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Effects of Rising External Debt; Empirical Evidence from Nigeria

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ABSTRACT

External debt which is inevitable as government revenue diminishes, or sometimes as a result of financial mismatch especially in the case of Nigeria, which is an import base nation gives concern. This study seeks to investigate the effect of external debts on the Nigerian economy from a period of 1990 – 2020. This study used an ex post facto research design, Augumented Dickey Fuller (ADF) unit root was used for stationarity test and the Vector Auto Regressive Distributive Lags test was employed for the data analysis. The variables tested were External debt being the independent variable while Exchange rate, growth rate of GDP and Inflation rate are the dependent variables. Findings revealed that external debt impedes economic growth leading to deteriorating exchange rate which is followed by increase in inflation, which hampers economic growth. Recommendations of the authors from the findings is that the fiscal authorities should liaise with the monetary authorities on the best sources and uses of funds to eradicate the issue of financial mismatch but rather contribute both to infrastructural development and economic growth in the country.

KEYWORDS: *External debt, Government revenue, financial mismatch, Exchange rate, Inflation rate, Gross Domestic Product*

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INTRODUCTION

When Government revenue diminishes, government borrowing becomes inevitable. Nigeria is an import based nation, where loans and grants from developed countries is a source of revenue. Borrowing in excess without appropriate planning for investment may lead to heavy debt burden and interest payment which in turn may create several undesirable effects for the economy (joy and panda, 2020). High debt rate of an economy most times reduces the rate at which foreign investors buy the idea of investing in such a country. Saungweme, Odhiambo and Camarero (2019) opined that high debt to GDP ratios are also considered a concern for investors, as they can have negative effects on the stock market, thereby reducing productive investment and employment in the long run.

Financial mismatch may as well contribute to the rising external debts, which is using of short term borrowing to finance long term project in the country or using long term borrowing to finance short term projects. Sometimes government justifies their borrowing with the neo classical growth model, because it states that there is need for countries with scarce capital to borrow in order to increase their capital accumulation and steady state level of output per capital, (Madow, Nimonk, Brigitte and Camarero, 2021).

Rising external debts can restrict the government's ability to pursue more productive investment programs in infrastructural development in the country, (Johnny and Johnnywalker, 2018). The global economic crises has also become a reason, for countries (especially the developing ones) to borrow since they are faced with increased expenditure level and declining capital inflows, (Ogbonna, Ibenta, Chris-ejiogu and Atsanan, 2019). In sub-Saharan Africa Nigeria is currently ranked among the countries that are heavily indebted with a dwarfish GDP, a snail-like movement6 export rate, an epileptic per capita income and a galloping increase in the level of poverty.

Debt could be from within a nation's boarder (internal) or from outside (external). External debt is debt owed to non-residents repayable in terms of foreign currency for goods and services. The effect of external debt on investment and economic growth of

a country has remained questionable for policy makers and academics alike. There has not been consensus on the impact of external debt on economic growth. External debt may be used to stimulate the economy but whenever a nation accumulates substantial debt, a reasonable proportion of public expenditure and foreign exchange earnings will be absorbed by debt servicing and repayment with heavy opportunity cost, (Adepoju, Salau and Obayelu 2007).

Developing countries like Nigeria are stacked in the middle of Debt Sea because of borrowing which they are often unable to service. The climax of it is that they borrow more because of the deteriorating world prices of their exports (Ogunjimi, 2019). In 2005, Nigeria was granted debt relief by the Paris club which was meant to make available resources for investment and accelerated economic growth considering the fact that the debt burden has been reduced, but sadly in about one and half decade the country went back into an ocean of debt. The economy is over burdened with massive government debt and debt service cost that consumes more than half of government scarce revenue, narrowing down the fiscal space for government to invest in critical infrastructure that supports private investment and sustain growth, (Abdulkarim and Sardatulakmal, 2021).

Nigeria has been battling with higher debt service to revenue ratio since 2016 after the recession, since revenue moves hand in hand with oil price in the country. The government debt service to revenue ratio is 59.6% as at 2019 and 83% in 2020 (Abdulkarim and Saidatulakmal, 2021). As a country spends significant parts of its revenue servicing debt, it will be left with nothing for critical infrastructure and development of the economy. National Bureau of Statistics (NBS) 2019 recorded that poverty and inequality in Nigeria, shows that 40.1% (83 million) of the nations population lives below the country's poverty line of #137,430 (381.75) per year, showing the low level of wealth in a country that has Africa's biggest economy.

The problem here is that despite these borrowing Nigerian's infrastructure is still in a state of malnutrition and the standard of living of majority individuals is still very slow and yet external debt is on the rise, so the ability of the nation to pay its debt and does it have assets in excess of its liabilities, is in doubt. There is an imbalance between government borrowing and productive use of borrowed funds, this imbalance leads to increase in government borrowing and debt servicing burden on revenue generated, low level economic growth and increased poverty level in the country. This study seeks to assess the effects of external debt burden on exchange rate in Nigeria, to ascertain the effect of external debt burden on growth rate of gross domestic product in Nigeria and to examine the effect of external debt burden on inflation rate in Nigeria from the year 2000 to 2021.

Having introduced the background to this study in section one (introduction) the other parts of this study are arranged as follows; section two reviews relevant literature on the subject matter, section three details the methodology adopted by this study, section four discusses the findings from analysis, whereas conclusion and policy recommendation was detailed in section five.

REVIEW OF RELATED LITERATURE

Related literature has suggested that developing countries are likely to develop their economy by borrowing to a reasonable extent, due to their small stock of capital and often have investment prospect with high return on investment than advanced economies. Pattillo, Poirson and Ricci (2004); Abdulkarim et al (2021) observed that as long as these countries use borrowed funds for productive investment and do not suffer from macroeconomic instability, policies that distort economic incentives or sizeable adverse shocks, growth should increase and allow for timely debt repayment. If this observation could be maintained over time, there will be continuous growth rate which will definitely affect per capita income positively which is a panacea for poverty eradication.

Rising global interest rates and the increasing debt burden of Nigeria is pointing towards another debt crisis which may not be far ahead. It has be observed by Ogbonna et al (2019) that unsustainable public debt is discouraging investment and lowering growth in Nigeria thereby reducing the country's global competitiveness and increasing financial market susceptibility to international shocks.

There are different theories which gave different perspectives to view the effect of debt on economic growth, from different school of thoughts upon which this work was anchored.

THE DEBT OVERHANG THEORY

The debt overhang theory implies that large borrowing leads to high debt, debt traps and slowing down of economic growth. According to this theory, if there exist the likelihood that in the future government debt will be larger than the country's repayment ability expected debt service cost will discourage further domestic and foreign investment. Potential investors would be discouraged based on the assumptions that the more there is production, the more they will be taxed by the government to service

the public debt and thus they will be less willing to incur investment costs for the sake of increasing future output (Gordon and Cosimo, 2018; Abdulkarim et al, 2021).

This theory supports the observation of Ogbonna et al (2019) and coccia (2017) that the high stock of debt and its servicing affects growth by discouraging investors. Madow et al, (2021) stated that diversion of foreign exchange to debt servicing also limits import capacity, competitiveness and investment even growth.

DEBT CROWDING OUT THEORY

This theory states that higher debt service payment can increase a country's budget deficit, thereby reducing public savings, if private savings do not increase to affect the difference, this on the other hand may either drive up interest rates or crowd out the credit available for private invest, then by depressing economic growth.

This crowding out effect is weakened by the fact that government spending through the multipliers increase the demand for private sector products, by so doing stimulating fixed investment via the acceleration effect (joy and panda 2020). This theory implies that by financing government deficit through borrowing can result in increased interest rates, lower disposable income, higher wages and all these reduces return on investments. This may consequently discourage or crowd out private investment and decrease the production level in an economy (Spillioti and Vamuoukas, 2015; Abdulakarim et al 2021).

This theory is based on the presumption that variations in government expenditures and revenues are matched by changes in private savings (Saungweme et al 2019).

So below we present few studies on debt and economic development in a tabular form in table 1.

Authors/ years	Topic/Periods	Variables	Methods of Estimation	Major Findings
Udeh 2016	Impact of external debt on economic growth in Nigeria (1980-2013)	GDP, external debt stock and debt service payment and exchange rate	Ordinary least square method (OLS)	External debt stock and debt service payment impacted growth negatively while exchange rate showed positive impact.
Elom-obed 2017	The relationship between public debt and economic growth in Nigeria. (1980-2015)	RGDP, foreign debt, domestic debt and domestic private savings.	Vector error correction model (VECM)	It revealed a significant negative impact of foreign and domestic debt on economic growth in Nigeria.
Akhanolu 2018	Effect of public debt on economic growth of Nigeria (1982-2017)	GDP, external debt, internal debt, savings and capital expenditure	Two stage least square regression technique.	The study revealed that external debt had a significant negative impact on growth while internal debt showed a positive impact.
Thao 2018	Effect of government debt on economic growth in six ASEAN countries (1995-2015)	Public debt, FDI, GFCF and exchange rate	General method of moments (GMM) estimation technique	It revealed a significant and positive impact of public debt, FDI, GFCF and real effective exchange rate on economic growth while population growth had a significant negative effect on growth rate of these countries.
Mhlaba 2019	The long run and short run effects of public debt on economic growth for South Africa. (2002-2016)	Gross and net debt, investment, inflation and terms of trade.	ARDL method	Results shows a significant negative impact of public debt on economic growth.
Saungweme and Odhiambho 2019	Causal relationship between government debt, debt servicing and economic growth in Zambia 1979-2017	RGDP, stock of public debt, fiscal balance and savings	Dynamic multivariate ARDL approach	The findings supported the hypothesis that the pace of economic growth matters in defining the level of public sector indebtedness.

Festus and Saibu 2019	Effect of external debt on Nigeria economy: further evidences (1981-2016)	RGDP,external debt to GDP ratio trade openness and inflation rate	ARDL model	External debt contribute negatively to growth in Nigeria.
Paul 2017	Analysis of impact of external debt on economic growth in an emerging economy; evidence from Nigeria 1985-2015	GDP, external debt service, external debt stock, external reserve and exchange rate.	ADF unit root test, Johansen cointegration test	Findings shows long run relationship between externa debt and growth index (GDP), and it also shows that variable have atleast one common stochastic trend driving the relationship between them.
Ring, Abdullah, Osmam, Hamdan, Hwang, Mohamad, Hassan and Khalid, 2021	Impact of external debt on economic growth: the role of institutional quality	GDP, Externa debt ratio, external debt governance indicator	Generalize method of moments (GMM)	Despite the importance of good governance practices prescribing the right policy is crucial to avoid negative impact of the wrong policy prescription on economic growth.
Abdulkarim and Saidatulakmal 2021	The impact of government debt on economic growth in Nigeria	RGDP, external debt stock, domestic debt stock, debt service payment, foreign reserve position, interest rate, GFCF and FDI.	ARDL approach to cointegration	Externa debt constituted an impediment to long term growth and short term effect was growth enhancing. In long and short term debt service payment led to growth retardation confirming debt overhang effect.

METHODOLOGY

The research design for this study is the ex-post facto and secondary data was employed covering the 1990 to 2020. Data were obtained from the Central Bank of Nigeria statistical bulletin 2021 edition.

The study adopted historical or after the fact research design to evaluate the effects of external debts, variables measured in this research work are, Exchange rate, Gross Domestic Product and Inflation rate on External debt. The model was structured to investigate the effect of Exchange rate, Gross Domestic Product and Inflation rate on External debt which is given as thus:

$NEXD = f(EXR, INF, GDP)$ equ.1

The econometric transformation of Equ . 2 is thus expressed:

$NEXD_t = \beta o + \beta 1 EXR_t + \beta 2 INF_t + \beta 3 GDP_t + \varepsilon t$ equ.2

Where:
NEXD = Nigeria External Debt
EXR = Exchange Rate
INF = Inflation Rate
GDP = Gross Domestic Product
βo = The constant term
β 1- β4 = The coefficients of the independent variables
εt = the random disturbance term

ANALYSIS RESULT / DISCUSSION OF FINDINGS

The stationarity test was conducted using the Augmented Dickey Fuller (ADF) Unit Root test. The decision rule implies that a data is stationary if the computed ADF statistic is greater in absolute terms that the critical value of the chosen level of significance (5%). The results of the ADF Unit Root tests are summarized in table 1.

Table 1: Summary of the Unit Root Test

Variables	Difference	ADF statistic	Critical Value (5%)	Order of Integration	Remark
EXD	**EXD**	0.061680	-3.552973	I(0)	**Non-Stationary**
	D(EXD)	-2.187001	-3.552973	I(1)	**Non-Stationary**
	D(EXD,2)	-5.911142	-3.562882	I(2)	**Stationary**
EXR	**EXR**	-0.261568	-3.548490	I(0)	**Non-Stationary**
	D(EXR)	-4.211415	-3.552973	I(1)	**Stationary**
INF	**INF**	-3.073712	-3.587527	I(0)	**Non-Stationary**
	D(INF)	-3.958352	-3.574244	I(1)	**Stationary**
RGDP	**RGDP**	-2.864159	-3.552973	I(0)	**Non-Stationary**
	D(RGDP)	-5.217591	-3.568379	I(1)	**Stationary**

Source: *Author's Compilation from Eviews Unit Root Test Results, 2022*

The results of the stationarity tests shown in table 1 reveal that none of the variables are stationary at level. External debt is stationary after the second differencing while the other variables, exchange rate, inflation rate and real GDP are stationary after the first differencing. Having confirmed the non-stationary status of the variable the Vector Auto Regressive Distributive Lags test was employed for the data analysis.

External debt being the independent variable is used as an exogenous variable while exchange rate, growth rate of GDP and inflation rate are used as endogenous variables. The result of the Vector Auto Regressive Distributive Lags test is shown in table 2.

Table 2: VAR Estimates

Vector Autoregression Estimates			
Date: 02/09/22 Time: 14:31			
Sample (adjusted): 1987 2020			
Included observations: 34 after adjustments			
Standard errors in ( ) & t-statistics in [ ]			
	EXR	INFR	RGDP
EXR(-1)	0.477580	-0.088285	35.49754
	(0.12067)	(0.11234)	(9.14549)
	[3.95765]	[-0.78590]	[3.88142]
INFR(-1)	-0.217227	0.513596	-7.373970
	(0.16514)	(0.15373)	(12.5158)
	[-1.31539]	[3.34080]	[-0.58917]
RGDP(-1)	0.001718	7.16E-05	0.920319
	(0.00040)	(0.00038)	(0.03069)
	[4.24236]	[0.18992]	[29.9914]
C	-15.61676	13.82486	2546.672
	(8.80734)	(8.19890)	(667.488)
	[-1.77315]	[1.68619]	[3.81531]
EXD	0.009726	0.001192	-0.693687
	(0.00190)	(0.00177)	(0.14437)
	[5.10586]	[0.67214]	[-4.80488]
R-squared	0.979636	0.442754	0.997132
Adj. R-squared	0.976827	0.365892	0.996736
Sum sq. resids	6839.311	5926.984	39283519
S.E. equation	15.35703	14.29611	1163.875
F-statistic	348.7677	5.760404	2520.336
Log likelihood	-138.4133	-135.9794	-285.5631
Akaike AIC	8.436077	8.292905	17.09195
Schwarz SC	8.660541	8.517370	17.31641
Mean dependent	118.7034	19.89166	39261.37
S.D. dependent	100.8825	17.95297	20371.93

Source: *Eviews 10 VAR Result, 2022*

The result of the VAR estimate reveals that external debt has a positive effect ($B = 0.0097$)on exchange rate. The corresponding t-statistic value of 5.10586 is greater than the tabulated t-statistic of 2.042 (df=33). This indicates that the effect is significant. It follows that every billion naira change in the value of external debt would significantly cause exchange rate to change by 0.0097 in the same direction. The previous value of exchange rate and GDP growth are also significant ($t_{cal}>t_{tab}$) in determining the current value of exchange rate.

External debt also showed positive effect on inflation rate with a coefficient of 0.001192. However, the resulting t-statistic of 0.67214 showed that the effect was not significant as it is less than the tabulated t-statistic.This indicates that every billion naira debt contracted by Nigeria will insignificantly cause inflation rate to increase by 0.001192. The results further reviewed that only the previous value of inflation rate is significant in predicting the present value of inflation in Nigeria.

On the other hand, external debt was found to negatively affect economic growth rate with a coefficient of -0.693687. The effect is also significant as the computed t-statistic (-4.80488) is greater in absolute terms than the tabulated t-statistic (2.042). This indicates that every billion naira change in external debt will cause real economic growth to significantly change by 693.69 million naira in the opposite direction. The findings further revealed that previous value of exchange rate and the previous value of real GDP growth have significant effect on the current value of economic growth in Nigeria.

The R-squared value of 0.979636 for the first model, exchange rate, indicates that 97% of exchange rate is explained by a combination of external debt and lagged values of exchange rate, lagged values of inflation rate and lagged values of GDP growth. Similarly, the R-squared value of 0.997132 for the third model, RGDP growth indicates that 99% of the variations in RGDP is explained by the combined trends of external debt and lagged values of exchange rate, lagged values of inflation rate and lagged values of GDP growth. These values indicate a very strong fit of the adopted model of analysis. However, with an R-squared value of 0.442754 for the second model, inflation rate, only about 44% of the variations in inflation rate were explained by the trends of external debt and lagged values of exchange rate, lagged values of inflation rate and lagged values of GDP growth. Compared to the first and the third model, the second model is slightly fitted to the adopted method of analysis

Post-Estimation Test of the Residuals

Normality test

The result of the VAR normality test is shown in table 3.

Table 3: Jarque-Bera Normality Test Result

VAR Residual Normality Tests			
Orthogonalization: Cholesky (Lutkepohl)			
Null Hypothesis: Residuals are multivariate normal			
Date: 02/09/22 Time: 14:34			
Sample: 1986 2020			
Included observations: 34			
Component	Jarque-Bera	df	Prob.
1	2.659378	2	0.2646
2	2.235953	2	0.3269
3	1.013315	2	0.6025
Joint	5.908646	6	0.4335
*Approximate p-values do not account for coefficient			
Estimation			

Source: *E views 10 Residual Normality Test, 2022*

The probabilities of the Jarque-Bera statistic in the normality test results for all three models are all greater than 0.05 indicating that the null hypothesis of multivariate normality of the residuals is accepted. Therefore there are no problems of non-normality in the residuals.

Serial Correlation Test

The result of the Serial Correlation test for the residuals of the VAR model is shown in table 4

Table 4: Serial Correlation LM Test Result

VAR Residual Serial Correlation LM Tests						
Date: 02/09/22 Time: 14:37						
Sample: 1986 2020						
Included observations: 34						
Null hypothesis: No serial correlation at lag h						
Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	16.53260	9	0.0566	1.986179	(9, 58.6)	0.0572
Null hypothesis: No serial correlation at lags 1 to h						
Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	16.53260	9	0.0566	1.986179	(9, 58.6)	0.0572
*Edgeworth expansion corrected likelihood ratio statistic.						

Source: *E views 10 VAR Serial Correlation Test, 2022*

The result of the Serial correlation LM test shows a probability value of 0.0572 which indicates an acceptance of the null hypothesis of no serial correlation in the residuals. The model is therefore free from the problems of serial correlation.

CONCLUSION/ RECOMMENDATION

External debt is the major resort of developing economies like Nigeria seeking to bridge the gap in capital needed for economic growth and development. However, owing to macroeconomic conditions inherent in developing economies, the contraction of external debt often has negative effect on the economy. Empirical findings have also confirmed this as in many of these studies external debt has been found to negatively affect economic growth. For instance, Elom-Obed (2017) found a negative effect of external debt on economic growth in Nigeria. In the same vein, Akhanolu (2018) also found that to a significant extent, external debt has negative impact on economic growth. Some authors have blamed the negative effects of external debt on the huge debt service figures that eat up a large portion of revenues that would have been channeled to productive outlets. Evidence of this is found in the study of Udeh (2016) which revealed that economic growth is negatively affected by external debt service payments. The findings of the present study further explain the negative effects of economic growth in two lights; firstly exchange rate depreciation and secondly high inflation rates. The findings of the study reveals that each time external debt stock increases, the quotation of naira to dollar exchange rate increases significantly indicating exchange rate depreciation. The deteriorating exchange rate is also followed by increase in inflation to levels which hamper steady economic growth by deteriorating real output, real interest rates on investments and real wages. The study therefore concludes that external debt has impeded the Nigerian economic growth within the reviewed period by depreciating exchange rate and slightly causing inflation.

It is therefore recommended that the monetary authorities should minimize the use of external debt to finance less productive projects. Fiscal budget should also be synchronized to the economic-growth objective of monetary policy so as to avoid contracting external debt to levels that are counterproductive. This implies that in setting budgets for infrastructural development, the fiscal authorities should liaise with the monetary authorities on the best sources and uses of funds that would contribute both to infrastructural development and economic growth in the country.

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