



External Debt Service and Nigeria's Macroeconomic Performance, 1981 – 2019

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Abstract: This research studied external debt service and Nigeria's macroeconomic performance from 1981 to 2019. The macroeconomic performance indicators employed were Real Gross Domestic Product and Exchange rate while external debt servicing is the independent variable. The data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (2019 edition) and were analyzed using the Vector Error Correction Model. Some other robust econometric tools such as Granger causality, impulse response function, variance decomposition and the stability tests were conducted. The findings revealed that a significant relationship existed between external debt service and Nigeria's real gross domestic product and external debt service decreased exchange rate. The error correction coefficients showed significant speed of adjustments to long run equilibrium. Based on the analysis, the study concluded that Nigeria's external debt service profile has increased growth of the macro-economy owing to the positive effect of external debt service on real GDP in the model. The implication is that Government has evolved more efficient ways of channeling these borrowed funds to the productive sectors. Thus, the country should devise a more efficient way of servicing her external loan obligations to avoid huge debt burden. The study further recommended that government should engage in massive production so as to meet the long term objective of borrowing externally which will ease the strain on exchange rate and also further the strength of the local currency as well as focus more on the real sector which is the productive sector of the economy

Keywords – External Debt Service, Real Gross Domestic Product, Exchange Rate, Economic growth, Vector Error Correction Model



1.0 INTRODUCTION

One of the major challenges facing most developing countries like Nigeria is the failure of the nations to meet their debt service payments coupled with lack of adequate information relating to the structure, nature, and volume of the debt in question (Were, 2011). The inability of the country to promptly meet its debt servicing obligations resulted in high debt service burden for the country. The impact of this burden of debt service created more problems for the nation as it led to the increase in the fiscal deficit which is driven by the increase in the levels of debt servicing. This created a major problem to the economy because a great part of the earned revenue of the country was now being used up in servicing debt obligations and negatively affecting the improvement of the macroeconomic fundamentals of the country such as economic growth reduction of unemployment, price stability, favourable exchange rate etc. Debt servicing in Nigeria has hampered the country's economic growth and development. This exerts pressure on the economy, with consequences such as high inflation, unemployment, the majority of the population living under the poverty line and corruption (Ayadi, 2008).

External Debt Service is a situation where a debtor country is able to fulfil her external debt obligations (payment of principal and accrued interest) when they fall due. This is the repayment by a country that owes the principal and interest on a loan outstanding at maturity. The proportion of interest payments in total debt service in Nigeria in absolute terms has been on the increase. The payments of interest form a key source of worry in the debt servicing challenges facing the country. Available statistics from Debt Management office (DMO) indicates that interest payments increased from N783.6 million in 1984 to N980.5 million in 1985 and to N987.2 million in 1986. This increased further to

N2,251.8 million in 1987 and then to N5,133.9 million in 1988. The interest payments constitute 29.7 percent total debt service in 1984 and 26.4 percent in 1985. It was 39.5 percent in 1986; 62.7 percent in 1987 and 64.1 percent in 1988. The implications of the debt problem for the national economy is quite obvious. The inability of the country to secure additional new loans such as medium and long term loans frustrated the completion of a number of projects. In order to avoid the delays in payment of goods and services, suppliers build in a risk premium on their prices. A huge volume of the foreign exchange of the country is utilized for debt servicing. Available statistics from CBN indicates that Nigeria spent N1.03 billion on debt servicing in 1981. This continued to increase yearly and rose to N1.61 billion in 1985, N23.82 billion in 1990, N51.06 billion in 1995 and N131.05 billion in 2000. This is also a reflection of the external debt stock in the country. The external debt stock of the country during this period was N2.33 billion in 1981, N17.3 billion, N298.6 billion, N716.87 billion and N3,097.38 billion in 1985, 1990, 1995 and 2000 respectively. The external debt servicing amount rose to N393.96 billion in 2005 and decline to N249.33 billion in 2006 following the debt relief granted Nigeria by the Paris Club. This declined further to N213.73 in 2007, increased to N381.20 billion in 2008 and to N415.66 billion in 2010. From then on, the amount spent by the country on servicing her external debt has been on an upward increase. It increased sharply to N1,060.38 billion in 2015, N1,700.25 billion in 2017, declined to N1,321.61 billion in 2018 and increased to N1,416.59 billion in 2019.

It has been argued that most of the borrowed funds were diverted and used to finance ill-conceived Federal and State Government projects that did not in any way improve the macroeconomic fundamentals of the country. Many of the projects remained uncompleted or are functioning below capacity due to ineffective



management, poor financial planning or defective project selection. The right calibers of people were not given the opportunity to serve and manage the country's resources effectively. Rather, it became very common to find round pegs in square holes. Sound financial management criteria like Pay Back Period; Internal Rate of Return, Discounted Cash Flow, Profitability Index were ignored when embarking on project analysis in order to conceal the fact that the project was not viable so that the initiators and signatories to the agreement could on their own make maximum profit at the expense of the nation. (Adesola, 2009)

Nigeria's external debt profile according to Debt Management Office (DMO, 2006) has become as a source of concern to everyone as over \$32 billion were used for debt services between 1985 and 2001. In spite of the huge external debt overhang, there was no appreciable growth in the economy and the country was regarded as a developing economy with a per capita GDP of less than \$5. Even with the debt forgiveness granted to Nigeria in 2006 by the Paris Club, the level of economic activities in the country tends to question the quest for foreign loan and its benefit for the improvement of the macroeconomic performance of the Nigerian economy.

It should be noted that in spite of the huge amount of external loans taken by successive governments in Nigeria over the years and the enormous external debt service payments made, the level of their impact on the macroeconomic activities in Nigeria has not been investigated. This is the reason why the researcher intends to investigate the impact of external debt service on Nigeria's macroeconomic performance. The study will provide answers to the following questions: What is the relationship between external debt servicing and economic growth in Nigeria?; and what is the

contribution of external debt service on the exchange rate in Nigeria.

Answers to these questions will enable economic planners in Nigeria to determine the extent to which the amount spent on external debt servicing would have helped to boost the macroeconomic performance in the country. The study will also assist budget implementation and monitoring agencies to track the funds that are earmarked for debt servicing to ascertain if they are actually utilised for the intended purposes or not.

2.0 LITERATURE REVIEW

2.1 Conceptual Framework

External Debt Service.

External Debt Service is the regular payment of the principal amount and the accruing interest by a country on its external loan obligations. According to Kalu, Okai, Chukwu and Amadi (2016), it refers to the repayment of the principal and interest components of an outstanding external loan as and when due by a debtor nation. In Nigeria, debt servicing generally has put a great setback and threat to the economic growth and development of the country. Adesola, (2009) stated that debt servicing is the cash that is needed for a particular time period to cover the repayment of interest and principal on a debt. He also noted that debt servicing results in sharp decline in the standard of living, gross social and economic overhead depreciation, high external dependence, currency depreciation, balance of payment disequilibria, exchange rate depreciation and rising inflationary rate. The proportion of interest payments in total debt service in Nigeria in absolute terms has been on the increase. The payments of interest form a key source of worry in the debt servicing challenges facing the country.

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Macroeconomic performance refers to an assessment of how well a country is doing in achieving key objectives of government policy. Traditionally, the key measures of macroeconomic performance include the following amongst others; sustainable growth of real GDP, price stability i.e. low positive inflation (CPI inflation of 2%), reduced unemployment/rising employment rate, improved global competitiveness/trade balance (BOP), favorable exchange rate, high average standard of living, a more equitable distribution of income and wealth, etc. Macroeconomic performance demonstrates how well a country is doing in achieving important objectives or key targets of government policy. These targets include;

1. Economic growth measured by real GDP growth. – Sustainable growth of real GDP (National output)
2. Reduced Inflation – e.g., target CPI inflation of 2% (Price stability)
3. Reduced Unemployment – target of achieving full employment
4. Improved global competitiveness/Trade balance (BOP)

Exchange Rate

Exchange rate is the rate at which one currency of a country will exchange for that of another country. For example, how many US dollars does it take to buy one Naira. It plays an important role in an economy that is dependent on international trade. The importance of exchange rate is derived from the fact that it connects the price system of two different currencies thereby facilitating trade between individuals, organizations and government of one country and that of another. It also helps traders to directly compare prices of traded goods. Countries use exchange rates as policy for macroeconomic control and for attainment of

macroeconomic objectives in most economies. For instance, if foreign exchange is obtained at low cost, similarly, the prices of imported goods will be low. On the other hand, if the exchange rate appreciates, for example, an increase via devaluation, prices of imported goods will increase and the general level of prices in the economy will increase. Nations from time to time introduce exchange rate policies in their pursuit of macroeconomic objective of a healthy external balance. Theoretically, this variable is expected to exert a negative impact on economic growth provision in the country. Mohammed & Ahmed (2005) stated that the continuous depreciation of the value of the Naira against foreign currency would adversely affect the economic growth provision.

Real Gross Domestic Product (GDP)

Real GDP is a macroeconomic tool that is used to measure the value of the goods and services produced by an economy over a in a specific period, after adjusting for inflation. Essentially, it measures the total economic output of a country, adjusted for price changes. According to Investopedia Real gross domestic product (real GDP) is an inflation-adjusted measure that reflects the value of all goods and services produced by an economy in a given year (expressed in base-year prices) which is often referred to as constant-price GDP, inflation-corrected GDP, or constant dollar GDP.

Jochumzen (2010) stated that Gross Domestic Product (GDP) is the market value of all finished goods and services produce in a country during a certain period of time. GDP can also be defined as the market value of all officially recognized finished goods and services produced within a country in a year, or other giving period of time.

2.2 Theoretical Framework



The Dependency Theory

The dependency theory stipulates the various elements that have aided the development of the underdeveloped countries. This theory is hinged on the belief that economic resources move from a “periphery” of underdeveloped and poor countries to a “core” of affluent countries and in the process the wealthier nations are enriched at the expense of the underdeveloped nations. It is the argument of the dependency theory that poor nations are impoverished while wealthy ones are enriched because of the way poor nations are integrated into the world system (Todaro, 2003; Amin, 1976).

Dependency theory asserts that the poverty situation of the countries in the periphery is not due to the fact they are not integrated or fully integrated into the core of the world system as is often championed by free market economists, but due to the manner in which they are integrated into the system. The bourgeoisie scholars are the school of thought at the forefront of this school of thought. According to them, the impoverishment and consequent reliance of the developing countries on developed countries is due to their domestic contradictions. They are of the view that this issue is as a result of their lack of close integration, corruption, capital diffusion, bad leadership, poor institutional framework, lack of technology, corruption, etc. (Momoh and Hundeyin, 1999). They view the poorly developed and reliance of the third world countries as being generated internally and not induced externally. A way out of this quagmire according to this school of thought, is for developing nations to look for assistance from foreign countries via loan, aid, investment, etc, and give undisrupted permission to the operations of the Multinational Corporations (MNCs). The less developed countries rely on developed nations for almost everything including technical assistance,

aid, technology, ect due to their poor state. Due to the fact that most of the developing nations are dependent on the developed countries, it has therefore left them unprotected to the products of the Western countries and Breton Woods institutions (Ajayi, 2000). The dependency theory gives a comprehensive account of the things that caused the standpoint of the TWCs and their persistent and constant dependence on external debt for their economic growth and development.

The Crowding Out Effects Theory

Crowding out effects usually occurs when to the weight of debt servicing reduces public expenditure on items that are very important for economic growth and development such as education, healthcare, etc. This huge debt obligation implies that government revenue in the short run would have to be used to service the debts which will, in turn, crowd out public investment in the economy. Claessens et al. (1996) revealed the decline in investment as the effect of a decline in the available assets of a country for financing investment and macroeconomics activities. The reduction in the capability of a country in maintaining its debt emanating from the crowding out effect; and therefore, as it strives to meet some of its obligations, leaving little capital for domestic investment (Patenio and Augustina, 2007).

The ideology behind the concept of crowding out effects is based on the assumption that government debts increases a greater part of the national savings meant for investment as a result of increase in demand for savings while supply remains constant, the cost of money therefore increases. At the point where only government and its agencies would be able to borrow due to excessive interest charges, crowding out effect sets in. At this point, individual entrepreneurs and firms are thus unable to compete and hence are crowded out of the market. Macroeconomic performance is thus



affected via the inability of the economies to generate enough capital for investment.

The foregoing negative reviews and scenarios were further confirmed by Clements et al (2003) and the effects of excessive foreign borrowings were confirmed further by this and other findings which reveals that the negative impacts of external borrowing on economic growth can be seen from the debt stock and flow of service payments facilities which most likely crowd out public investment. Taylor (1993) from his findings concluded that debt caused liquidity restraints is as a result of the effect of reduction in government expenditure due to the continuous servicing of outstanding debt stocks higher than what the economy can contain. Karagol (2004) was of the view that much interest has been generated from less developed countries in the relationship between external debt and economic development since debt overhang has an impact on investment and thus macroeconomic performance. Debt overhang greatly impacts on the rate of investment and this makes it a difficult matter to establish. Claessens et al. (1996) in discussing debt overhang theory stated that anticipated debt burden is an increasing aspect of a nation's productivity.

As debt services grow, foreign creditors effectively remove most of their earnings from investment within the local economy and repatriate them abroad. This removal of earnings from investment in the local economy leads to total discouragement of new foreign investments (Clements et al., 2005; 2006). This will in no small measure directly reduce the level of capital formation (Dijkstra and Hermes, 2001). Consequently, debt servicing transfers wealth from the domestic economy to international arena and thus creates certain dramatic multiplier accelerator effects that reduce the capacity of the economy to development while at the

same time promoting its dependence on foreign debts (Metwally and Tamaschke, 1994).

2.3 Empirical Literature Review

Karagol (2002) used time series data for Turkey and a simultaneous equations model to investigate the relationship between economic growth, external debt service and capital inflow. The results revealed that a negative relationship existed between debt servicing ratio and economic growth whereas the reduction in the growth rate reduces the ability of the economy to service its debt.

Adesola (2009) investigated the nexus between debt servicing and economic growth in Nigeria for the period spanning 1984-2004 using OLS multiple regression method. The study found a significantly and positively relationship between debt payments made to Paris Club creditors and holders of promissory note, and GDP and GFCF. Furthermore, the study revealed that debt repayments to London club creditors and other creditors shows a negative significant relation to GDP and GFCF.

Mukolu, and Ogodor (2012) using ordinary least square technique (OLS) carried out a study on how external debt relates with macroeconomic performance in Nigeria from 1975 to 2005. They expressed two macroeconomic variables of gross domestic product and interest rate each as a function of external debt and debt servicing. The study revealed a significant and positive impact between external debt and Nigeria's Gross Domestic Product while the debt charges paid on this debt, and the debt serviced by the government have a negatively affect economic growth in Nigerian.

Ezike and Mojekwu (2011) used OLS technique on real GDP, total external debt stock and debt service ratio to study the impact of external debt management and macroeconomic performance in Nigeria. Their findings revealed that in line with expectation, foreign capital



inflow was positive while debt service/export ratio was negative as expected. This was due to the fact that debt capital adds to capital formation and positively impacted on economic growth. Debt-service ratio on the other hand shows capital outflow and consequently worsens the performance of a country and thus leads to a decline of real GDP. It also agrees with the theoretical expectations that debt service/export ratio diverts resources away from the debtor country. It was their conclusion that total debt stock, less debt service, still remains a big positive balance, to improve capital accumulation that positively affects economic growth given that total debt stock shows a positive relationship in the result instead of negative and statistically significant at all levels.

Faraglia et al (2012) employed dynamic stochastic general equilibrium (DSGE) to examine the impact of government debt maturity on inflation. They used Fiscal Insurance, Fiscal Sustainability, Government Debt, Inflation, Interest Rates and Maturity as variables. The result revealed that the volatility and continuity of inflation is predicated on the size, sign and maturity profile of government debt and was significantly incomplete even with long bonds and inflation which is not significant in realizing sustainability of debt. They concluded that issuance of long term debt does help governments in utilizing inflation more to realise fiscal sustainability. The effect of the inflation is more volatile and persistent with longer maturity of debt. However, whatever the length of the maturity of the debt, the relative effect on inflation is moderate and the relative importance of inflation in achieving fiscal sustainability is moderate. A more substantial contribution to debt stabilization is achieved from joggling interest rates.

Agwu, Ohaegbu, and Nnodim (2019) carried out a study on the Impact of External Debt on Economic Growth in Nigeria from 2014 to 2018 using multiple regression

statistical technique. They used the following variables; GDP (as dependent variable), while external debt, exchange rate and external debt service were the independent variables. Their findings revealed that External Debt is positively related with Gross Domestic Product, while external debt service negatively related with Gross Domestic Product; and Exchange Rate had a negative relationship with GDP. They recommended amongst others, that the regulatory authorities (Debt Management Office) should set up a framework which would ensure that borrowed funds were utilized for reasons for which they were acquired and equally set a limit for borrowing for states and federal governments based on well-defined measures.

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Orjinta and Nwadior (2016) carried out a study on the Effect of Debt Servicing on Economic Growth: Evidence from Nigeria from 1996 to 2016 using time



series data. Findings from the study revealed that a significant long-run relationship existed between real gross domestic product (RGDP) and external debt (EDEBT) and debt service (DEBT) and an insignificant long-run relationship between real gross domestic product (RGDP) and domestic debt (DDET). Also, the regression result showed that external debt and debt servicing has a positive significant effect on economic growth in Nigeria. There was an inelastic relationship between real gross domestic product and external debt services. The study we recommended that Debts should be contracted solely for economic capital formation purposes since capital formation has direct impact on economic growth.

Faraji and Makame (2013) did a study on “the impact of external debt on economic growth: A Case Study Tanzania” from 1990-2010. The study made use of time series data on external debt and economic performance and assumed that external debt is utilized by developing countries to augment their domestic savings in meeting developmental needs. The results from the study revealed that a significant relationship exists between external debt, debt service and GDP growth. The debt service payment has a negative effect of about 28.52 while total external debt stock has a positive effect of about 0.37. The study recommended that in taking external debt, counties should ensure that they are put in productive use and the rate of return of debt is higher than the service payment rate. The reason for acquiring the debt should be of a serious concern to the government and they should provide the efficiency of domestic resource uses by creating other optional framework that will improve their income via the use of their natural and cultural endowment so that they can increase their economy rather than depending to the external debt.

Solomon (2016) applied the regression and granger causality methods of analysis to investigate the impact of external debt on the Nigeria economy using secondary data. The results revealed that a negative relationship existed between external debt, external debt service with GDP and the granger causality test shows that GDP has a unidirectional causal relationship with external debt service which runs from GDP to external debt service. It equally shows that uni-directional causality exists between external debt and GDP which runs from external debt to GDP. It recommends that economic considerations should be the reason for external debt rather than for social or political considerations as this would improve the productivity of the nation.

Matthew and Mordecai (2016) using annual time series data from 1986 to 2014 examined the impact of public debt on economic development of Nigeria. The study utilized the following econometric tools; the Augmented Dickey-Fuller test, Johansen co-integration test, Error Correction Method (ECM) and the Granger Causality test. Findings from the study revealed an insignificant negative relationship existed between external debt stock, external debt servicing and economic development in Nigeria. It further showed that a direct significant relationship existed between domestic debt stock and economic development while domestic debt service payment has significant but inverse relationship with economic development in Nigeria. The study recommended that the government should reduce the level of accumulation of external debt overtime, and focus on using domestic debt accumulation to grow significantly the development of the economy.

Omodero and Alpheaus (2019) used ordinary least square and secondary data for 21 years to examine the effect of foreign debt on the economic growth of



Nigeria. The results revealed a significant negative relationship exists between foreign debt and economic growth while there was a strong and significant positive relationship between foreign debt servicing and economic growth. The other factors were insignificant in explaining economic growth under this scenario.

Agwu, Ohaegbu, and Nnodim (2019) carried out a study on the Impact of External Debt on Economic Growth in Nigeria from 2014 to 2018 using multiple regression statistical technique. They used the following variables; GDP (as dependent variable), while external debt, exchange rate and external debt service were the independent variables. Their findings revealed that External Debt is positively related with Gross Domestic Product, while external debt service negatively related with Gross Domestic Product; and Exchange Rate had a negative relationship with GDP. They recommended amongst others, that the regulatory authorities (Debt Management Office) should set up a framework which would ensure that borrowed funds were utilized for reasons for which they were acquired and equally set a limit for borrowing for states and federal governments based on well-defined measures.

Ohwofasa, Nana and Kumapayi (2012) carried out a study titled “External Debt Management and Macroeconomic Performance of the Nigerian Economy, 1986 – 2011”. The study employed an Ordinary Least Squares (OLS) technique and modeled four equations using external debt (EDBT), balance of payments (BOP), foreign direct investment (FDI) and debt service payment (DSP), as independent variables and unemployment (UNEM), per capita income (PCI), and literacy rate (LITR) as dependent variables for model 1, 2 and 3 respectively including of EDBT. The OLS results revealed that DSP, EDBT, and BOP impacted negatively on PCI while FDI had a positive relationship with PCI. Also, DSP, EDBT, and BOP

positively affected UNEM while that of FDI on UNEM was negative. The results from the findings further showed that the impact of DSP, FDI, and EDBT, on LITR was positive while there was a negative relationship between LITR and BOP. Finally, FDI and TOT impacted negatively on EDBT while a positive relationship existed between GDP, EXR and EDBT. The study recommended that government should ensure that all transactions with the London and Parish Clubs and other creditors should be ones that will promote greater trade and investment in Nigeria.

Utough (2016) using annual time series data from 1981 to 2014 examined the impact of external debt on economic growth in Nigeria. The study utilized the following econometric tools; the Augmented Dickey-Fuller test, Johansen co-integration test, Vector Error Correction Method (ECM) and the Granger Causality test. The findings revealed that external debt service has a significant and negative relationship with economic growth in Nigeria while external debt stock impacted positively to the development of the Nigerian economy at 5% level. The study recommended that, the stock borrowed should be effectively managed to avoid debt overhang and that Instead of continuous debt servicing, there should be an arrangement for repayment of the loans within the agreeable time.

Ndubuisi (2017) work was titled “Analysis of the Impact of External Debt on Economic Growth in an Emerging Economy: Evidence from Nigeria”. with data on External debt services, Gross Domestic Product, external debt stock, exchange rate and external reserve over the period 1985 to 2015. The model formulation and data analysis were done with ordinary least square regression. Augmented Dick Fuller Unit Root Test, Co-integration and Error Correction Model were used in conducting the diagnostic tests. Findings from the study revealed that a negative and insignificant relationship



existed between debt service payment and Nigeria's economic growth while external debt stock has positive and significant impact on the growth index of Nigeria. External reserve and exchange rate were used as control variables and they had a positive and significant effect on growth. The study recommended that external loans should be used for infrastructural development by the government; provide an enabling environment for businesses to strive through legislation; establish proper debt management policies and replace external borrowing for human capital development.

Omodero (2019) in a study titled "External Debt Financing and Public Capital Investment in Nigeria: A Critical Evaluation (1996 – 2018)" applied OLS technique using government capital expenditure as the dependent variable, while external debt accumulation and debt servicing cost as the major explanatory variables. The results revealed that there is a significant negative relationship between external debt and capital investment while debt servicing cost has a strong and significant positive impact on capital investment. The study recommended that the governments in power both at the state and federal levels should focus on completing capital projects initiated by past administrations in order to develop the economy and reduce the level of wastages of financial resources both internally generated and the borrowed funds. It also recommended that if external debt must be embarked upon it should be more focused on capital investments that are profitable and the need to emphasize on revitalizing the abandoned industries, establishment of industries and the development of untapped natural resources which will boost debt repayment

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Kasidi and Said (2013) used time series data of 1990-2010 to investigate the impact of external debt on economic growth in Tanzania. The study revealed that external debt and debt service impacted significantly on GDP growth. Total external debt stock has a positive effect of about 0.36939, while debt service payment has a negative effect of about 28.517.

Olusegun, Oladipo and Omotayo (2021) used time series data from 1990 to 2020 to investigate The Impact of Debt Service in Stimulating Economic Growth in Nigeria: Mediating on its Role on Public Sector Financial Management using time series data from 1990 to 2020. The study revealed that debt servicing has significant impact on economic growth due to its positive relationship with gross domestic product, while exchange rate had a negative significant relationship with Gross domestic product. The study recommended that government should ensure that any debt both internal and external debt should be utilised to open Nigeria to greater trade and investment and stimulate the economic growth of the country.



Audu (2004) carried a study on the impact of external debt on economic growth and public investment in Nigeria from 1970-2002. Co-integration test and Error Correction Method was used to carry out his empirical investigation. The study shows that there was a significant negative relationship between debt servicing pressure in the country and economic growth and also, past debt accumulation affected public investment negatively

Odubuasi et al. (2018) used Augmented Dickey Fuller (ADF), Granger Causality and Error Correction Model to extend the study on the impact of external debt on the economic growth of Nigeria from 1981 to 2017. The results of the study findings indicated that a significant positive relationship existed between external debt, capital expenditure and economic growth, while debt servicing cost did not have any impact on economic growth. The study among others recommended that external loans should be used for capital investment in order to promote economic growth in Nigeria.

Nwanne and Eze (2015) used Ordinary Least square (OLS) to Assessing the Effect of External Debt Servicing and Receipt on Exchange Rate in Nigeria from 1981 to 2013. The findings of the study revealed that external debt receipts and external debt servicing have positive short and long-run relationships with naira exchange rate fluctuations. The study concluded that while external public debt receipts affected exchange rate positively, external public debt servicing affected exchange rate negatively. The study recommended that the Nigerian government should always strive to secure self-liquidating, production/project-based foreign loans for financing projects, place and enforce the embargo on certain classes of foreign loans as well as on the frequency of contracting loans, contract foreign loans with concessionary low interest rates and long maturity periods, promptly and regularly service foreign loans to

avoid the burdensome effect of accumulated compound interests, and appropriate external loan resources properly.

Ijeoma (2013), on her part, carried out a study on the impact of debt variables on selected macroeconomic variables using linear regression model. The debt variables used in the study were external debt stock, external debt service payment while the macroeconomic variables were gross domestic product and gross capital formation. The results revealed that a significant relationship existed between Nigerian debt service payment and gross fixed capital formation. The result also revealed that fluctuations in exchange rate affect external debt shock, external debt service payment and economic growth in Nigeria. Although, the study focused on the Nigerian economy, however, the result only revealed the effect of exchange rate on external debt, while the major focus of the current study is on the impact of external debt on macroeconomic performance in Nigeria, therefore this study tried to narrow the gaps observed in the previous studies examined.

3.0 METHOD OF STUDY

We adopted *ex-post facto* research design by collecting secondary data from the Central Bank of Nigeria (CBN) Statistical Bulletin 2019 edition. The data were analysed using the Vector Error Correction Model (VECM) within the framework of Ordinary Least Square regression (OLS) estimation. The empirical works of Safdari & Mehrizi (2011) and Utomi (2012) provided the basis for the specification of the model in this study. We modified their specifications by introducing the macroeconomic performance variables – GDP and exchange rate. The model is stated in a functional form as:



$$MEGI = f(EDSV) \quad (i)$$

Where:

MEGI = Macroeconomic growth indicators (Real Gross Domestic Product and exchange rate.

EDSV = External Debt Servicing

We expanded the equation (i) by including the macroeconomic growth indicators (RGDP and EXR) thus:

$$RGDP = f(EDSV) \quad \dots(ii)$$

$$EXR = f(EDSV) \quad \dots(iii)$$

Where:

RGDP = Real gross domestic product

EXR = Exchange rate

We further model the vector relationship amongst the variables by taking all the variables as both endogenous and exogenous:

$$RGDP = f(EDSV, EXR) \quad \dots(v)$$

$$EXR = f(EDSV, RGDP) \quad \dots(vi)$$

$$EDSV = f(RGDP, EXR) \quad \dots(vii)$$

The vector relationship between the variables is represented in the equation below:

$$y_{it} = \beta_i + \sum \beta_k X_{ij}^k + \varepsilon_{it} \quad (ix)$$

Where y_t represents the dependent variable with $i = 1, 2, 3 \dots n$, β_i is the constant term, X_{ij} are the k explanatory variables and ε_{it} is the disturbance term. This can be more explicitly represented in the following series of equations:

$$RGDP_t = \beta_{10} + \sum_{i=1}^n \beta_{11} RGDP_{t-1} + \sum_{i=1}^n \beta_{12} EDSV_{t-1} + \sum_{i=1}^n \beta_{14} EXR_{t-1} + ECM_{t-1} \quad \dots x$$

$$EXR_t = \beta_{30} + \sum_{i=1}^n \beta_{31} EXR_{t-1} + \sum_{i=1}^n \beta_{32} EDSV_{t-1} + \sum_{i=1}^n \beta_{33} RGDP_{t-1} + ECM_{t-3} \quad \dots xi$$

$$EDSV_t = \beta_{40} + \sum_{i=1}^n \beta_{41} EDSV_{t-1} + \sum_{i=1}^n \beta_{42} RGDP_{t-1} + \sum_{i=1}^n \beta_{44} EXR_{t-1} + ECM_{t-4} \quad \dots xii$$

4.0 ANALYSIS AND INTERPRETATION OF RESULTS

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Table 1. Unit Root Test

Variables	ADF test statistics @				Order of integration
	Level	p-values	1 st difference	p-values	
RGDP	-0.096780	0.9424	-3.434098	0.0160	I(1)
EXR	-1.494341	0.5256	-5.740445	0.0000	I(1)
EDSV	-1.587476	0.4788	-7.724881	0.0000	I(1)
	Critical Value at 5% level = -2.941145			Critical Value at 5% 1 st difference = -2.943427	

Source: Author's Computation (2022)

The unit root test above reveals that all the variables are stationary at first difference. This is because the Augmented Dickey Fuller Test statistics are greater than the Mackinno critical value at 5% level of significance. This implies Real gross domestic product (RGDP), Exchange rate (EXR) and External debt

service (EDSV) were stationary after first differencing, indicating an order of integration 1, i.e. were integrated of order one I~(1). Based on this result, we can test for the existence of a long-run relationship amongst the variables, i.e. cointegration using the Johansen cointegration test.

Johansen Cointegration Test

Table 2: Trace and Max-Eigen Tests for Cointegration

Hypothesized	Trace		0.05	Prob.**
No. of CE(s)	Eigenvalue	Statistic	Critical Value	
None *	0.851305	126.1488	69.81889	0.0000
At most 1 *	0.637616	57.53794	47.85613	0.0048
At most 2	0.349848	20.99612	29.79707	0.3579
At most 3	0.140952	5.496363	15.49471	0.7541
At most 4	0.000746	0.026849	3.841466	0.8698

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized	Max-Eigen		0.05	Prob.**
No. of CE(s)	Eigenvalue	Statistic	Critical Value	
None *	0.851305	68.61088	33.87687	0.0000
At most 1 *	0.637616	36.54181	27.58434	0.0027
At most 2	0.349848	15.49976	21.13162	0.2554
At most 3	0.140952	5.469514	14.26460	0.6818



At most 4 0.000746 0.026849 3.841466 0.8698

**Max-eigen value test indicates 2 cointegrating eqn(s) at the 0.05 level

**Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

Source: Researchers' Computation (2022)

The Table 2 above indicates the Trace statistic and the Max-eigen statistics which we used to determine the existence of long run relationship in the model. The Trace test indicates 2 cointegrating equations at 5% level thus implying the existence of long run relationship amongst the variables. The existence of two cointegrating equations in the model shows that there is a long run relationship in the model. The test shows that we reject the null hypothesis of $r = 2$ and accept the alternate of $r > 2$ which denotes the existence of 2 cointegrating equations in the model. Also, the

maximum eigen statistics shows that there are 2 cointegrating equations. Thus, we conclude that external debt and its associated variables have long run effect on Nigeria's macro-economic performance.

Granger Causality/Block Exogeneity Test for VECM Model

The direction of causality between the variables is determined using the Granger causality Block exogeneity test. This test is necessary to justify the use of the restricted VAR or the VEC model and determine the inter-relatedness of the variables. It is summarized below:

Table 3: Granger Causality and Block Exogeneity Test

	Granger Causality and Block Exogeneity (p-values in parenthesis)				
	RGDP	INF	EDSK	EDSV	EXR
RGDP	-	5.9517 (0.0369)	10.5072 (0.0052)	9.8889 (0.0071)	6.6339 (0.0363)
EDSV	4.4865 (0.0061)	0.2304 (0.8912)	5.4639 (0.0651)	-	6.2649 (0.0436)
EXR	9.9290 (0.0284)	0.7816 (0.6284)	0.8619 (0.6499)	2.3274 (0.3123)	-

Source: Researcher's Computation (2022)

Null hypothesis: No causality exists amongst the variables

Alternate hypothesis: The variables granger cause each other

The Table 3 above shows the causality amongst the variables. The block Exogeneity Wald test is used to determine if inclusion of the lagged value of the variables is important in explaining the dynamics of other variables in the multivariate frame work. The probability values show the decision criterion for each set of causal relationship existing between the variables.

The Chi-square statistics and the p-values as summarized above shows that the variables are significant for each pair of variables in the first row and first column. This implies that there is bi-directional causal relationship between the variables. Therefore, we are rejecting the null hypothesis and accepting the alternate hypothesis. Thus, we conclude that there



exists bi-directional causal relationship between the variables.

Estimation of the Vector Error Correction Model (VECM)

Table 4: VECM Estimates

Cointegrating Eq:	CointEq1		
RGDP(-1)	1.000000		
EXR(-1)	-25.38440 (3.50935) [-7.23337]		
EDSV(-1)	-61.37959 (1.42894) [-42.9546]		
C	-10.90926		
Error Correction:	D(RGDP)	D(EXR)	D(EDSV)
<i>CointEq1</i>	<i>-0.303487</i> <i>(0.26354)</i> <i>[-1.15160]</i>	<i>-0.480522</i> <i>(2.01905)</i> <i>[-0.73327]</i>	<i>-0.027617</i> <i>(0.00407)</i> <i>[6.78078]</i>
D(RGDP(-1))	0.236646 (0.48536) [0.48756]	3.404408 (3.82115) [0.00090]	-0.061866 (0.00750) [-8.24763]
D(RGDP(-2))	-0.768627 (0.73863) [-1.04062]	2.260511 (5.70500) [0.39457]	-0.007506 (0.01142) [-0.65755]
D(INF(-1))	-30.24570 (52.1280) [-0.58022]	0.004619 (0.00405) [1.14171]	3.123819 (0.80561) [3.87759]
D(INF(-2))	-39.59882 (51.5961) [-0.76748]	-0.006314 (0.00400) [-1.57657]	-2.392232 (0.79739) [-3.00008]
D(EXR(-1))	-257.4182 (3166.86) [-0.08128]	-0.165440 (0.24580) [-0.67307]	131.9839 (48.9421) [2.69674]



D(EXR(-2))	-960.2326 (3059.25) [-0.31388]	-0.043198 (0.23745) [-0.18193]	107.3294 (47.2790) [2.27013]
D(EDSV(-1))	23.24140 (10.5324) [2.20665]	-0.000455 (0.00082) [-0.55701]	0.799671 (0.16277) [4.91281]
D(EDSV(-2))	16.67389 (9.28162) [1.79644]	2.890511 (0.50072) [5.77271]	0.007385 (0.14344) [0.05148]
C	-1582.754 (2452.13) [-0.64546]	0.098852 (0.19032) [0.51939]	237.1220 (37.8963) [6.25713]
R-squared	0.698696	0.531913	0.880880
Adj. R-squared	0.660599	0.525706	0.826284
F-statistic	5.059443	1.083951	16.13434

Source: Eviews9 Output

The Vector Error Correction Model (VECM) or the Restricted VAR model as summarized above shows that Real GDP at lag one has a positive own effect increasing itself by 0.2366 units. However, in the second period lag, real GDP decreased itself by 0.7686 units. Exchange rate has positive effect increasing RGDP by 3.40448 units. This implies that increase in external debt service decreases growth in the economy and in a similar manner; while increase in exchange rate increases growth in the economy. The coefficient of VECM for RGDP is -0.303487 implying that the speed of adjustment of the real GDP equation to long run equilibrium is estimated at 30.35% annually.

The second equation where exchange rate (EXR) shows that increase in real GDP increases exchange rate by 3.4044 and 2.2605 units in the first and second period lags respectively. The estimates also showed that the own effects of exchange rate are negative in both lag periods. External debt service decreases exchange rate

by 0.00046 units. The value of the VECM for exchange rate is -0.480522 and this implies that the speed of adjustment of exchange rate equation to long run equilibrium is estimated at 48.05% annually.

The third equation in the VECM model is the external debt service (EDSV) equation. Here, unit change in economic growth (RGDP) decreases external debt service by 0.0619 units. Exchange rate has a positive effect on external debt service increasing it by 131.9839 and 107.3294 units in the first and second period lags respectively. The value of the coefficient of VECM of external debt service is -0.027617 and the equation has a speed of adjustment of 2.76%.

Determination of Model Fitness (Adj. R-squared)

The adjusted R-squared gauges the degree of fitness of the equations in the VEC model. This is summarized below:

Table 5: Summary of R-squared Adjusted



Equations	Adjusted R-squared		Conclusion
RGDP	0.6606	66.06%	<i>Moderate/fair explanatory coefficient</i>
EXR	0.5257	52.57%	<i>Moderate/fair explanatory coefficient</i>
EDSV	0.8262	82.62%	<i>High explanatory coefficient</i>

The adjusted R-squared values show that the external debt service and its associated variables account for 82.62% of the variations in the macro-economic performance variables (Real GDP). This implies that external debt service and its variables explain economic growth changes which is seen as a moderate and high fitness. The other equations, Real GDP, and exchange rate and 66.06% and 52.57% coefficients of determination respectively. These show high explanatory coefficients.

Discussion of Findings

The study set out to achieve the general objective of determining the impact of external debt service on macroeconomic performance in Nigeria between 1981-2019. The specific objectives tried to examine the dynamic relationship existing between external debt service and selected macro-economic growth variables (Real GDP, inflation rate and exchange rate). Based on the pre-estimation tests, the Granger causality and Block exogeneity test found bi-directional causal relationships amongst the variables, and the variables showed integration at first difference with long run properties, the study adopted the Vector Error Correction Model (VECM) as the main analytical technique.

The findings revealed that external debt service (EDSV) has positive effect on the growth of the economy (real GDP) in the first period lag increasing Real GDP significantly by 23.241 units. Also, external debt service decreased the other macro-economic performance variables (exchange rate). The positive and

significant effect of external debt service on real GDP is an indication that an increase in external debt servicing increases growth in the economy. This finding is in agreement with Omodero and Alpheaus (2019); Suleman and Azeez (2012); Ijirshar et al (2016); Ndubuisi (2017) and Monogbe (2016) while conflicting with Afolabi et al (2017) and Udeh et al (2016). The increasing effect of debt service on Real GDP is a pointer to the fact that servicing of the accumulated debts has strong positive effect on the macro-economy. This finding agrees with Amaefule and Umuaka (2016). The coefficient of all the explanatory variable has a significant impact on economic growth at 5 percent level because their F-value calculated of 5.059 units is greater than the table value of 2.530. Thus, an increase of 5.059 units in Real GDP occasioned by a unit change in external debt service is significant given the value of the F-statistic. The coefficient of external debt service is positive in the first period lag indicating that a unit change in external debt service will result to a significant increase in macroeconomic performance (real GDP) by 23.241 units. The implication is that external debt service has significantly increased macro-economic growth over the years.

Following from the above analysis, this study, therefore, rejects the null hypothesis which says that there is no significant relationship between external debt service and economic growth in Nigeria and accept the alternative hypothesis that there is a significant relationship between external debt service and economic growth in Nigeria



The findings equally revealed that external debt service has a positive effect on exchange rate (EXR) in the first period lag increasing EXR by 131.9839 units. This findings does not collaborate with Nwanne and Eze (2015) who found a negative effect between external debt service and exchange rate in Nigeria. The coefficient of all the explanatory variable has an insignificant impact on inflation rate at 5 percent level because their F-value calculated of 1.0839 units is less than the table value of 2.530. The coefficient of external debt service is negative in the first period lag indicating that a unit change in external debt service will result in significant decrease in macroeconomic performance indicator (exchange rate) by 0.000455 units. This implies that external debt service has significantly decreased exchange over the years.

Following from the above analysis, this study therefore accept the null hypothesis which says that there is no significant relationship between external debt service and exchange rate in Nigeria and reject the alternative hypothesis.

5.0 Conclusion and Recommendations

The study sought to examine impact of external debt service on Nigeria's macroeconomic performance for a 38-year period from 1981 to 2019, making use of time series data ascertained from CBN statistical bulletin (2019). External debt service was used as the external debt variable while real gorss domestic product, and exchange rate were used as the macroeconomic variables.

The conclusion drawn, based on the analysis is that Nigeria's external debt service profile of the country has increased growth of the macro-economy owing to the positive effect of external debt service on real GDP in the model. Thus, we can deduce that with the negative effect of debt servicing on exchange rate, the

government should soft-pedal on external borrowing and concentrate on domestic means of sourcing for revenue which will reduce the amount used in servicing the debts and therefore channel them into other economic use. The study recommends based on the findings and conclusion drawn that given that external debt service decreases exchange rate as seen in the VEC model, the government should engage in massive production so as to meet the long term objective of borrowing externally which will ease the strain on exchange rate and also further the strength of the local currency which has a ripple effect on the general price levels. When the productive capacity of the real sector is enhanced, it augurs well for the country's debt profile.

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