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EXTERNAL DEBT OVERHANG AND NIGERIA'S ECONOMY: AN ARDL BASED ANALYSIS

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Abstract
This research investigated the effect of external debt overhang on Nigeria's economy. The research relied on time series data collected from the Central Bank of Nigeria statistical bulletin for the period 1986 to 2024. The research adopted a series of econometric estimation methods which culminated the auto-regressive distributed lag (ARDL) model for data analysis. The Jarque-Berra normality test and Augmented Dickey-Fuller (unit root) test were used as diagnostic to test that basic assumptions of the data were satisfied. Findings from the data analysis revealed that external debt overhang and the weight of debt servicing obligations had statistically significant adverse effect on the economy. In all, we posit that external debt causes a problem on the economy due to the build-up of repayment obligations which far outweigh the contributions of the actual borrowing to the economy. Bases on the findings, it is concluded that external borrowing and the challenges associated with it is causing deterioration in the economy as repayment obligations emerge without commensurate income or returns from the funds that were borrowed. This research recommends that the government take steps to ensure that international best practices guiding external borrowing funds are fully implemented. This should include tying borrowed funds to specific capital formation projects of economic value. In addition, giving funds providers' economic/financial interest in the specified projects will improve the selection and monitoring criteria of such projects. Finally, It is important that the rate of domestic saving be improved in order to build up surplus funds that can be invested within the economy.

Keywords: External debt, debt over hang, debt burden economic growth, domestic saving.

Introduction

For countries and entities desirous of growth but lacking the requisites resources, borrowing - especially from external sources - provide an important source of funding to help achieve the desired objectives. For countries, external borrowing provide financial resources that have an almost instantaneous effect on the economy as such funds increase the stock of investible capital that stimulates economic activities by creating jobs and infusing new capital into the economy Onyele & Nwadike, 2021; Abdullahi, AbuBakar & Hassan, 2016). However, for many countries - especially in the developing and less developed axis - the effect of such borrowing on the economy begins to were off rapidly as more funds are borrowed and the associated repayment obligations take its total on future revenue of the country. The resultant effect may be a need for more borrowing which the country may be unable to access as funds providers become cautious considering the accumulated debt and reduced repayment capability of the country.

For a country, debt overhang involves the problems associated with the inability to raise funds - especially through external borrowing - as a result of previous accumulated external debt (Kagan, 2020). According to Sichula (2012) debt overhang occurs in cases where the stock of external debt of a country increases and surpasses a country's ability to repay with the probability that debt servicing in the future will depend on the country's level of output. In the same vein, Krugman (1988) cited in Sichula (2012) opined that debt overhang come about in a country when debt service burden is of such magnitude that a considerable portion of current and future output accrues to foreign lenders consequently resulting in a disincentive to invest. Debt overhang has proven to an impediment to a lot of developing countries around the as they struggle to generate adequate fixed capital development.

In Nigeria, external debt burden continue generate concern as the stock of external debt and funds required to service it continues to grow. According to CBN (2020), the stock of Nigeria's external debt grew from N689.84 billion (NGN) in 2010 to N1.631 trillion (NGN) in 2014 and further ballooned to N9.022 trillion (NGN) in 2019. In the same period, debt servicing charges grew from N39.86 billion (NGN) in 2010 to N61.3 billion (NGN) in 2014 N448.66 billion (NGN) in 2019. Thus, huge amounts of funds are expended on servicing external debts many of which were expended on projects and programs that do not generate any reasonable returns to the country. In this research, we explore the effect of external debt burden on Nigeria's economy.

Statement of the Problem

The previous research on the problem includes but not limited to (Abdulkarim, & Saidatulakmal, 2021; Adewale & Meyer, 2021; Igudia, 2021; Inyang & Effiong, 2020). A closer look at the torrent previous research reveals that it is accepted by most researchers that the problems of public debt in Nigeria emanates considerably for the external debt component (Akanni, 2014; Igudia, 2021). However, most have tended to focus on quantum of external borrowing with very few actually paying attention to the inordinately large amounts expended in servicing foreign debt which denies the country huge amounts of financial resources that could be better utilized in capital formation. The capacity to repay which is affected by the large amounts of external borrowing has received negligible research attention. Thus, the present research is aim at contributing to literature by focusing on problems associated with capacity to repay external such debt overhang and debt servicing and how it affects the economy. In addition, this research will adopt robust estimation techniques in order to avoid some of the pitfalls that may account for unreliable findings in previous research.

Aim of the Study

The purpose of this research is to evaluate the effect of external debt overhang on the economy of Nigeria. This will be achieved using the following specific objectives:

- Evaluate the relationship between external debt overhang and economic growth in Nigeria
- Evaluate the relationship between external debt servicing and economic growth in Nigeria

External Debt and Associated Problems

Public debt according Panizza (2008) is the sum total of public and publicly guaranteed debt. Public debt is therefore the sum of all external and domestic debt obligations for the government is responsible. These include debt obligations incurred by the Federal Government, its agencies; local

councils, states and such other political subdivisions including their agencies. In this regard, autonomous public bodies such as state owned business enterprises and their subsidiaries in which the government have total/joint ownership with private sector entities. These obligations of public sector agencies which are outside the Central Government will include borrowings whether guaranteed or not guaranteed by the Government. Debts that are publicly guaranteed is the sum total of all external and domestic obligations of the private sector that has been guaranteed for repayment by a public sector entity. The World Bank and International Monetary Fund (IMF) classify the debt obligations of a country as domestic and external debt on the basis of the lenders.

Akanni (2014) further characterized external debt as the amount (of financial resources) at any given time of outstanding and disbursed contractual liabilities (excluding non-contractual financial instrument) of residents of a jurisdiction to non-residents to repay in part or full. External debt inflows constitute a charge (liability) on a country's future resources in foreign exchange through debt service and principal repayment. Debt servicing of external debt are contractual obligations to be met. Inyang and Effiong (2020) stated that the effect of external debt on the economy can either be positive or negative depending on various factors which include nature of use to which the funds is utilized, the size of existing external debt, expected return or benefits of funds usage, cost of funds etc.

Pattillo, Poirson, and Ricci (2004) in an IMF working paper stated that reasonable levels of borrowing from external sources by developing countries are more likely to lead to improvement in economic growth - through both productivity growth and capital accumulation. They further stated that developing countries at early stages of growth with minimal stock of capital formation and higher rates of return than what is obtainable in more developed economies can record substantial improvement in the economy by borrowing from external source provided that the funds are properly utilized in productive investment and do not suffer from macroeconomic instability, policies that distort economic incentives, or sizable adverse shocks, growth should increase and allow for timely debt repayments (Pattillo, et. al, 2004).

However, where the funds are not properly utilized, the repayment of external debt (external debt service) can potentially have an adverse effect on growth by crowding out private investment or altering the composition of public spending (Clements, Bhattacharya & Nguyen, 2003). Higher debt service - especially to external sources - can raise the government’s interest bill and consequently budget deficit, reducing public savings; this, in turn, may either raise interest rates or crowd out credit available for the private investment, dampening economic growth (Clements, et. al, 2003). From the above, it can be inferred that much of the danger inherent in external debt is associated with proper utilization of the funds in productive investments.

Theory of Debt Overhang

Debt overhang is characterized by a country or entity's inability or difficulty in offsetting its debt obligations to external sources. According to Krugman (1988) cited in Abdullahi et .al, (2016), characterized the problem of debt overhang "as a situation resulting when the current anticipated value of any potential financial resource allocation is not up to its outstanding loan value. The theory as posited by Krugman (1988), stated that if there is a "probability" that a country’s future debt obligation will exceed its capacity to repay the debt, then the anticipated cost of servicing the debt can cause a decrease in investment within the economy as funds are diverted way towards debt repayment rather

than investment in outlets that hve the potential to generate revenue in the future. Debt overhang is likely to be particularly acute in economies with limited capacity to generate revenue from existing sources. For example, a country like may fall back on fossil fuel to earn foreign exchange in order to offset debts. However, as is wont to happen periodically, any time earnings from oil resources diminishes, external debt repayment assumes a crisis mode. Thus, ability to repay to a large defines what can be termed debt overhang for a country. Where foreign earnings are limited, a much larger share of such earnings may have to be channelled towards debt repayment which in turn reduces available resources for investment in the economy.

Where the utilization of the borrowed funds is unable to generate adequate revenue to repay the loan obligation as it mature, the government may be left with no other option than to raise funds to offset such a loan. Thus, resources raised as taxes are generated from private citizens and sectors which transfer real investible resources away from the private sector to the public to used in loan repayment. This situation consequent on debt overhang raises the issue of implicit taxation identified by Feldstein (1986) as a problem arising from debt overhang. The scenario above results in crowding-out effect (Sen, Kasibhatla & Stewart, 2007) which is characterized by funds being diverted away from productive investment in private as a result of government mopping up resources either through taxes of domestic borrowing to pay off external debt. It is also important that debt overhang is more prevalent in developing and less developed countries with poor fiscal/monetary planning and implementation strategies. As noted by Daud, and Podivinsky (2012) the leading cause of debt overhang in developing countries is the application of funds from external borrowing. If such loans are properly, the likelihood of debt overhang will be considerably reduced.

Empirical Review

Worried by the present upward spike in external borrowing by the government, Igudia (2021) investigated the relationship between the servicing of external debt and human capital development in Nigeria. The research which relied on the Central Bank of Nigeria (CBN) for data employed the OLS regression method for data analysis. Findings of the research indicated that funds expended in external debt servicing had a negative effect on human capital development. However, the stock of external borrowing had a positive relationship with human capital development. Thus, research concluded that resources expended in servicing external borrowing could have been better utilized to improve human capital in the country. The research thus recommended that future external borrowing should be focused entirely on providing capital projects that have the potential to generate returns of economic value.

Adewale, and Meyer (2021) explored channels through which external borrowing contributed to economic growth in selected Sub-Sahara-African countries. Thus, thirty countries in the region were selected for the study. Applying the generalized method of moments (GMM) analytical estimation technique, the research concluded that public and private investment as well as total factor productivity as channels through which external borrowing is transmitted to economic growth. In the same vein, interest rate was also shown to have a direct link to economic growth. However, saving did not appear to stimulate economic growth in the region. They thus recommended that countries in the region reduce their external debt stock and instead redirect policy efforts towards alternative (macro-economic) non-debt related strategies to stimulate economic growth and development.

Onyele and Nwadike (2021) focused their research attention on how national debt burden affected economic stability in Nigeria. The researchers extracted relevant data for the study from the Central Bank of Nigeria Statistical Bulletin for the period spanning 1981 to 2019. The research implemented the auto-regressive distributed lag (ARDL) econometric analysis method. Findings of the research provided evidence debt overhang, reserve (in)adequacy and debt service cost all had a statistically significant negative effect on economic stability which was measured as GDP growth rate. Thus, public borrowing activity of the federal government is associated with economic retardation in Nigeria.

Abdulkarim, and Saidatulakmal (2021) investigated the impact of public debt on the economic growth of Nigeria. The study covered a period of thirty nine (39) years from 1980 to 2018. To analyse the research data, the study implemented the auto-regressive distributed lag (ARDL) econometric analyses method. Findings of the research revealed that debt from external sources constituted a major impediment to long term growth and development in the country. On the other hand, domestic debt had a statistically significant positive long-term effect on the long run but negative in the short term. Based on the findings, the researchers suggested that borrowed funds - especially from external sources - should be channelled towards the diversification of the economy's productive base and promote fiscal improvements that will enhance domestic resource mobilization and utilization in addition to efficient debt management practices.

In the European Union, Vanlaer, Picarelli, and Marneffe (2021) evaluated the relationship between private investment and public debt. The research which was intended to determine whether the EU had a debt overhang problem used data from twenty eight European Union countries for the period 1995 to 2016. The researchers applied the instrumental variable - GMM analytical approach (GMM) and found that public debt let to a reduction in private sector investments. However, private debt did not have a meaning effect on private investment. Thus, the research finding was consistent with the debt overhang hypothesis but only through the public debt channel. Finally, the research revealed that financial openness among the members of the union helped to relieve the negative consequences of public borrowing on private investment.

Inyang, and Effiong (2020) evaluated the relationship between Nigeria external debt stock and its economy. The research which adopted a series econometric analytical techniques including - auto-regressive distributed lag (ARDL), and error correction model (ECM). From the findings, debt burden had an insignificant positive relationship with economic growth. However as expected, debt overhang, and debt crowding out effect exerted a significant negative effect on the economy. The research recommended that the way out of the perennial external debt crisis in Nigeria is to channel all funds from external borrowing into sound investment outlets and avoid the constant misappropriation of funds borrowed from external sources.

Abdullahi, AbuBakar, and Hassan (2016) conducted a research on how external debt affected capital formation in Sub-Sahara African countries. The research was particularly interested in discerning the roles of debt overhang and crowding out effect on the relationship between the main variables of study. Findings of the research established that debt in general and particularly - external debt- is inexpedient for economic survival. Further, all measured indicated a negative effect of external borrowing on capital formation in much of Sub-Sahara Africa. In particular, the negative effect was attributable to debt overhang and crowding out effect on the economy.

Akanni (2014) investigated the relationship between the accumulation of external debt, the phenomenon of capital flight and economic growth in fourteen (14) West African countries for the period covering 1970 to 2008. The study which adopted the GMM analytical method found that all public debt variables and the capital flight variable had non-linear relationship with economic growth. Furthermore, the research revealed that public borrowing contributed to economic growth but beyond a given threshold, the effect of debt overhang would lead to a diminution and ultimately a negative effect on the economy. The research suggested that there was need to control the level public borrowing stabilize it within a certain limit and ultimately aim at reducing the size of debt stock in the future.

Chung, Wang, and Hwang (2010) used a sample of twenty (20) Asian countries with a high external debt profile to evaluate the relationship between debt overhang, financial sector development and economic growth. Findings of the research indicated that debt overhang had a significantly negative correlation with economic growth which implied that excessive external borrowing was hampering economic growth. Implementing the GMM estimation technique, findings revealed that the negative impact of high external debt on economic growth appeared to manifest via financially repressive policies.

Methodology

The ex post facto research design was adopted for this research work. This is justified as the phenomenon under investigation has already occurred and the role of the researcher does not include altering the documented outcome or to interfere with the process. Thus, data generated for the research is taken "as is' provided by the relevant authorities which in this case include the Central Bank of Nigeria's (CBN) Statistical Bulletin and the National Bureau of Statistics' (NBS) Abstract of Statistics. Period covered for the research is thirty nine (39) years - from 1986 to 2024. The variables of interest include: Real Gross Domestic Product (RGDP); Debt Overhang (DBOH) which is measured as total external debt-to-GDP ratio; External debt service (XDSC); Total domestic saving (TDSV) is included in the model as a moderating variable. This recognises the fact that debt is just one among the several sources of funds for investment in the economy.

The basic method of analysis adopted for the research is the OLS regression method. However, previous researches have proven that analysis conducted with time series data is particularly susceptible to errors and inaccuraciesthat may make its findings unreliable. To ensure that the data is fit for purpose, certain initial diagnostic tests will be conducted. These include test of normality using the Jarque-Berra statistic, unit root test using the Augmented Dickey-Fuller (ADF) method. In addition, the data set (particularly those in absolute Naira values) will be log-transformed. If the OLS regression method is found to unsuitable for analysis, other method(s) like the ARDL may be adopted for analysis. Using the Ordinary Least Square (OLS) Regression method of analyses, it is proposed that RGDP is a function of Debt Overhang (DBOH); External debt service (XDSC); and Total domestic saving (TDSV). This state functionally as:

RGDP = f(DBOH, XDSC, TDSV) . . . . . (1)

In econometric terms, the above is stated as:

$$\mathbf{RGDP = a_0 + ß_1DBOH + ß_2XDSC + ß_3TDSV + \mu_t \ldots\ldots (2)}$$

All regression analyses will employ the Auto-Regressive Distributed Lag method. The research data will be subjected to a unit root test to ensure the data is stationary to avoid the problem of spurious results.

Finally, the data will be tested for long term significance using the ARDL co-integration method of analyses.

Research Data and Results

Table 1: Descriptive Statistics

Variables	Mean	Median	Max	Min	Std. Dev.	Jarque-Bera	Prob.	Obs
RGDP	2.3882	2.3464	2.8536	1.9709	0.2857	2.4197	0.2982	39
DBOH	0.2429	0.1423	0.6318	0.0126	0.2306	4.9018	0.0862	39
XDSC	1.5940	1.7247	2.6519	0.0043	0.7962	3.8299	0.1473	39
TDSV	2.5898	2.5857	4.2315	0.8171	1.1381	3.1922	0.2027	39

The probability of the Jarque-Bera statistics in table 1 above gave values of 0.2982; 0.0862; 0.1473; and 0.2027 for real gross domestic product (RGDP) debt overhang (DBOH); external debt servicing (XDSC); and total domestic savings (TDSV). The above results confirm that the variables are all normally distributed (after log transformation) as none of the probability statistics are statistically significant.

Table 2: ADF Unit Root Test

Variable	**T-stat (5%)**	**Prob.**	**Order of integration**
RGDP	-2.9434	0.0000	I(1)
DBOH	-2.9434	0.0006	I(1)
XDSC	-2.9434	0.0000	I(1)
TDSV	-2.9434	0.0010	I(1)

The ADF unit roots test results in table 2 shows that all variables vis-à-vis; real gross domestic product (RGDP) debt overhang (DBOH); external debt servicing (XDSC); and total domestic savings (TDSV) were all stationary after first differencing, ie, I(1) order of integration using Augmented Dickey-Fuller (ADF) unit roots test methods. These results imply that on the basis of both ADF unit roots test, the data is healthy for further analyses at I(1) order of integration. However, The use of the OLS regression method will not be appropriate. for this purpose, the ARDL estimation technique is implemented.

Table 3: Summary Auto-Regressive Distributed Lag (ARDL) Results

Dependent Variable: RGDP
Method: ARDL
Selected Model: ARDL(1, 1, 2, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RGDP(-1)	0.714495	0.093351	7.653872	0.0000
DBOH	-0.027689	0.06648	-0.416495	0.6803
DBOH(-1)	**-0.177960**	**0.077681**	**-2.290915**	**0.0300**
XDSC	-0.022253	0.029639	-0.750795	0.4593
XDSC(-1)	-0.139163	0.030573	-4.551767	0.0001
XDSC(-2)	**-0.117519**	**0.028570**	**-4.113410**	**0.0003**
TDSV	-0.229108	0.122353	-1.872521	0.0720
TDSV(-1)	0.152587	0.183518	0.831452	0.4130
TDSV(-2)	**0.179558**	**0.133188**	**1.348157**	**0.1888**
C	0.516277	0.167426	3.083607	0.0047
Adj. R^2 0.9822; D-W stat 1.7957; F-stat. 221.9479; Prob. F-stat 0.000				

First from the summary results in table 3, the method of analysis is ARDL and the selected model as shown above 1, 1, 2, and 2. This is highlighted as bold lettering. The results indicate a statistically significant negative relationship between debt overhang (DBOH) with a coefficient of regression value of -0.177960 implying that increasing debt overhang leads to decrease in the real gross domestic product (RGDP). The probability of t-statistic between the variables gave a value of 0.0300 implying that the relationship between debt overhang and real gross domestic product is statistically significant at 5% significant level. External debt servicing (XDSC) had a negative and statistically significant relationship with real gross domestic product. The relationship between the variables had a coefficient of regression value of -0.117519 with the implication that a unit increase in external debt servicing is predicted to lead to 11.75% decrease in RGDP and vice versa. Probability of T-statistic between the variable gave a value 0.0003 indicating a statistical significance at the 1% significance level. The moderating variable - total domestic savings (TDSV) had a positive relationship with RGDP implying that increasing the level of domestic saving is predicted to lead to increase in real gross domestic product and vice versa. Finally, the summarized outcome of the analysis indicates that all explanatoryvariablestaken as a unit can explain about 98.22% of the variations in real gross domestic product.

Discussion of Findings

This research investigated the effect of external debt overhang on Nigeria's economy. The research relied on time series data collected from the Central Bank of Nigeria statistical bulletin for the period 1986 to 2024. The research adopted a series of econometric estimation methods which culminated the auto-regressive distributed lag (ARDL) model for data analysis. The Jarque-Berra normality test and Augmented Dickey-Fuller (unit root) test were used as diagnostic to test the basic assumptions of the data were satisfied. Findings from the data analysis revealed that external debt overhang and the weight of debt servicing obligations were affecting the economy adversely. In both cases, the findings were statistically significant implying that the quantum of negative effects of debt overhang and debt

servicing on the economy were major factors in the poor performance recorded in the economy. However, domestic savings had a positive effect on the economy albeit at a much lower level such that the effect is minimal.

The findings of the research is consistent with the postulations of the debt overhang hypothesis which posits that debt overhang ultimately results in reduced (economic) economic growth and activity as financial resources are diverted away to meet debt obligations (Sen, Kasibhatla and Stewart, 2007; Krugman, 1988). In addition, the research findings in line with those of Onyele and Nwadike (2021); Abdulkarim, and Saidatulakmal (2021); and Abdullahi, Abubakar, and Hassan (2016) who all show in the different empirical research that problems associated with debt overhang and debt burden were major causes of poor performance in in different countries and regions of the world. For example, Abdulkarim, and Saidatulakmal (2021) stated that the adverse effect of debt overhang on the economy was as result of the inordinately higher cost imposed on the economy by the obligations of servicing the debt which are much higher than the financial returns generated form said external borrowing. However, Inyang, and Effiong (2020); and Akanni (2014) who also recorded an adverse effect of debt overhang on the economy averred that the quantum of the effect was minimal. In all, we posit that external debt causes a problem on the economy due to the build-up of repayment obligations which far outweigh the contributions of the actual borrowing to the economy.

Conclusions and Recommendations

Bases on the findings, it is concluded that external borrowing and the challenges associated with it is causing deterioration in the economy as repayment obligations emerge without commensurate income or returns from the funds that were borrowed. This in most part is as a result of the misapplication and misappropriation of the funds that were borrowed. For example, an established practice for external borrowing is to tie the borrowed funds to specific infrastructure projects of economic value which should be able to generate adequate returns over time to repay the debt. However, we find in the case of Nigeria that quite a number external borrowing activities are embarked (both at state and federal level) without identifying the funds with specific projects. In other cases, funds are borrowed for political reasons without the requisite economic considerations. This research recommends that the government take steps to ensure that international best practices guiding external borrowing funds are fully implemented. This should include tying borrowed funds to specific capital formation projects of economic value. In addition, giving funds providers an economic/financial interest in the specified projects will improve the selection and monitoring criteria of such projects. Finally, It is important that the rate of domestic saving be improved in order to build up surplus funds that can be invested within the economy.

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