EFFECT OF DEBT SERVICING ON ECONOMIC GROWTH: EVIDENCE FROM NIGERIA

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Abstract
This study examines the effect of debt service on economic growth using a time series data of 20 years (1996-2015). The data were collected from the CBN statistical bulletin and government gazette. The study was predicated on ex-post facto research design, the data collected were analysed using unit root, co-integrations and ordinary least square regression. The analysis result revealed a significant long run relationship between real gross domestic product (RGDP) and external debt (EDEBT) and debt service (DEBT) and an insignificant long run relationship between real gross domestic product (RGDP) and domestic debt (DDET). Secondly, the regression analysis result revealed that external debt and debt servicing has a positive significant effect on economic growth in Nigeria. Real gross domestic product and external debt services exhibit the inelastic relationship. Based on the above findings, we recommend that Debts should be contracted solely for economic capital formation purposes since capital formation has direct impact on economic growth.

Keywords: Domestic debt, External debts, Debt servicing external debt, Real Gross domestic product, Debt burden and Gross fixed capital formation.

In Nigeria, capital and recurrent expenditures which are captured in the budget are usually anchored on projected revenue that may be realized as projected or not. Most often they are not realized as projected, the deficit, coupled with the desire to
building capital stock has driven government to resort to borrowing to finance the budget. The fund required may be lacking domestically due to the undeveloped capital market, low saving, low investment and low productivity. Uma, Eboh and Obidike (2013) opined that when country lacks the necessary resources for optimal development, one of the alternatives is borrowing. Borrowing as an option when the period of intended expenditure does not synchronize with the time of receipt of revenue from the major sources of revenue generation, which is taxation. In Nigeria, one of the major sources of Federal Government revenue has been the oil sector which gives about 85% of foreign earnings and about 75% of budgetary revenue.

Government intention however, of sourcing any loan is aimed at achieving some macroeconomic objectives of economic growth and stability. The payment and servicing of such loans are public expenditure. Hence, the cost of servicing public debt (domestic and external) may go beyond the capacity of the economy to cope, thereby impacting negatively on the ability to achieve the desired fiscal and monetary policy objectives. Thus rising debt burden may constitute a hindrance to the ability of government to undertake more productive investment in infrastructure, education and public health. The associated problem of payment of principal and servicing of loan culminated in reduction of virtually various types of infrastructure in Nigeria.

In Nigeria, the debt servicing has become a heavy burden due to the unproductive application of domestic and foreign loans. The unproductive application of debt may have stemmed from such factors as political, economic, policy instability, corruption, misappropriation and embezzlement of public funds, non-commitment to sound economic philosophy, politicization of economic projects and weak legal framework, (Harrison, Momodu & Tamunomieibi 2000). This has lead to low capital formation, underdevelopment of the country and the growth of the debt profile. Nigeria’s external debt stock rose from US$28454.8 million in 1997 to US$31041.6 and US$37883.1 million in 2001 and 2004 with 80.3, 64.67 and 52.58 percentages of GDP respectively. On the other hand South Africa’s external debt stock stood at US$25272.4 million, US$24050 million and US$27112.4 million in 1997, 2001 and 2004 with 16.98, 20.34 and 12.52 percentages of GDP respectively. According to the debt management office (DMO) statistics (2004), Nigeria requires $3.0 billion to service external debt annually. This increasing debt profile lends credence to the unproductiveness or non performance of foreign loan in Nigeria due to the prevailing maladies above-stated and explains the extent to which the debt servicing of such loans could negatively affect economic growth in Nigeria.

The domestic loans represent the gross liability of government, which also includes federal, state and local governments’ transfer obligations to the citizens and corporate firms within the country. It consists of securitised loans such as Treasury bills, and Certificates, Development Stocks, Treasury Bonds and state government bonds as well as unsecuritised loans such as public sector debt to banks and local contractors.
(Odozi, 1996) while the external debt stock consists of multilateral and promissory notes (CBN, 2016).

**Statement of Problem**

The resultant effect of this debt service burden creates additional problems for the nation particularly the increasing fiscal deficit which is driven by higher levels of debt servicing. This poses a grave threat to the economy as a large chunk of the nation’s tax earnings are being eaten up. Nigeria’s external debt outstanding stood at US$28.35 million in 2001 which was about 59.4% of GDP from US$8.5 million in 1980 which was about 14.6% of GDP (WDI 2013). The debt crisis reached its maximum in 2003 when US$2.3 billion was transferred to service Nigeria’s external debt. In the year 2005 the Paris Club group of creditor nations forgave 60% (US$18 billion) of US$30.85 billion debt owed by Nigeria. Bakare, (2010) noted that despite the debt relief of US$18 billion received by Nigeria from the Paris club in 2005 the situation remains the same.

Empirical studies have been conducted to investigate the impact of debt burden on the Nigerian economy. Studies like Utomi (2014), Uma, Eboh, and Obidike (2013), Adebisi (2010), Ajayi and Oke (2012), Udeh, Ugwu and Onwuka (2016), Sunday, Ngozi, Micheal and Ogochukwu (2016) have arrived at different results using the same scope of study. In the same vein, studies of (Fosu, 2007; Hunt, 2007; Ayadi, 2008) have mixed results and findings. Our study focused on both external and internal debt to determine the long run relationship between external debt and economic growth by expanding the scope of study beyond what has been done in times past.

Despite the numerous studies done on the impact of debt on economic growth, for example the works of Afxention and Serletis (2011), Asley (2012), Muhtar (2011), Smyth and Hsing (2009), the impact of external debt on economic growth remain unresolved as there is no universal agreement on the effect of debt on economic growth (Anyamu, 2013). For instance, Morrisey (1991), Afxention and Serletis (2011), Smyth and Hsing (2009) findings showed that debt has positive effect on economic growth while the studies of Muhtar (2011), Oxfam (2008), and Asley (2012) showed that external debt has a negative effect on economic growth. These studies were conducted in Europe and other developed economy that differ significantly from the Nigerian context.

In Nigeria, most studies on external debt like the studies of Ajayi (1995), and Iyoha (1997) have largely been devoted to describing the origin, causes, magnitude and sustainability, external or domestic debt only. Few studies have been focused on the effect of domestic and external debt on economic growth, they includes; Anyamu (2013), Ajayi and Oke (2012), Utomi (2014), Uma, Eboh, and Obidike (2013), Adebisi (2010), Adesola (2009), Udeh, Ugwu and Onwuka (2016), Sunday, Ngozi, Micheal and Ogochukwu (2016). The findings from these studies differ on the effect of debt on economic growth. For instance, Udeh, Ugwu and Onwuka (2016), Adebisi (2010), and Adesola (2009) studies found that debt has a positive effect on economic growth, while
the study of Ajayi and Oke (2012), Utomi (2014), and Anyamu (2013) found a negative effect on economic growth. Uma, Eboh, and Obidike (2013) and Sunday, Ngozi, Micheal and Ogochukwu (2016) found that debt has no effect on economic growth. Most of these studies differ in scope, methodology, and their findings therefore were difficult to draw policy implications from. This particular study disaggregated the external debt into domestic and external lines; debt servicing into interest and debt repayment and uses more robust methodology. We employ double equation framework, unlike the single equation framework used by previous studies which was inadequate in analyzing the long-term inter-temporal relationship between debt and growth, thus making it difficult to capture the dynamic behaviour of the economy being modeled. This is the gap that this present study intends to fill.

Nevertheless, the main objective of this paper is to contribute to the debate by evaluating the impact of domestic debt, external debt and debt servicing impact on the economic growth. Hence, this paper finds answer to the question of: To what extent does domestic debt, external debt and debt servicing impact on the economic growth of Nigeria?

The paper is thus structured into five sections including this introduction, section two deals with review of related literature and conceptual issues. Section three deals with Methodology and section four analysis of result while in section five, we draw conclusions and recommendations.

Review of Related Literature.

Nigeria has been classified by the World Bank along other less developed countries (LDCS) as high indebted-low income countries since 1992. The inability of the nation to meet its entire debt service obligation may constitute one of the serious obstacles to the inflow of external resources into the economy. The accumulation of debt service arrears which is being compounded with penalty interest has not permitted reduction in the debt stock, despite the fact that government has been servicing its external debt annually.

External debt is the total public and private debt owed to non-residents repayable in foreign currency, goods, or service” Government external debt= current account deficit + increase in foreign exchange reserves + gross private short term capital outflow- net long term private capital inflow. Hence the increase in a country net external debt is determined only by the size of current account deficit. Compound Interest also includes interest paid or earned or any previous interest earned, as well as on the principal borrowed or lent

Adesola (2009) investigated the effect of external debt service payment practices on sustainable economic growth and development in Nigeria. The study covers the period from 1981 to 2004 using the ordinary least square multiple regression method. Adesola found that debt payment to London club creditors, Paris club creditors, promissory notes holders and other creditors have significant impact on the Gross...
Domestic Product (GDP) and Gross Fixed Capital Formation (GFCF). Debt payment to Paris club creditors and debt payment to promissory notes holders are positively related to GDP and GFCF, while debt payment to London club creditors and other creditors shows a negative significant relationship to GDP and GFCF.

Uma, Eboh and Obidike (2013) examined the influence of domestic debt, external debt and debt servicing on the economic development of Nigeria from 1970-2010. The study analyzed the data using ordinary least square and tested stationarity of the time series data using Augmented Dickey-Fuller test and Johansen test for co-integration to ascertain the long-run relationship of the variables. Their results showed that domestic and external debts were inversely related to real gross domestic product, but at an insignificant level. While the interest on total external debt relates positively on real gross domestic product contrary to our expectation but at an insignificant level.

Sunday, Ngozi, Michael and Ogochukwu (2016) examined the impact of public sector borrowings on prices, interest rates, and output in Nigeria. They utilized a Vector Autoregressive framework, the Granger causality test, impulse response, and variance decomposition model. They found that the level of external and domestic debt over the period of this study had no significant impact on the general price level and output.

Austin (2014) x-rays the correlations between dept servicing and economic growth in Nigeria. Decomposing the debt stock along creditor line and using the relevant statistical data from multinational finance institutions, the study adopted the ordinary least square multiple regression method. The study found that debt payment to Nigeria's creditors has significant impact on the GDP and GFCF. Debt payment to Paris club creditors and debt payment to promissory notes holders are positively related to GDP and GFCF, while debt payment to London club creditors and other creditors shows a negative significant relation to GDP and GFCF.

Utomi (2014) investigated the impact of external debt on economic growth in Nigeria for the period 1980-2012. The study used time series data on external debt stock and external debt service was used to capture external debt burden. The study employed the Augmented Dickey Fuller (ADF) test, Johansen Co-integration, Vector Error Correction Mechanism and Granger Causality Test. The study found an insignificant long run relationship and a bi-directional relationship between external debt and economic growth in Nigeria.

Ajayi and Oke (2012) investigated the effect of external debt on economic growth and development of Nigeria employing ordinary least square method of data analysis and found that external debt burden had an adverse effect on the national income and per capita income of the nation, and high level of external debt led to devaluation of the nation’s currency, increase in retrenchment of workers, continuous industrial strike and poverty.

Adenike, Adekunle and Abiodun (2007) reviewed the roles of debt management practices on sustainable economic growth and development with particular emphasis on...
Nigeria. The analysis of the data collected with descriptive statistics showed that availability of access to external finance strongly influences the economic development process of any nation. Debt is an important resources needed to support sustainable economic growth. But a huge external debt without servicing as it is the case for Nigeria before year 2000 constituted a major impediment to the revitalization of her shattered economy as well as the alleviation of debilitating poverty.

**Debt Servicing and Economic Growth**

Different approaches have been used to analyse debt sustainability within the context of growth (see Klein and Verbeek, 1990; Underwood, 1992; Cline 1995; Cohen, 1996). Hence a developing country borrows to finance the accumulation of physical capital or other assets. External borrowing for this purpose, promote further growth by enabling an expansion in productive capacity beyond what could be undertaken solely with domestic savings. On the other hand, a country may borrow to smooth domestic consumption levels to the time path of its income. The use of foreign borrowings for these purposes must be balanced against the interest cost and sustainability effects of the debt. Most models explore the former purpose for borrowing, in which foreign borrowing is carried out for capital expansion, investment and hence economic growth. This is because consumption occurs after interest payments on debt have been made from output. Thus, models that treat consumption as a fraction of income are not very useful for analysing the causes of debt crises where interest obligations may not be met. (Glick: 1983), shows that the propensity to consume out of net new resources is irrelevant to the possibility of unbounded debt paths, because of governments ability to raise national savings rate (lower consumption), through tax adjustment which is critical to the avoidance of debt crisis.

Muhtar (2011) also stated that, the service of these debts have direct negative impact on economic development. Muhtar argues that debt services encroach on resources needed for socio economic development and poverty reduction. It also contributed to negative net resource flow. Anyanwu et al (2013) was of the opinion that whole scale of white elephant development project in the country is the root cause of our external debt problems. He said instead of emphasis being placed on small rural development project so as to reverse the chaotic trend of urbanization and lessen the opportunity for corruption.

**Debt Burden and Economy in Nigeria**

It is believed that the growing national debt against the background of declining and/or unstable foreign exchange earnings has serious consequences for the recovery of National economy. But the crucial question to ask according to Sogo-Temi (1999) are; how to determine the extent of Nigeria’s debt burden; and how is this going to affect the capacity of the economy to achieve substantial economic growth and development? Answers to these questions will be based on some principal indices. These are standard
indicators for measuring the burden of external debt. These indicators, among other, include the ratios of the stock of debt to exports and to government revenue. It has been noted that the debtor-countries have too much burden on their heads, the burden packaged with economic crisis and socio-political difficulties. Expending as much as 70-90% to export earnings on debt servicing connotes that little is left virtually for the countries to perform their constitutional obligations to the citizenry. It is also carefully noted that in its zeal to break out of economic shackles to achieve economic and socio-political development, the Third World has chosen the option of seeking foreign loan to achieve this development.

Development, to them, might mean embarking on capital intensive projects such as schools, hospitals, road and bridges, radio and television stations. The implication of this is that, the loan, well packaged with a number of conditionality’s, needs to be serviced and as such, the recipient-countries are expected to invest the money in the business that will bring returns for servicing and paying back of the loan but, with the implementation of these non-profitable social projects (Aluko & Arowolo, 2012). James (2006) opined that public debt has no significant effect on the growth of the Nigerian economy because the fund borrowed were not channeled into productive ventures, but diverted into private purse. He suggested further, that for the gains of the debt forgiveness to be realized, the War against Corruption should be fought to the highest. The study concluded that the growth of debt has affected the majority of the market participants are willing to hold longer maturity and as a result the government has been able to issue more of short term debt instruments. This has affected the proper conduct of monetary policy and affected other macroeconomic variables like inflation, which makes proper prediction in the economy difficult.

Methodology

The study adopted the ex-post-facto design and used a time series data of 20 years covering 1996-2015. The variable used are: Domestic debt (DDEBT), External debts (EDEBT), Debt servicing external debt (DEBTS) and Real Gross Domestic product (RGDP). The data were analyzed using ordinary least square multiple regression, Co-integration analysis using the Augmented Dickey Fuller (ADF) unit root test, Johansen co-integration and Vector Error Correction techniques of estimation which provides coefficient estimates of the time-series data used in analysis and Granger Causality Test carried out.

Data and Variables Description

The study used domestic debt, external debts and debt servicing as independent variables while real gross domestic product was used as Dependent variable.
Operationalisation of variables:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measures/Proxy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic debt (DDEBT).</td>
<td>Log of total domestic debt</td>
</tr>
<tr>
<td>External debts (EDEBT).</td>
<td>Log of total External debts (EDEBT).</td>
</tr>
<tr>
<td>Debt servicing external debt (DEBTS)</td>
<td>Log of total Debt servicing external debt</td>
</tr>
<tr>
<td>Real Gross domestic product (RGDP).</td>
<td>Log of total Real Gross domestic</td>
</tr>
<tr>
<td>Gross fixed capital formation at current Price (GFCF). (control variable)</td>
<td>Log of total fixed capital formation at current Price</td>
</tr>
</tbody>
</table>

Model Specification

The linear regression model was designed to test each of the null hypotheses. The model used was adopted from the work of Adesola (2009), it was modified to suite the variables used in this study.

\[ \text{RGDP}_t = \delta_0 + \delta_1 \text{DDEBT}_t + \delta_2 \text{EDEBT}_t + \delta_3 \text{DEBTS}_t + \delta_4 \text{GFCF}_t + \epsilon_t \]

\( \delta_0 = \text{Constant}; \ \delta_1 \ldots \delta_4 = \text{are the coefficient of the regression equation}; \ \epsilon = \text{Error term capturing other unexplained variables while } t = \text{time series.} \)

Data Analysis

In analyzing the data, the study used multiple regressions to identify the possible effects of debt servicing on economic growth in Nigeria. The study conducted some preliminary analysis such as Unit root test and Co-integration.

Unit Root Test

The Unit Root Test examines the property of the variables. It is used to check for the presence of stationarity of the variables. This test is carried out using the Augmented Dickey Fuller (ADF) test:

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF</th>
<th>Critical value 5%</th>
<th>lag</th>
<th>Order</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGDP</td>
<td>4.1255</td>
<td>2.8611</td>
<td>0</td>
<td>1(0)</td>
<td>S</td>
</tr>
<tr>
<td>DDEBT</td>
<td>3.4604</td>
<td>2.8279</td>
<td>0</td>
<td>1(0)</td>
<td>S</td>
</tr>
<tr>
<td>EDEBT</td>
<td>2.9362</td>
<td>2.8423</td>
<td>0</td>
<td>1(0)</td>
<td>S</td>
</tr>
<tr>
<td>DEBTS</td>
<td>4.3863</td>
<td>2.7268</td>
<td>0</td>
<td>1(0)</td>
<td>S</td>
</tr>
</tbody>
</table>

Source: Author’s Compilation from E-views 9.5

From the table above, RGDP, DDEBT, EDEBT and DEBT are stationary at level. Thus RGDP, DDEBT, EDEBT and DEBT are integrated at order zero.
**Johansen Co-integration test**

The co-integration test was used to check for the long run relationship between the dependent and independent variables. This study carried out the co-integration test using the Johansen Co-integration test.

**Co-integration Test** for RGDP and DDEBT, EDEBT DEBT

<table>
<thead>
<tr>
<th>Variables</th>
<th>Eigen value</th>
<th>Likelihood</th>
<th>Critical value 5%</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDEBT</td>
<td>0.6722</td>
<td>12.9045</td>
<td>14.9603</td>
<td>0.2481</td>
</tr>
<tr>
<td>EDEBT</td>
<td>0.7495</td>
<td>16.7131</td>
<td>10.6807</td>
<td>0.0328</td>
</tr>
<tr>
<td>DEBTS</td>
<td>0.4177</td>
<td>21.7150</td>
<td>15.4174</td>
<td>0.0265</td>
</tr>
</tbody>
</table>

*Source: Author’s Compilation from E-views 9.5*

The result indicates two co-integration equation and one non co-integration at 5% level. We conclude that there is a long-run relationship between real gross domestic product and external debt and debt servicing. But no long run relationship between real gross domestic product and domestic debt.

**Regression analysis**

To examine the effect of debt servicing on economic growth, we used a multiple regression analysis. The multiple regressions result obtained are presented and discussed below.

**Table 4.3 Regression Result of economic growth (RGDP)**

<table>
<thead>
<tr>
<th></th>
<th>DDEBT</th>
<th>EDEBT</th>
<th>DEBTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>-8.0752</td>
<td>19.2377</td>
<td>11.3191</td>
</tr>
<tr>
<td>T-value</td>
<td>1.5639</td>
<td>7.1583</td>
<td>9.5912</td>
</tr>
<tr>
<td>Probability Value</td>
<td>0.5463</td>
<td>0.0274</td>
<td>0.0240</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.5701</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>33.7803</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probability (F-stat)</td>
<td>0.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.8360</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Author’s Compilation from E-views 9.5*

In table 4.3 above, the study observed from the result that the R-square (adjusted) value was 0.57 (57%), this indicates that all the independent variables jointly explain about 57% of the variation in economic growth. The F-statistics probability value of 0.0000 (1%) shows that the regression model is generally significant and well specified. The Durbin Watson 1.8360 which is approximately 2 shows the absent of auto-colinearity.
The analysis result showed that domestic debt has a coefficient value of -8.0752, t-value 1.5639 and a P-value of 0.5463. The coefficient value indicates that domestic debt negative influence on economic growth. This indicates that #1.00 increase in domestic debt will result to a loss of # -0.8 in economic growth. The t-value of 1.5639 is less than absolute 3, this reveals that domestic debt has negligible effect on economic growth. The P-value of 0.5463 reveals that the effect is not statistically significant.

The regression analysis result of external debt and debt servicing showed a coefficient value of 19.2377, 11.3191, t-value of 7.1583, 9.5912 and a P-value of 0.0274, 0.0240 respectively. The t-test value indicates that external debt and debt servicing has positive effect on economic growth and the effect is statistically significant at 5% level.

**Conclusion**

This study examines the effect of debt servicing on economic growth in Nigeria. The study carries out an empirical analysis to determine the relationship between the variables.

First, the analysis revealed a significant long run relationship between real gross domestic product (RGDP) and external debt (EDEBT) and debt service (DEBT) and an insignificant long run relationship between real gross domestic product (RGDP) and domestic debt (DDET).

Secondly, the regression analysis result reveals that external debt and debt servicing has a positive significant effect on economic growth in Nigeria. The result reveals the inelastic nature of the effect of external debt on real gross domestic product. Thus a #1.00 increase in external debt will lead to #0.19 increase in real gross domestic growth. Real gross domestic product and external debt service exhibit the inelastic relationship. Hence, a unit change in external debt service payments will bring about a less than proportionate change in real gross domestic product.

Based on the above findings, we recommend that: Debts should be contracted solely for economic capital formation purpose because capital formation has direct impact on economic growth.

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