product (R*GDP*) growth rate in South Africa. Hence, an

increase in the ratio of external debt to export (*REXDX*), ratio of external debt to GDP (*REXDGDP*), ratio of external debt service to export (*REXDSX*) , ratio of external debt service to GDP (*REXDSGDP*) and manufacturing sector output (MSO) led to increase in economic growth in South Africa within the study period.

Discussion on Comparative Study of External Debt-Economic Growth Relationship between Nigerian and South Africa

Comparatively, based on the results, the study revealed that external debt service payment had negative effect on economic growth in Nigeria within the study period while external debt service payment had positive effect on economic growth in South Africa within the study period.

Table 4.6Diagnostic Test

Diagnostic Test	Statistics	
	Nigeria	South Africa
R^2	0.74	0.8157
Adj. R^2	0.40	0.5086
F-Statistics	21.73(0.000043)	17.37(0.000012)
Durbin-Watson	1.9599	1.74
Serial Correlation	12.52466(0.0619)	14.277850.2008)
Heteroscedasticity	14.508(0.4874)	3.401899(0.7570)

The diagnostic tests for Nigeria and South Africa above confirm the perfection of model. The functional form of the model is normal, there is no heteroscedasticity and serial correlation and the residuals are normally distributed.

Policy Implications of Findings

The result of the long run association or bound test proposed by Pesaran et al (2001) revealed that there exists long run association among the variables employed in the ARDL model. Comparatively, based on the findings, the study also concluded that external debt service payment had negative impact on economic growth in Nigeria while external debt service payment had positive impact on economic growth in South Africa. Hence, increase in external debt service payment led to decline in economic growth in Nigeria within the study period while increased in external debt service payment led to increase in economic growth in South Africa within the study period.

5.0 Conlusions and Recommendation

The study examined external debt and economic growth relationship in Nigeria and South Africa. It employed Autoregressive Distributed Lag approach in testing for the impact external debt service payment on economic growth in Nigeria and South Africa. The study revealed that external debt service payment has negative effect on economic growth in Nigeria while positive effect on South Africa economy within the study period. This implied based on conclusion that an increase in external debt service payment in Nigeria will lead to a decline in economic growth while an increase in external debt service payment in South Africa will lead to an increase in economic growth.

Hence, based on findings and conclusion the study therefore recommend that Nigerian government should ensure that borrowing from the rest of the world is reduced to the barest minimum level in order to minimize the level of service payment in terms of borrowing so as to achieve the desired level of economic growth in the Nigerian economy. The study further recommend that South African government should ensure that borrowing from the rest of the world is increased on the average with a moderate increase in external debt service payment in order to achieve the desired level of economic growth.

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