

EXTERNAL DEBT BURDENS AND ECONOMIC GROWTH IN NIGERIA: AN EMPIRICAL INVESTIGATION, 1970–2013

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ABSTRACT

Financial deficit and inability to mobilize resources domestically make foreign finance a priority for the Nigerian government and the economy. Financial resources flow into the Nigeria economy in the form of foreign loans and investment. The need for foreign finance has been justified on a number of ground as it helps to bridge the gap between the domestic resources deficit and the foreign surplus resources, sustenance of the economy in terms of road construction, building of schools, hospitals, capital accumulation, balance of payment support, managerial know-how, technical experts, technology transfer, agriculture, manufacturing, communication, transpiration and tourism. The finding in this study shows that the co-efficient of correlation is 0.86 which implies that 86% degree of relationship exists between the regressand and the regressors. The co-efficient of determination $R^2 = 0.74$ signifies that 74% of total variation in the regressand is attributed by the explanatory variables in the model while 26% is attributed to the random terms. Adjusted $R^2=0.71$ signifies that there is 71% degrees of freedom is (27.39) which is greater than the $F_{0.05}$ value (2.53), i.e. $F_{cal} = 27.2? F_{0.05}=2.53$. On this account, the null hypothesis is rejected and the alternative hypothesis accepted. This shows that F-statistics is statistically significant implying that the explanatory variables are significant. The Durbin-Watson test result of $1.25 < 2.50$ bench mark signifies absence of auto-correlation in the model. We conclude that government should put in place measures to curb the rush for foreign loans especially when it does not have any bearing with the development of the country. Government should equally reduce the amount allocated to debts servicing in every fiscal year since it is inimical to the growth and development of the country. We recommend tighter monetary policies to reduce more foreign borrowing and deduction at source form the resources to be allocated to indebted states in Nigeria.

Keywords: External debts, Debt servicing, Economic growth, Capital inflow, macroeconomic environment.

Introduction

Capital inflow is major sine-qua-non in the development and growth of any nation and Nigeria as a developing country has borrowed externally to stir the country on the development path. Borrowing of funds, economically speaking, is an injection into the economy. Over the years, Nigeria has posted trade imbalances given the trends in her external receipts that often fall short of her payment for goods and services from abroad hence she has often experienced a deterioration in the balance of payment (Ajayi and Oke, 2010). Borrowing becomes necessary when insufficient funds exists thereby creating a big gap between domestic income and expenditure which must therefore be filled up by domestic and external fund sourcing. The reduction in capital account or gap existence is caused in the interim by a sharp drop in the domestic inability to mobilize for domestic resources needed to vary out infrastructural development that will in itself create jobs and income in the economy, increased importation pattern of the economy, neglect of the agricultural sector, a non-linked economy, persistent fall in exportable commodities and given the mono-product nature of the Nigerian economy, revenue from oil sales is bound to decline thereby causing some macroeconomic imbalance in the economy alongside the accumulated debt servicing burden already acquired. This mono-product pattern of the economy therefore makes Nigeria prone to external shocks easily hence bridging the deficiency in funds is resorted to borrowing for investment purposes (Ishola, Olaleye, Ajayi, Giwa. 2013).

In a nutshell, debts in itself is not a bad economic policy and do not carry any negative externalities except if the debts are not managed properly. It becomes “bad” when the purpose for which the money is borrowed for is misdirected, misused and inefficiently utilized for purposes other than developmental projects. Significantly, the rise in oil prices in the 1970s induced high level of borrowing as donor nations encouraged Nigerian leaders to borrow money. The sharp clump in oil prices in the past and even now puts a question mark on our ability to service debts denominated in foreign currencies especially now that the country, Nigeria has devalued her currency from ₦165 for a \$1 to ₦197 for a \$1. It should be noted that devaluation increases the burden of debt as borrowers pay more to obtain the needed funds in periods of domestic currency reduction and the retaliatory impact might be dangerous if a trading partner decides to devalue their countries’ currencies (Godson, 2006).

Statement of Problem

One nation in this planet earth blessed with abundant natural resources but choose to be a mono-product economy is Nigeria. As a nation, she exports primary products that is less competitive in the international markets and revenue which comes from it remains too small to finance imports especially capital intensive goods which are comparably more expensive given room for low economic growth, low per capita income and low domestic savings too insufficient to meet the needed developmental strides required of a nation. The problem is compounded with the abandonment of the agricultural sector which would have provided a complementary support to the drift into the oil sector. The picture therefore painted here is that crude oil export and revenue generated did transform to diversification given that the international price of oil has fallen below the bench mark thus making the nation characteristically a dependent nation.

The above situation will definitely affect the budget operations since government plans is built on and/or carried out on that platform. Since this mono-product status cannot in the interim provide the needed fund to finance imports and domestics economic activities, the resort to foreign finance becomes unavoidable as means to fast track development in the country. However this has been constraints by mismanagement and a high level of corruption among the political leaders in the country so much so that borrowing has become a curse instead of the initial blessings. This is therefore is the problem the paper intends to resolve by looking at the positive and negative impacts of debts on a nation like the giant of Africa, Nigeria.

Theoretical Literature Review

Various theories have been propounded by scholar to explain the subject matter of external debt. This paper shall be limited to analyzing two debt theories as they affect the economic growth of the country Nigeria and these includes the debt overhang theory of external debts and the dual gap analysis.

Debt Overhang Theory. The premise of the debt overhand theory is hinged on the fact if the debt stock of a country exceeds the repayment ability of a country in the future, debt services will become an increasing function of the nation's output level. Returns from investments in the domestic economy are taxed" away by existing foreign creditors, and investment by domestic and new foreign investors is discouraged (Ibi, and Aganyi, 2015). If the stock of debt is too large, interest payments becomes a positive function of output, thus as investments decreases, their returns will be taxed away by foreign creditors and the pace of economic growth will slow down (Ajayi and Oke, 2013). Again, the presence of a large external debt makes the macroeconomic environment unstable thereby affecting variability of the main macroeconomics policy like interest rate inflation etc. over borrowed funds and institutional framework. The consequences are not only related to scarce investment, but also to a limited access to international financial markets and to capital flight. Under such circumstances, the debtor country shares only partially in any increase in output and exports because a fraction of that increase will be used to service the external debt.

The theory implies that debt reduction will lead to increased investment and repayment capacity and, as a result, the portion of the debt outstanding becomes more likely to be repaid. When this effect is strong, the debtor is said to be on the wrong side of the debt Laffer curve. In this case, the debt Laffer curve refers to the relationship between the amount of debt repayment and the size of debt. However, the idea of debt Laffer curve also implies that there is a limit at which debt accumulation stimulates growth. Given the Laffer curve, it is argued that a debt is detrimental to growth in which the liquidity constraint is captured as a crowding out effect, by which the requirement to service debt reduces funds available for investment and growth and consequently any reduction in the current debt service should, therefore, lead to an increase in current investment for any given level of future indebtedness. Other channels through which the need to service a large amount of external obligations can affect economic performance include lack of access to international financial markets and the effects of the stock of debt on the general level of uncertainty in the economy.

The dual gap analysis is explained from the angle that development is a function of investment and as such investment requiring domestic savings to support development may be insufficient to ensure take off of that development. The argument therefore is that nations desiring to develop must of necessity obtain loans from abroad since the domestic economy lack the financial muzzle to face lift infrastructural development such as road, hospital and most social services. The basis of the dual gap approach is that investment in the domestic economy must not exceed domestic saving (Udeh, Ugwu, and Onwuka, 1996)

Furthermore, if the domestic resources are to be supplemented from abroad, such as excess of import over export (i.e. $M > E$). $I - S = M - E$ Hence, $I - S = M - E$. In national income accounting, an excess of investment over domestic saving is equivalent to excess surplus of import over export. $\text{Income} = \text{consumption} + \text{import} + \text{savings}$. $\text{Output} = \text{consumption} + \text{export} + \text{investment}$ $\text{income} = \text{output}$ Then $\text{Investment} - \text{Saving} = \text{Import} - \text{Export}$. This is the basis of dual gap analysis, assure that there is a country that requires saving and investment good import to achieve a particular rate of growth. If the available domestic saving fall short of the level necessary to achieve the target rate of growth, a savings investment gap is said to exist on a similar note, if the maximum import requirement needed to achieve the growth target are greater than the maximum possible level of export, then these is an export-import of origin exchange gap (Hameed, Ashraf and Chaudhary, 2008).

Empirical Literature

Sulaiman and Azeez (2012) using annual data from 1970 – 2010 with the application of econometric techniques of OLS, Augmented Dickey – Fuller (ADF) unit root test, Johansen co-integration test and Error Correction Mechanism (ECM) found that the co – integration shows a long run relationship among the variables while ECM shows that external debt had a positive impact on the economy. Dessy and Vencatachellum (2007) study however show that if a government has a high discount factor, it will consume than invest once debt relief is granted. This is particularly true of most developing countries that have high marginal propensity to import. These findings are consistent with Godson (2004) who argue that the people faced by debt-relieved countries lack good institutions. Thus, if the status-quo remains the same, the new debt-relief initiative would not achieve their objectives to increase growth promoting expenditure in these countries. Karagol (2002) investigated the long run and short run relationship between external debt and economic growth for Turkey during 1956-1996 and the Granger casualty test result showed a unidirectional casualty from debt to economic growth.

Audu (2004) investigated the impact of external debt on the economy from 1970 - 2002 and found that external debt servicing exerts negative pressure on the growth process and that past debt accumulation negatively affects public investment using co-integration and ECM techniques. Malik, Hayat and Hayat (2010) examined the external debt relationship in the growth of Pakistan economy for the period 1972 -2005 using time series data and the result showed that external debt negatively relates to economic growth. This means that increased external debt declines economic growth of Pakistan. Abdelmawla and Mohammed (2005) investigated on the impact of external debt on growth in Sudan using data between 1978 -2001 found that export earnings have significant positive impact while external debt and inflation

had negative impact on the Sudan economic growth. Aluko and Arowolo (2010) analyzed the short run and long run relationship that exists between external debt and income in Indonesia from 1980 to 2005. His findings indicated that GDP and the variable employed in the estimation have long run equilibrium relationship. The relationship between GDP and external debt servicing was found to be significantly negative which indicates a debt overhang phenomenon in the country. The reason could be that the country is under borrowed as was the case with Nigeria in the early 1970s. The damaging impact of debt servicing on economic growth can be accounted by the reduction of government expenditure resulting as a result of debt induced liquidity constraints. However, majority of existing empirical literature have established a negative links between external debt servicing and economic growth.

Adesola (2009) examined the effect of external debt service payments on the economic growth in Nigeria by using ordinary least square multiple regression method for his analysis. It was found out that debt service payments have negative impact on economic growth. Godson (2006) analyzed the impact of external debt on economic growth in Malaysia. The empirical results indicated that total external debt positively affected the economic growth. He concluded that external debt did not affect economic growth while Omet and Kalaji (2003), reported the positive impact of external debt on economic growth. Ajayi and Oke (2012) investigated the impact of external debt on economic growth in 24 less developed countries from 1976 to 2003. The study employed the method of random effect and fixed effect estimation, the result of which showed that debt servicing to GDP negatively affect the economic growth and may leave less funds available to finance private investment in these countries leading to a crowding out effect. Ayadi and Ayadi (2008) examined the impact of the huge external debt, with its servicing requirements on economic growth of the Nigerian and South African economies. The Neoclassical growth model which incorporates external debt, debt indicators, and some macroeconomic variables was employed and analyzed using both Ordinary Least Square (OLS) and Generalized Least Square (GLS) methods. Their finding revealed negative impact of debt and its servicing requirement on the economic growth of Nigeria and South Africa.

Ogunmuyiwa (2011) examined whether external debt promotes economic growth in Nigeria using time-series data from 1970-2007. The regression equation was estimated using econometric techniques such as Augmented Dickey-Fuller test, Granger causality test, Johansen co-integration test and Vector Error Correction Method (VECM). The results revealed that causality does not exist between external debt and economic growth in Nigeria. Adesola (2009) empirically investigated the effect of external debt service payment practices on the economic growth of Nigeria. Ordinary Least Square method of multiple regressions was used to examine how debt payment to multilateral financial creditors, Paris club creditors, London club creditors, Promissory Notes holders and other creditors relates to gross domestic product (GDP) and gross fixed capital formation (GFCF) using data from 1981 to 2004. The study provides evidence that debt payment to Paris club creditors and Promissory Notes holders are positively related to GDP and GFCF while debt payment to London club creditors and other creditors show a negative significant relation to GDP and GFCF. Adepoju, Salau and Obayelu (2007) analyzed the effects of external debt management on the economic growth of Nigeria

for a period between 1962 to 2006 using time-series data of the various bilateral and multi-lateral arrangements. Their study concluded that accumulation of external debt adversely affected Nigeria's economic growth.

Origin of Nigeria's External Debts

Records had it that Nigeria's debts date back to 1958 when a whopping sum of US\$28million was contracted for a railway construction. Thus, the road map for subsequent borrowing started in Nigeria by federal and state government. The fall in oil prices or the oil glut of 1978, mounted a considerable pressure on government lean resources, thus it became necessary to bridge this gap by a foreign finance which lead to the acquisition of a loan facility to the tune of US\$1billion from the international capital market (ICM) and this "jumbo Loan" is the single most influential borrowing that brought the paradigm shift in debt discourse in Nigeria. This raised the debt level to about US\$2.2 billion. These loans borrowed did not serve the very purpose for which they were acquired for. Some of the money borrowed went into private accounts of public officers while some were used to finance prestigious projects that have neither little or no economic relevance nor the ability to generate income with which to repay the loaned money (Wosu, 2006). Beginning from the states that were considered highly indebted such as Cross River, Oyo, Lagos, Ekiti, Zamfara, Gombe, Niger and Nassarawa, the allocation of these states reduced due to deductions for debts servicing. In Cross River, 2bn or 10.4%, Oyo 2.07bn or 8.84%, Lagos N2.2bn or 7.7%, Akwa Ibom N1.96bn or 5.88%, Ekiti N76m or 0.44%, Zamfara N10m or 0.54%, Gombe N107m or 0.61%, Niger N1.3bn and Nassarawa N1.2bn. Total debt servicing in 2007 above was \$3.186billion, a decrease of about 60.39% paid in 2006.

External debt service to promissory notes was 46.6%, multilateral had 38.4% in 2007 but its outstanding sum was \$3.08billion owed to concessional multilateral creditors. International Development Fund (IAD) had \$22 million and European Development Fund (EDF) the sum of \$146.10million. The non-concessional creditors like IBRD had \$368.5m, ADB \$353.8m or 18.2%. As at 2007, the states and federal government owed external creditors \$3,654bn of multilateral debt and non-Paris bilateral debt by the Federal Government. Lagos remains the most indebted state with 243.28m or 6.665. Oyo \$108.92m or 2.98%. Cross Rivers \$94.44m or 2.58%. Others are Kaduna \$931.154m, Katsina \$69.105m, Bauchi \$19.105m, FCT \$12.20m, Borno \$13.567m, Zamfara \$13.6m, Gombe \$14.27m and Anambra \$15.19m (Audu, 2004) .

In 2005, the states and the Federal Government had their debts cancelled by the Paris Club as they exited \$18bn through the payment of a whopping \$12bn and \$1bn to unknown agents that mediated in the debt cancellation with Okojo-Iweala Ngozi and Olusegun Obasanjo as Finance Minister and President respectively. In 2007 too, Nigeria through the London Club redemption exercise started in 2002, had by November, 2006 with Par bonds amounting to \$1.44bn, got redemption at par. Under the Obligor substitution arrangement, Nigeria gutted another \$519million to cancel debts obligation to promissory note holders around March 2007. Again, an issue of all notice led to about 21% debt retired at \$220 per unit of oil. By 31stDecember 2007, the debt profile of both states and the Federal Government stood at US\$5billion and US\$3.976 billion in 2009 (Rusike, 2007).

Rationale for Debts

There exists a concerted effort directed towards the role external finance play in the development process of a given nation, in this case, Nigeria. Plethora of literatures emphasize that external finance has positive and productive effect and capable of augmenting domestic savings, stimulate growth and promote investment in a country (Ishola, Olaleye, Ajayi Emmanuel and Giwa, A.B. (2013). The focus of this is that if foreign finance is converted into capital and other necessary inputs, development will occur. The second argument that stands to counter this earlier position is that the accumulation of external debt is channeled to lenders that could have been applied to development projects and the upgrading of national infrastructure (Adesola, 2009). This argument, although very watery cannot account for the gap existing between lack of domestic resources and the need to acquire foreign finance to bridge the gap. If foreign finance are properly channeled and utilized for the purpose for which it was acquired, soaring of debts through service commitment would not shrink export earnings as asserted by Omet and Kalaji (2003).

On another ground, it has been argued that as soon as debt climax to certain level, it becomes unmanageable, and its effect turns out a problem due to the escalating nature of debt servicing thereby crowding out investment in the country for which it was expected to improve its economic growth (Rusike, 2007). Foreign finance is justified on a number of grounds such as: capital accumulation, balance of payment support, managerial know-how, technical experts and technology transfer. To justify the above, Hassan and Butt (2008) noted that capital inflow can boost agriculture, manufacturing, health, road network, communication and transportation, urban development, tourism and infrastructural development.

Magnitude and Size of Debts (External)

The magnitudes and size of Nigeria's external debt is replete with confusing figures despite face lift the DMO gave in streamlining and determining the magnitude and size of the debts. Most times, the amount quoted by the creditor nations is in fact alarming and questionable. In 1970, the debt was to the tune of \$654m, \$309m in 1971, \$401m in 1972. It has been on the increase. By 1980, it was 3.44million, \$33.099m in 1990 and \$32,585m in 1995. In 2003, it was US\$32m, \$917m and US\$35,944.60m in 2004. Today, the external debt stood at US\$20, 4477.99m in 2005, US\$3,544.49m in 2006, US\$3,654.21m in 2007; US\$3,720.36m in 2008; US\$3,947.30 million in 2009; US\$4.578.55 million in 2010 and US\$5,666.58 million in 2011 respectively (Omotoye, Sharma, Ngassam and Eseonu, 2006).

Sources, Structure and Composition of Debts (External)

All the external debts owed by Nigeria are from the following international donor organizations such as: The Paris Club, The Multilateral, The Non-Paris Club bilateral, Promissory notes and London Club respectively.

The Paris Club: The Paris Club debt owed by Nigeria is about \$27,467.92m or 83.45% of total debt stock as at 31st December, 2003 but it is US\$4bn in 2010. Its compositions are the principal balance of US\$24,109.225m, principal arrears stood at US\$1,83.69 million, interest arrears of US\$2,053.95m, and penalty of US\$124.02m of the total Paris debt. US\$ 36,972.27m is owed to United Kingdom, France, US\$5,56.47million, Germany US\$4,645.36m and Japan US\$4,214.58m.

Out of the 19 member Paris Club, Nigeria owes 14 of them and the sum of US\$30.848. She owes Italy \$1.978bn, USA \$8984.5m, Netherlands \$1.7m, Australia \$521.38, Belgium \$608.2m, Denmark \$571.75, Finland \$3.99m, Spain \$249.5m, Switzerland, \$201million and the Russian Federation \$36.97million (Iyaha, 2000).

Multilateral Debts: The multilateral debts by 31st December, 2003 amount to US\$3,042.08m or 9.24% of total debt stock. Of this amount US\$1,978.88m was owed to the World Bank Group made up of International Bank for Reconstruction and Development (IBRD) and (IDA). US\$71.17m to I.F.A.D, US\$1.59m was owed ECOWAS fund. As at 2004 December 31st, with the total debt outstanding of US\$36billion, multilateral debt stood at US\$2,824.32m including the World Bank group and African Development Association the sum of US\$868.14m including the World Bank group and African Development Bank. She owed IBRD US\$935.57m and owes International Development Association the sum of US\$868.14m. The African development Bank (ADP) and African Development Fund (ADF) is owed US\$720.03m and US\$4,127.93m respectively. She owes the ECOWAS Fund US\$41.16m, European Investment Bank (E.F.F) the sum of US\$133.23million (Dessy and Vencatachellum, 2007).

Non-Paris Bilateral Debts: The amount owed to the Non-Paris club bilateral creditors in 2003 was US\$1.6m as against US\$55.55m in 2002. This represented a decrease of about 7%. This occurred majorly from principal repayment during the year. Non-Paris club debts are serviced as at when due. Here, commercial debts rose to the tune of US\$44.25 billion while Official Development Assistant (ODA) was US\$2.26m in 2004 (CBN, 2008).

Promissory Notes: The amount owed by the promissory notes holders at the end of year 2003 was US\$11.39m against in 2002. The reduction was due to amortization on the conversion of a portion of the debt under the debt conversion programme. The amortized amount stood at \$176.16m while the cancelled amount was as a result of the conversation totaling US\$27.753. In the year 20014, the total of \$783.23m was owed promissory note holders (Ayadi and Ayadi, 2008).

London Club: The outstanding debt as at 31st December 2003 was \$1,447.7m reflecting no change from the value in 2002. What occurred in the London Club of creditors was a massive debt buy-back arrangement which led to significant reduction in the stock of the per Bonds from \$2,043.21m to \$1,442.79. Far back 1973 and 1987, floating rate constituted an important aspect of Nigeria's debt. It was one percent of the total term debt at the floating rate. The share increased to 49% in 1980-82 till 1990 when it got to an all high 96.3% (Fosu, 1996). Loans from official source were 30.2% and the private source was 68.2% in 1998. \$33.007million representing 22.2% of GDP. It rose significantly to 52.2% between 1981 to 1990. In 2000, external debt was estimated at \$278.040m, \$28.0 billion in 2001, \$30,991.866 in 2002, and \$23,916.81m in 2003 and \$36billion in 2004 but it is 466million now in 2010. It is on record that the first Jumbo loan was contracted in 1978 from the International Capital Market (ICM) of \$1.0billion. This is the single largest loan that changed the structure and patterns of debts in Nigeria (Ogunmuyiwa, 2011).

Debt Management Office and Its role towards Debt Control

In order to achieve its mandate and objectives, the Debt management Office (Establishment etc) Act 2003, gives the Office a wide range of functions. These functions are provided for under Section 6 of the Act. These functions give as a glimpse into the activities of the DMO. The functions are as follows: To maintain a reliable database of all loans taken or guaranteed by the Federal or State Governments or any of their agencies, prepare and submit to Federal Government a forecast of loan service obligations for each financial year, prepare and implement a plan for the efficient management of Nigeria’s external and domestic debt obligations at sustainable levels compatible with desired economic activities for growth and development; and participate in negotiations aimed at realizing those objectives, verify and service external debts guaranteed or directly taken by the Federal Government set guidelines for managing Federal Government financial risks and currency exposure with respect to al loans and submit to the Federal Government, for consideration in the annual beget and forecast of borrowing capacity in local and foreign currencies amongst others (Alli and Mshella, 2007).

According to Godson (2006), Government’s total debt position remained sustainable at ending of December 2011. Figures released by the debt Management Office (DMO) shows that total public debt stock-domestic and foreign debts of the Federal and State Governments increased by 3.6\$ from the corresponding period of 2010 to stand at US\$41,549.44 million or N6,510.80 billion at December 2011. At 17.45% of GFP, the country’s debt stock falls below both the national and international benchmarks of 30% and 40% of GDP respectively (Bakere, 2010; Nwaeke and Wosu, 2013).

Data Analysis

With regards to the model, Gross Domestic Product (GDP) as regressed against four (4) independent variables namely: External Debt Stock, External debt Service (EDS), Interest Rate (INTR), and Inflation Rate (INFR). Time series data for the period 1980 – 2003 was used. The Ordinary Least Square (OLS) technique of multiple regressions was applied on the time series data of the aforementioned variables to estimate the model. Various tests were carried out. The coefficient of determination (R^2) was used to test for the goodness of fit of the regression. The F statistics was used to test the statistical significance of the R^2 . The t-statistics and the statistics and the standard error tests were both employed to test the statistical significance of the parameter estimates ($\beta_0, \beta_1, \beta_2, \beta_3$ and β_4) at 5% level. Finally, the Durbin-Watson statistics was used to test the presence of autocorrelation in the variables of the model.

Model Specifications

The model of this study is stated thus:

$$GDP = f(EXD, EDS, INTR, INFR) \dots\dots\dots (1)$$

The model for this study is specified as:

$$GDP = \beta_0 + \beta_1 EDT + \beta_2 EDS + \beta_3 INTRm + \beta_4 INFR + U^t \dots\dots\dots (2)$$

Where:

GDP = Gross Domestic Product

EDT = External Debt Stock

EDS = External Debt Service

INTR = Interest Rate

INFR = Inflation Rate

β_0 = Interception or autonomous GDP when EDT, EDS, INTR and IFR are held constant.

β_1 = Coefficient or parameter estimate of the external debt stock

β_2 = Coefficient or parameter estimate of the external debt service.

β_3 = Coefficient or parameter estimate of the interest rate

β_4 = Coefficient or parameter estimate of the inflation rate

U_t = Stochastic or Error term.

A-priori Expectations

The explanatory variables $\beta_1, \beta_2, \beta_3$ and β_4 should have outcome with the following expected signs, i.e. $\beta_1 > 0$, $\beta_2 < 0$, $\beta_3 < 0$ and $\beta_4 < 0$

Hypothesis

H₀: There is no positive significant relationship between gross Domestic Product and the independent variables in Nigeria.

H_A: There is no positive and significant relationship between Gross Domestic product and the independent variables in Nigeria.

Regression Result

From the regression results, the estimated model is:

$$\text{GDP} = -16.489 + 0.927 \text{ EXD} - 0.387 \text{ EDS} + 3.342 \text{ INTR} - 0.812 \text{ INFR}$$

$$\text{S.E} = (7.244) \quad (0.183) \quad (0.468) \quad (0.759) \quad (0.305)$$

$$\text{t-statistics} = (-2.28) \quad (5.06) \quad (-0.83) \quad (4.40) \quad (-2.66)$$

$$R = 0.86 = 86\%$$

$$R^2 = 0.74 \text{ or } 74\%$$

$$\text{Adjusted } R^2 = 0.71 \text{ or } 71\%$$

$$\text{F-Table} = (4.39) \text{ degree of freedom} = 2.04$$

F-Statistics was used to test the significance of R^2 . The empirical F (i.e. F^*) was compared with theoretical $F_{0.05}$ with $V_1 = K-1=5-1=4$ and $V_2 = N-K=44-5=39$ degree of freedom.

$$\text{Empirical F (i.e; } F^*) = 27.4$$

$$\text{Theoretical } F_{0.05} = 2.53$$

$$\text{Durbin-Watson (d}^*): \text{DW} = 1.251$$

Since $dL < DW < du$ ($0.95 < 1.251 < 2.50$), we therefore confirm the absence of autocorrelation in the model.

Discussion of Result

The regression result shows that positive relationship exists between the GDP and the independent variables i.e. EDT, EDS, INTR and INFR. The coefficient of all the independent variables appeared with positive signs as reflected in the a-priori expectations. This means that as the levels of the independent variables are improved, GDP is enhanced significantly. The coefficient of determination R^2 indicates that 74% variation in GDP could be largely explained by variation in the explanatory variables in the model for the period between 1970-2013 under

study on annual basis. The remaining 26% could be traced to variables not included in the model. The standard error test comparing half of the coefficients of the parameters $\beta_0, \beta_1, \beta_2, \beta_3$ and β_4 with standard error test results to show its significance at 5% level:

$$\beta_0 = \frac{1}{2} (-16.489) = -8.25 < 7.244 \text{ (Not significant)}$$

$$\beta_1 = \frac{1}{2} (0.927) = 0.46 > 0.183 \text{ (Significant)}$$

$$\beta_2 = \frac{1}{2} (-0.387) = -0.19 < 0.468 \text{ (Not significant)}$$

$$\beta_3 = \frac{1}{2} (3.342) = 1.67 > 0.759 \text{ (Significant)}$$

$$\beta_4 = 1.2 (-0.812) = -0.41 < 0.305 \text{ (Not significant)}$$

This implies that the standard error test $\beta_0, \beta_2,$ and β_4 are not statistically significant at 5% level while $\beta_1,$ and β_3 are significant at 5% level. The t^* -statistics employed to test the statistical significance of the parameter estimates $\beta_0, \beta_1, \beta_2, \beta_3$ and β_4 at 5%

Level show thus: $\beta_0 = \frac{1}{2} (-16.489) = -8.25 < 7.244$ (Not significant)

$$\beta_0 = -2.28 < 2.04 \text{ (Not Significant)}$$

$$\beta_1 = 5.06 > 2.04 \text{ (Significant)}$$

$$\beta_2 = -0.83 > 2.04 \text{ (Not Significant)}$$

$$\beta_3 = 4.40 > 2.04 \text{ (Significant)}$$

$$\beta_4 = -2.66 < 2.04 \text{ (Not significant)}$$

This shows that the parameters $\beta_0, \beta_2,$ and β_4 are statistically insignificant at 5% level. Whereas $\beta_1,$ and β_3 are statistically significant at 5% level. The F-statistics of 27.4 is greater than the theoretical $F_{0.05}(2,53)$ i.e. $F^*(27.4) > F_{0.05}(2,53)$. The F-statistics show that the overall regression is statistically significant. Therefore, the four (4) independent variables jointly account for the variation in the dependent variable. Thus, we reject the null hypothesis and accept the alternative hypothesis that there is a positive and significant relationship between gross domestic product and the independent variables in Nigeria. The Durbin-Watson test result of $1.25 < 2.50$ bench mark signifies the absence of autocorrelation in the model..

Recommendations

- ❖ Develop the capital market to develop long-term debt instrument such that rather than what the banks have been used to in terms of given out 91 days loans, debt instruments of up to 20 years should be in place. The policy will make possible for companies to float their own bonds in the domestic market such that between 2005 and 2013, 23 companies raised N223 billion. The implication is that with operators in the real sector of the economy being able to raise long-term funds, they can expand their businesses, increase productivity and create more jobs, across the country, on a sustainable basis.
- ❖ Manage the nation's debt in line with the national priority needs with a view to creating full values of the funds borrowed in order to ensure maximum benefits to the economy.
- ❖ Tailor the nation's debt management in accordance with our peculiarities. Use debt management to leverage development of the private sector in order to raise money to boost the real sector such as manufacturing, solid minerals, agriculture and electricity/power supply.

Conclusion

We conclude that the mad rush for debt acquisition that has no direct bearing in terms of regenerative potentials should be stopped. States like Lagos and Rivers remain the two richest states in Nigeria and yet they remain highly indebted than any other states in Nigeria. Debt servicing should not be taken as priority of government since it has negative relationship with growth in Nigeria. Records show that what are allocated to debt in 2004, 2006 and 2010 are currently three times budgetary allocations to health, education and seven times to infrastructural development. Government of Nigeria should look inward by boosting domestic resources mobilization which will cushion the inflow of foreign loans by state governments and generally create a conducive atmosphere free from corruption which is one of the means for the upsurge of borrowing externally

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APPENDIX

REGRESSION FOR GDP AND EX. DEBT, INFLATION, ETC

Descriptive Statistics

	Mean	Std. Deviation	N
GDP	48.0727	36.89798	44
EXT_DEBT	47.3091	22.74852	44
EXT_DEBT_SER	10.9182	8.63436	44
Inflation	10.2505	5.78511	44
INT_R	11.4691	11.03295	44

Correlations

		GDP	EXT_DEBT	EXT_DEBT_SER	Inflation	INT_R
Pearson Correlation	GDP	1.000	.741	.493	.748	.135
	EXT_DEBT	.741	1.000	.507	.612	.434
	EXT_DEBT_SER	.493	.507	1.000	.644	.177
	Inflation	.748	.612	.644	1.000	.279
	INT_R	.135	.434	.177	.279	1.000
Sig. (1-tailed)	GDP	.	.000	.000	.000	.191
	EXT_DEBT	.000	.	.000	.000	.002
	EXT_DEBT_SER	.000	.000	.	.000	.125
	Inflation	.000	.000	.000	.	.034
	INT_R	.191	.002	.125	.034	.
N	GDP	44	44	44	44	44
	EXT_DEBT	44	44	44	44	44
	EXT_DEBT_SER	44	44	44	44	44
	Inflation	44	44	44	44	44
	INT_R	44	44	44	44	44

Model Summary^b

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate	Durbin-Watson
1	.859 ^a	.737	.711		19.85208	1.251

a. Predictors: (Constant), INT_R, EXT_DEBT_SER, EXT_DEBT, Inflation

b. Dependent Variable: GDP

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43172.706	4	10793.176	27.387	.000 ^b
	Residual	15370.101	39	394.105		
	Total	58542.807	43			

a. Dependent Variable: GDP

b. Predictors: (Constant), INT_R, EXT_DEBT_SER, EXT_DEBT, Inflation

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-16.489	7.244		-2.276	.028
	EXT_DEBT	.927	.183	.571	5.062	.000
	EXT_DEBT_SER	-.387	.468	-.091	-.828	.413
	Inflation	3.342	.759	.524	4.400	.000
	INT_R	-.812	.305	-.243	-2.658	.011

a. Dependent Variable: GDP

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.2005	124.6284	48.0727	31.68622	44
Residual	-61.86514	53.44291	.00000	18.90620	44
Std. Predicted Value	-1.479	2.416	.000	1.000	44
Std. Residual	-3.116	2.692	.000	.952	44

a. Dependent Variable: GDP