

External Debt and Macroeconomic Performance in Nigeria, 1981–2019

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Abstract: This research studied external debt and macroeconomic performance in Nigeria from 1981 to 2019. The macroeconomic performance indicators employed were Real Gross Domestic Product, and Inflation rate while external debt stock was the explanatory variable. The study employed the cointegration and Vector Error Correction Model as the main analytical tool. The findings revealed that a significant positive relationship existed between external debt stock and inflation rate in Nigeria while external debt stock decreased Real GDP. The study also found that shocks to external debt stock decreased real GDP initially but grew subsequently at a slow pace. The external debt stock contributed to the macro-economy in the VEC model was very minimal as they contributed less than 20%. The study concluded that Nigeria's external debt had negatively affected the macro-economy and also, external debt stock increased inflation rate thus indicating a serious strain in the macro-economy occasioned by continued debts without a corresponding debt servicing. Thus, we recommended that the government can utilize external debt to decrease the rate of inflation through government focus on productive sectors and channeling of public investments to the real sector. Also, Nigeria should focus more on the real sector which is the productive sector of the economy so as to create a long term external debt service plan and ease the strain on exchange rate and the macro-economy.

Keywords: External Debt, Real Gross Domestic Product, Inflation Rate, Economic growth, Vector Error Correction Model

I. INTRODUCTION

The improvement of macroeconomic performance, such as sustained economic growth, low

inflation rate, positive balance of payment position, etc. is a key focus for any sovereign nation particularly the developing countries which are known to have low capital formation due to low levels of domestic investment and savings. Soludo (2003) gave two main reasons why countries borrow as; firstly, macroeconomic reason – to enable the country undertake higher level of consumption and investment and secondly to finance the transitory balance of payment deficit and avoid constraints in budget which will help improve economic growth, reduce the level of poverty and improve their macroeconomic performance. The creation of external loans by any government is to enable her finance the deficits of her budget (Osinubi and Olaleru, 2006). External debt has become an important avenue of generating public revenue and

capital accumulation financing in any economy (Adepoju et al, 2007). It is a medium used by countries to augment their domestic savings and realize the funds required to carry out economic growth and developmental projects that will improve the living standards of the citizens of the country and promote sustainable growth and development. Hameed, Ashraf, and Chaudary (2008) asserted that foreign borrowing is expected to increase economic growth particularly where there is a dearth of domestic financing. Also, external debt boosts total productive resources by increasing the output which in turn enhances the Gross Domestic Product (GDP) growth of a nation. Furthermore, external debt boosts growth and thus improves living standards and thereby reducing the level of poverty.

The origin of Nigeria external debts can be traced back to 1958 when the country first borrowed the sum of \$28million from World Bank to prosecute a railway extension. The country's external debt was sustainable up to mid 1970's. From the late 1970's because of poor macroeconomic management and declining prices of crude oil, the country's external debt began its upward movement. Thus from an external debt of N2.33 billion in 1981, Nigeria's external debt rose to N298.61 billion in 1990 and ballooned to N3,097.38 billion in 2000. It then peaked at N4,890.27 billion in 2004 before declining to N2,695.07 billion in 2005 and then declined sharply to N451.46 billion in 2006 due to the debt relief given to the country by the Paris Club. Since then the external debt have continued to rise with the figure standing at N9,022.42 billion in 2019.

A consideration of the poor state of the nation's macroeconomic performance against the backdrop of her huge external debt disposition would imply that the essence of external borrowing by countries of the world is converse to Nigeria's circumstance. More disturbing is the fact that despite the debt forgiveness received in year 2005 from the Paris club, Nigeria's external debt record has galloped to a whopping sum of N9,022.42 billion as at 2019 (DMO report, 2019) compared to a total sum of N451.46 billion in 2006 shortly after the Paris debt cancellation. Regrettably, this huge external debt profile does not reflect in the state of the nation's macroeconomic fundamentals. Nigeria has been reckoned with high debt profile which brought about the government's quest for debt forgiveness, pledging to plough

the fund used in servicing the debts to improve the macroeconomic activities. But surprisingly, the external debt profile of the country has continued to rise even after receiving the debt pardoning in 2005.

One then wonders how the money saved from servicing the debt since 2005 and the additional external loans taken by the federal government of Nigeria since then have impacted on the nation's macroeconomic performance. Can it be affirmed that the huge external debt inclination of Nigeria is justifiable by current the state of her macroeconomic performance? This is the reason why the researcher intends to investigate the impact of external debt on macroeconomic performance in Nigeria.

Objectives of the Study

The broad objective of this research is to examine the impact of external debt on macroeconomic performance in Nigeria between 1981- 2019.

The specific objectives are to;

- I. Examine the extent to which external debt stock has contributed to economic growth in Nigeria;
- II. Investigate the relationship between external debt stock and inflation rate in Nigeria;

II. LITERATURE REVIEW

2.1 Conceptual Framework

External Debt

External debt can be referred to as that part of the debt of a country which was borrowed from lenders abroad that includes commercial banks governments or international financial institutions. According to Udoka and Anyingang (2010), external debt can be defined as the term that explains the financial relationship between a debtor country and the lender country. It usually refers to debt incurred which is repaid in other currencies apart from that of the country that borrowed the money. In principle, external debt comprises short-term debts, such as trade debts which mature between one and two years or whose payment would be settled within a fiscal year in which the transaction is conducted. Both developing and developed countries seek for foreign loans to improve their macroeconomic performance because external debt is generally believed to improve the growth and development of an economy (Osinubi & Olaleru, 2006. Arnone et al (2005) defines external debt as that part of the debt of a country which is borrowed from foreign sources such as foreign corporations, government or financial institution. Ogbeifin (2007) stated that external debt arises as a result of the gap between domestic savings and investment and the gap between the value of export and that of import. As the gap increases, debt increases and thereby making the country to resort to borrow increasing amounts so as to stay afloat. He also described the external debt of Nigeria as that portion of the debt owed by the public and private sectors of the Nigerian economy to non-residents and citizens which is repaid in foreign currency, goods and services and arises due

to the gap between domestic investment and domestic savings. External debt according to Nnamocha (2002) can be classified to the purpose for which they are incurred such as;

- a) Trade Arrears: These debts arises when a country is unable to pay completely for its external purchases and or services
- b) Balance of payment support debts: These are debts incurred to correct adverse balance of payment of any country
- c) Project-tied Debts: These are loans for particular projects which are usually self-liquidating such as the loans Nigeria has borrowed from China to finance airport and railway projects
- d) Loans for socio economic needs: These are debts from loans used to provide socio-economic needs of the country.

Macroeconomic Performance

Macroeconomic performance refers to an evaluation 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)

Inflation

Balami (2006) sees inflation as a situation of a rising general price level of all categories of goods and services over a long period of time. Haslag (1997) is of the view that inflation is always and everywhere a monetary phenomenon; and can be produced only by a more rapid increase in quantity of money than output. He regarded inflation as “a destroying disease which emanated from out of lack of monetary control by the government and whose result undermined the rules of business, creating crisis in the market and financial destruction of even the products”. Inflation can simply be defined as a general and continuous increase in prices of goods and services without a corresponding rise in the quantity of goods and services. Its effects on economic activities and ultimately on people's well-being is a primary

concern of policymakers and has been the focus of many studies.

Gross Domestic Product (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. In the period 1988 – 1997 which constitutes the period of the structural adjustment and economic liberalization, the GDP responded to economic adjustment policies and grew at a positive rate of 4.0%. From 2005 Nigeria GDP growth rate averaged 6.8%, reaching 7.36% in 2011 and a low record of 6.5% in 2012, 4.69% in 2017 and 1.93% in 2018 (NBS Economic Outlook, 2018).

Theoretical Framework

The Dual-gap theory: Omoruyi (2005) asserted that reason why most economies resort to foreign borrowing is to enable the country to fill the gap between the level of domestic savings and investment. This gap according to Chenery 1966, is the reason for foreign borrowing which is to resolve the lack of savings and investment in a nation. The rise in the domestic savings and investment would vis-à-vis lead to a rise in economic growth and other macroeconomic growth indicators (Hunt, 2007). The framework of dual-gap analysis indicates that the development of any country is dependent on investment which needs domestic savings and this domestic savings is not adequate to enable that development take place (Oloyede, 2002). The dual-gap theory is derived from the national income accounting framework which stipulates that excess investment expenditure (investment-savings gap) is equal to the excess of imports over exports (foreign exchange gap).

The dual gap analysis stated that the economic development of any country is a function of investment, and that investment is an important product of domestic savings, which most times is not enough to finance development. In this situation, government resort to borrowing from abroad the money that can be invested in the economy, and this amount is usually equal with the amount that is saved. Furthermore, the local resources are to be supplemented with resources from abroad, in such a way that will result to excess of import over export i.e. $M > E$.

$$I - S$$

$$M - E$$

$$\text{Hence, } I - S = M - E$$

Surplus of investment over domestic saving in the national income account is equal to the excess of import over export.

$$\text{Income} = \text{Consumption} + \text{Import} + \text{Savings}$$

$$\text{Output} = \text{Consumption} + \text{Export} + \text{Investment}$$

$$\text{Income} = \text{Output}$$

$$\text{That is, } \text{Investment} - \text{Savings} = \text{Import} - \text{Export. } (I - S = M - E)$$

This is the basis of dual gap analysis; it shows that savings investment gap exists if the available domestic saving is not adequate to realize the targeted rate of growth, and thus borrowing is induced to cover the shortfall. Similarly, if the maximum import required to achieve the growth expectation is larger than the maximum possible level of export, then there is an export-import exchange gap.

The Crowding Out Effects Theory: Crowding out effects usually occurs when to the weight of debt servicing reduces public expenditure on items which 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 crowding 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) stated that there is much interest from less developed countries in the relationship between foreign loan 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 the 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 hamper 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).

Keynesian Theory of External Debt: The level of aggregate demand in the economy is usually influenced by government through the use of fiscal policy in order to realize major economic objectives which include economic growth, full employment, price stability, etc. Keynesian economics are of the view that increases in government expenditure and reduction of the tax rates are the best ways to quicken aggregate demand. Keynesians have posited that this method can be used in times of low economic activity or recession as an important means for establishing the platform for solid economic growth and working towards full employment. Theoretically, the arising deficits would be taken care of by an economy that will expand during the boom that would follow.

Budget surplus is mainly used by governments to achieve two things: to moderate the rate of strong economic growth and to stabilize prices during period of very high inflation. Keynesian theory argues that when you remove government spending from the economy it will lead to a decline in the aggregate demand levels and shrink the economy, thereby stabilizing prices.

There has been an ongoing debate on the effectiveness of fiscal stimulus which focuses on crowding out ie if borrowing by government results to higher interest rate which may likely offset the stimulative effect of spending. Funds usually come from public borrowing, external debt or monetising the debt when government runs a deficit budget. In the financial markets borrowing by government creates higher demand for credit which comes as a result of government funding of a deficit by issuing government bonds, and this causes interest rates to rise all over the market. (Frank and Bernanke, 2001). This causes aggregate demand for goods and services to reduce, against to the objective of a fiscal stimulus. While the neoclassical economists have generally harped on crowding out, the Keynesians are of the view that fiscal policy can still be effective particularly in a liquidity trap where, they emphasize that crowding out is minimal.

Empirical Literature Review

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.

Amaefule and Umuaka (2016) examined the effects of Government Borrowing on Nigerian Infrastructural development using OLS. It was revealed from their findings showed that the variables have a short-term relationship among themselves. The study further reveals the existence of a positive relationship between the capital expenditure of the federal government and domestic debt; while there was no significant relationship between capital expenditure and foreign debt.

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.

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 was more volatile and persistent with longer maturity of debt.

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 was 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.

Odubuasi et al. (2018) used Augmented Dickey Fuller (ADF), Granger Causality and Error Correction Model to extended the study on the impact of external debt on the economic growth of Nigeria from 1981 to 2017. The results of their 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.

Faraji and Makame (2013) did a study on the impact of external debt on economic growth of Tanzania from 1990-

2010. The study made use of time series data on external debt and economic performance and assumed that external debt was utilized by developing countries to augment their domestic savings in meeting developmental needs. The results from the study revealed that a significant relationship existed between external debt, debt service and GDP growth. The debt service payment had a negative effect of about 28.52 while total external debt stock had a positive effect of about 0.37. The study recommended that in taking external debt, countries should ensure that they are put in productive use and the rate of return of debt is higher than the service payment rate.

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 external debt and external debt service have negative relationship with GDP and the granger causality test shows that GDP had a unidirectional causal relationship with external debt service which runs from GDP to external debt service. It equally showed that uni-directional causality existed between external debt and GDP which runs from external debt to GDP.

Matthew and Mordecai (2016) used annual time series data from 1986 to 2014 to examine 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 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 had significant but inverse relationship with economic development in Nigeria.

Atique and Malik (2012) examined the impact of domestic and external debt on the economic growth of Pakistan from 1980-2010 using ordinary Least Square approach (OLS) to co-integration. The result revealed a significant inverse relationship in both, that is, inverse relationship between domestic debt and economic growth, and external debt and economic growth.

Suleiman *et al* (2012) used annual time series data from 1970 to 2010 to carry out a study on the effect of external debt on the economic growth in Nigeria. The study used econometric techniques of Ordinary Least Squares (OLS), Augmented Dickey-Fuller unit root test, Johansen co-integration test and error correction model (ECM) in the empirical analysis. The Johansen co-integration test showed that there was a long-run relationship amongst the variables and findings from the error correction model revealed that external debt has a positive relationship with the economic growth of the Nigerian economy.

Ogunmuyiwa (2011) also investigated whether external debt promotes economic growth in Nigeria used time series data

from 1970 to 2007. He employed econometric techniques such as Augmented Dickey-Fuller test, Granger causality test, Johansen co-integration test and Vector Error Correction Method (VECM) to estimate the regression equation. The study found out that there was no existence of causality between external debt and economic growth in Nigeria.

Safdari and Mehrizi (2011) employing vector autoregressive model (VAR) technique of estimate and time series date from 1974 to 2007, carried out a study on the impact of external debt on economic growth in Iran. The study observed the balance and long-term relation of five variables (GDP, private investment, public investment, external debt and imports). From their it was discovered that external debt negatively affected the GDP and private investment while public investment had a positive relationship with private investment.

Ohwofasa, Nana and Kumapayi (2012) carried out a study on external debt management and macroeconomic performance of Nigeria from 1986 – 2011. The study employed Ordinary Least Squares (OLS) technique and modeled four equations using unemployment, per capita income, literacy rate and external debt as dependent variables. External debt, balance of payment, foreign direct investment and debt service payment were the independent variables. Their findings revealed that debt service, external debt, and balance of payment impacted negatively on per capita income while FDI had a positive relationship with per capita income. Also, debt service, external debt, and balance of payment positively affected unemployment rate while that of FDI on unemployment was negative. The results from the findings further showed that the impact of debt service, FDI, and external debt on literacy rate was positive while there was a negative relationship between literacy rate and balance of payment. Finally, FDI and terms of trade impacted negatively on external debt while a positive relationship existed between GDP, exchange rate and external debt. 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.

Afolabi *et al.* (2017) used error correction model and granger causality test to examine the long and short term relationship between external debt and economic growth in Nigeria from 1980 to 2014. Their findings showed that there was a negative relationship between external debt and economic growth in Nigeria. The study recommended that government should use

the external debt judiciously for the provision of projects and infrastructures that will boost economic growth and development in the country

Ndubuisi (2017) analysed the impact of external debt on economic growth in an emerging economy using evidence from Nigeria. The data used were external debt services, gross domestic product, external debt stock, exchange rate and external reserve over the period 1985 to 2015. The data were analysed using the ordinary least square regression. Augmented Dick Fuller Unit Root Test, Co-integration and Error Correction Model were used in conducting the diagnostic tests. Findings revealed that there was a negative and insignificant relationship between debt service payment and Nigeria’s economic growth while external debt stock had positive and significant impact on the growth index of Nigeria. External reserve and exchange rate were used as control variables and they had positive and significant effect on growth.

Utomi (2014) investigated the impact of external debt on economic growth in Nigeria from 1980-2012 using include Augmented Dickey Fuller (ADF) test, Johansen Co-integration, Vector Error Correction Mechanism and Granger Causality econometric techniques. The results revealed an insignificant long run relationship and a bi-directional relationship between external debt and economic growth in Nigeria. The study recommended that external debts should be contracted solely for economic reasons and not for social or political reasons. Also, the responsible authorities responsible for managing the external debt of the country should adequately monitor the debt payment obligations and ensure that the debt are not be allowed to pass a maximum limit so as to avoid debt overhang.

III. METHODOLOGY

The study adopted *ex-post facto* research design by collecting secondary data from the following sources; Central Bank of Nigeria (CBN) Statistical Bulletin 2019 edition. The analysis conducted includes, unit root tests, Cointegration test, and Vector Error Correction Model (VECM). The empirical works of Safdari & Mehrizi (2011) and Utomi (2012) provided the basis for the specification of the model. By way of modification, we introduced the macroeconomic performance variables – GDP and inflation rate and we state the model in a functional form thus:

$$MEGI = f(EDSK) \quad \dots i$$

Where:

MEGI = Macroeconomic growth indicators (Real GDP and Inflation rate)

EDSK = External Debt Stock

The vector relationship between the variables is such that:

$$Y_{it} = \beta_i + \sum \beta_k X_{ij}^k + \varepsilon_{it} \quad \dots ii$$

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.

Furthermore, we expanded the equation (ii) in a Vector Error Correction Model form by treating all the variables as endogenous thus:

$$RGDP = f(EDSK, INF) \quad \dots iii$$

$$INF = f(EDSK, RGDP) \quad \dots iv$$

$$EDSK = f(RGDP, INF) \quad \dots v$$

We expand the functional equations above and obtain the following general vector model specification:

$$RGDP_t = \alpha_{10} + \sum_{i=1}^n \alpha_{11} RGDP_{t-1} + \sum_{i=1}^n \alpha_{12} EDSK_{t-1} + \sum_{i=1}^n \alpha_{13} INF_{t-1} + ECM_{t-1} \quad \dots vi$$

$$EDSK_t = \alpha_{20} + \sum_{i=1}^n \alpha_{21} EDSK_{t-1} + \sum_{i=1}^n \alpha_{22} RGDP_{t-1} + \sum_{i=1}^n \alpha_{23} INF_{t-1} + ECM_{t-2} \quad \dots vii$$

$$INF_t = \alpha_{30} + \sum_{i=1}^n \alpha_{31} INF_{t-1} + \sum_{i=1}^n \alpha_{32} RGDP_{t-1} + \sum_{i=1}^n \alpha_{33} EDSK_{t-1} + ECM_{t-3} \quad \dots viii$$

Where the RGDP, INF and EDSK represent the endogenous variables of the model as earlier explained.

Analysis and Interpretation of Results

Unit Root Test: The unit root test or stationarity test confirms the order of integration of the variables in order to avoid a spurious regression. It is a fundamental test in every time series econometric analysis (Egbulonu, 2020). The test is summarized below:

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)
INF	-2.940207	0.0501	-5.943724	0.0000	I(1)

EDSK	-2.113029	0.2409	-4.802117	0.0004	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), inflation rate (INFR), External debt stock 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: This test confirms the long run properties of the data. The existence of a long run relationship amongst the variables shwos that the model can be used for predictive purposes. The test utilizes the Trace and Max-eigen statistics. The null and alternate hypothesis are stated below:

H_0 : No long run relationship exists

H_1 : There is long run relationship

Table 2: Trace and Max-Eigen Tests for Cointegration

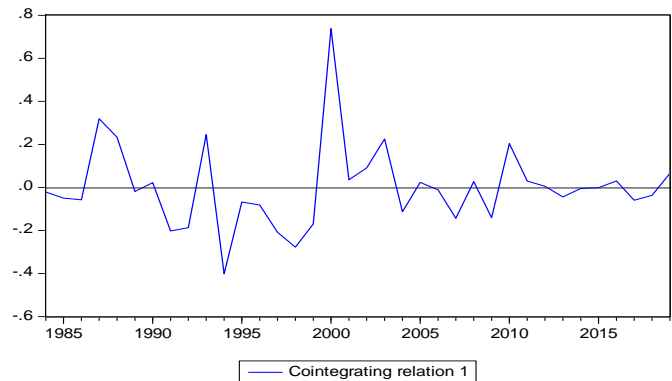
Hypothesiz ed		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.851305	126.1488	69.81889	0.0000
At most 1 *	0.637616	57.53794	47.85613	0.0048
At most 2	0.349848	20.99612	29.79707	0.3579
At most 3	0.140952	5.496363	15.49471	0.7541
At most 4	0.000746	0.026849	3.841466	0.8698
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesiz ed		Max-Eigen	0.05	
No. of CE(s)	Eigenval ue	Statistic	Critical Value	Prob.**
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

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 that we reject the null hypothesis. This shows 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.

Figure 1 Cointegrating graph of External Debt and Macro-economic Performance



Source: Eviews 9

The figure above shows the movement of the cointegrating residuals for the period 1981 to 2019. The rate of dispersion of the residuals from the zero mean is not too far away as it also returns to origin. We can notice a fluctuation around the zero line which shows that the residuals are cointegrated and do not disperse adversely over time.

Adj. R-squared	0.660599	0.710949	0.511347
F-statistic	5.059443	7.101618	1.319868

Granger Causality/Block Exogeneity Test: 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)		
	RDGP	INF	EDSK
RGDP	-	5.9517 (0.0369)	10.5072 (0.0052)
INF	8.3413 (0.0114)	-	0.1764 (0.9156)
EDSK	5.5474 (0.0106)	2.4731 (0.2904)	-

Source: Researcher’s Computattion (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: Summary of the VECM Estimates

Cointegrating Eq:	CointEq1		
RGDP(-1)	1.000000		
INF(-1)	-188.9647		
	(22.4201)		
	[-		
	8.42838]		
EDSK(-1)	-6.070005		
	(0.33745)		
	[-		
	17.9879]		
C	-10.90926		
Error Correction:	D(RGDP)	D(INF)	D(EDSK)
CointEq1	-0.303487	-0.000345	-0.029319
	(0.26354)	(0.00106)	(0.05089)
	[-1.15160]	[-0.32610]	[0.57610]
D(RGDP(-1))	0.236646	-0.000479	-0.132131
	(0.48536)	(0.00195)	(0.09373)
	[0.48756]	[-0.24563]	[-1.40970]
D(RGDP(-2))	-0.768627	-0.002054	-0.086100
	(0.73863)	(0.00297)	(0.14264)
	[-	[0.69212]	[-
	1.04062]		0.60363]
D(INF(-1))	-30.24570	-0.000705	-0.315529
	(52.1280)	(0.20946)	(10.0666)
	[-	[0.00336]	[-0.03134]
	0.58022]		
D(INF(-2))	-39.59882	-0.451701	-7.541563
	(51.5961)	(0.20732)	(9.96386)
	[-0.76748]	[-2.17875]	[-0.75689]
D(EDSK(-1))	-0.900435	0.001078	0.410510
	(-1.98316)	(0.00797)	(0.38297)
	[0.45404]	[0.13530]	[1.07190]
D(EDSK(-2))	-1.682431	0.004056	-0.240347
	(1.77588)	(0.00714)	(0.34294)
	[-0.94738]	[0.56836]	[-0.70083]
C	-1582.754	-10.59483	326.2051
	(2452.13)	(9.85306)	(473.537)
	[-0.64546]	[-1.07528]	[0.68887]
R-squared	0.698696	0.735508	0.576923

Source: Author’s Eviews9 Computation (2022)

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. Inflation rate (INF) and external debt stock (EDSK) have negative effects on the growth of the economy in the first period lag decreasing real GDP by 0.00048, 0.1321 and 0.0619 units respectively. This implies that increase in inflation rate and external debt decreases growth in the economy and in a similar manner; 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 inflation rate (INF) is endogenous shows that a unit change in real GDP decreases inflation rate by 0.00048 and 0.00205 units in the first and second period lags respectively. The own effect of inflation rate is negative (-0.000705) in the first period lag and also negative (-0.4517) in the second period lag. Increase in external debt stock (EDSK) increases the rate of inflation by 0.00108 units as expected in both lag periods. Inflation rate has VECM coefficient of -0.00035, with a speed of adjustment of 0.035%. This implies that given a steady state of increase in the external debt variables by 0.035%, the macro-economic growth indicator (inflation rate) would return to long run equilibrium.

The external debt stock (EDSK) equation shows that unit change in real GDP decreases external debt stock by 0.1321 units and 0.0861 units in the first and second period lags respectively. Inflation rate has a negative effect (-0.3155) on external debt stock and expectedly. The external debt stock has VECM coefficient of -0.029319 implying that the equation has a long run speed of adjustment of 2.93%.

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 4: Summary of R-squared Adjusted

Equations	Adjusted R-squared		Conclusion
RGDP	0.6606	66.06%	Moderate/fair explanatory coefficient
INF	0.7109	71.09%	High explanatory coefficient
EDSK	0.5113	51.13%	Moderate/fair explanatory coefficient

Source: Author’s Computation (2022)

The adjusted R-squared values show that the external debt stock and its associated variables account for 51.13% of the variations in the macro-economic performance variables (Real GDP). This implies that external debt and its variables explain economic growth changes which is seen as a moderate and

high fitness. The other equations, Real GDP and inflation rate (INF) 66.06% and 71.09% coefficients of determination respectively. These show high explanatory coefficients.

IV. DISCUSSION OF FINDINGS

The study set out to achieve the general objective of determining the impact of external debt on macroeconomic performance in Nigeria between 1981- 2019. The specific objectives tried to examine the dynamic relationship existing between external debt stock and selected macro-economic growth variables (Real GDP and inflation 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 shows that external debt stock (EDSK) has positive effect on the growth of the economy in the first period lag increasing real GDP by 0.1321 units. This implies that increase in external debt increases growth in the economy. The speed of adjustment of the real GDP equation to long run equilibrium is estimated at 30.35% annually. This agrees with the findings by Utough (2016) whose study revealed that external debt stocks impacts positively of economic growth but is in discrepancy with the findings of Omodero and Alpheaus (2019) who found a negative relationship between external debt stock and economic growth in Nigeria. The coefficient of all the explanatory variable hasan insignificant impact on economic growth at 5 percent level because their F-value calculated of 0.9004 units is less than the table value of 2.530. Thus, a decrease of 0.9004 units in Real GDP occasioned by a unit change in external debt stock is significant given the value of the F-statistic. This further indicates that the negative effect of external debt stock is felt significantly in the economy in the short run period.

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

The findings revealed that inflation rate (INF) has positive effect on the growth of the economy (real GDP) in the first period lag increasing Real GDP significantly by 23.241 units. External debt stock was found to increase the rate of inflation. One very interesting finding in the VEC model is that increase in the macro-economy (represented by Real GDP and inflation rate) decreases external debt stock both in the first and second lag periods. The implication of this is that as Nigeria's gross domestic product and other macro-economic aggregates increases with time, the country's external debt stock fell due to the increase in economic activities.

The hypotheses found that the negative effect of external debt stock is felt significantly in the economy in the short run period, Nigeria's external debt stock has significantly decreased inflation rate over the period. These findings

corroborates with Ndubuisi (2017); Kalu, Okai, Chukwu and Amadi (2016) but however disagrees with the findings of Adesola (2009). The coefficient of all the explanatory variable has an insignificant impact on economic growth at 5 percent level because their F-value calculated of 0.00108 units is less than the table value of 2.530. Also, the positive coefficient in the first period lag indicates an increase in macroeconomic performance indicator (inflation rate) by 0.00108 units occasioned by a unit change in external debt stock which was also found to be significant given the value of the F-statistic.

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

V. CONCLUSION AND RECOMMENDATIONS

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

The conclusion drawn, based on the analysis is that Nigeria's external debt has negatively affected the macro-economy. Also, external debt stock increased inflation rate thus indicating a serious strain in the macro-economy occasioned by continued debts without a corresponding debt servicing. Thus, the macro-economy will be better off if the country soft pedals on external borrowing and concentrate on domestic means of sourcing for revenue.

Therefore, efforts need to be intensified in the area of alternative sourcing of fund for the federal government as this study, having analyzed Nigeria's external debt profile vis-avis the macro-economy, has found a rather depleting macro-economy haven found negative effect of external debt stock on real GDP.

The study recommends the following based on the findings and conclusion drawn:

Government should channel money borrowed (external debt) to production in order to decrease the rate of inflation as the study shows that external debt stock increases inflation rate. This can be achieved through government focus on productive sectors and channeling of public investments to the real sector. This will help to decrease lavish investments and maintain a good fiscal balance in the economy.

The study found inverse relationship between external debt stock and economic growth (Real GDP). Meaning that as the economy increases, external debt stock decreases. What the government should do is to engage in massive industrialization drive with the available funds borrowed and alongside create a long term debt service plan and within this period, engage in domestic borrowing so as to ease the strain on the local economy.

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