



Public Debt Burden And Its Effect On Economic Development In Nigeria

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ABSTRACT

Borrowing to meet up international obligations, correct balance of payments disequilibrium as well as provisions of critical infrastructure at home has been the choice- options for the developing economies, Nigeria not an exception. Thus, this work examined the effects of public debt burden on the economic development of Nigeria for the period 1999-2017. Data on public debt were sourced from Central Bank of Nigeria (CBN) statistical Bulletin (2017) as well as from Nigeria Bureau for Statistics (NBS, 2017). Tests on the data properties showed that apart from internal debt (DBTINT) that achieved stationarity at 2nd differencing, others achieved stationarity at 1st differencing external debt (DBTEXT), debt servicing DBTSEV, and Gross domestic product per capita (GDPCAP). To achieve the broad objectives, the study utilized multi-methodology approach involving ordinary least square (OLS), Johansen co-integration test as well as Granger causality test. The ordinary least square result shows that there is a positive relationship between internal debt (DBTINT), debt servicing (DBTSEV) and the Gross domestic product per capita, although it is only internal debt that is significant in explaining the variation in Gross domestic product per capita (GDPCAP). The Johansen co-integration (trace test and max eigenvalue test) indicates co-integrating equation at 5% level implying that there is a long-run equilibrium relationship amongst the variables of the model. Based on the findings, we recommend that government must tackle corruption squarely and ensure that external loans from bi-lateral and multi-lateral organizations are reduced to the barest minimum and tied to specific projects.

Keywords: Public debt, Public debt burden, external debt, internal debt, economic development

INTRODUCTION

Government activities in the past three decades or more have been expanding much with the result that government expenditure has also been increasing at a phenomenal rate. Government is providing more facilities and infrastructure under public utilities and social services. However, in order to meet its mounting expenses, the government resort to deficit financing by borrowing from the individuals, corporate bodies, countries and international organizations at Bi-lateral and multi-lateral levels. The amount so borrowed in order to argument short falls in domestic capital accumulation constitutes public debt of the nation. Every debt incurred need to be serviced and consequently paid back. This is done usually through increase in taxes, exports and import

restrictions. These attendants constitute the burden of public debt. Thus, debt burden and economic growth have been one topical issue in developing economies, Nigeria not an exception. Nigeria has always resorted to budget deficit as a way of stabilizing the economy which has resulted in the accumulation of debt to the detriment of the economy's growth (Ajayi 1997). For instance, the 2016 federal government budget of 6.08 trillion naira was in an envisaged deficit of ₦1.8 trillion which would be financed through domestic and foreign borrowing (Adeosun). This situation has given a lot of concern that one might argue whether the economy can meet its debts obligations and as well maintain adequate domestic investments needed for the economy's growth. Checherita et al (2011) opined, debt, like any other form of financing is one of the bed rocks of modern economy and its growth. They argued that a poor country will remain poor without finance, but with debt, they can borrow with repayment in future time in order to carry out some activities which wouldn't have been possible because of capital inadequacy. Although this is very essential for growth, however they argued that it can be problematic when the borrowed fund is used injudiciously as it limits economy's ability to discharge its duties to the citizens. Lora and Olivera (2007) equally noted the way through which debt stock affects a country's growth rate. They argued that debt service payment reduces the availability of the economy's fund to embark on projects and other social expenditure as to enhance growth.

Since the 1980s, following the fall in the prices of oil at the international market, Nigeria has borrowed huge amount of money from domestic and external sources with the hope to put them on a faster route to development through higher investment, faster growth and poverty reduction but on the contrary, economic growth and poverty situation persist at the back door amidst excess debt. This situation is made worse when the money borrowed is not put into projects that will benefit the people and generate income to service the loan and make provision for its repayment. Nigeria has been grappling with the challenges of underdevelopment amidst huge resource endowment and massive indebtedness to bi-lateral and multi-lateral institutions.

The public debt profile of Nigeria has been on the increase and a serious source of concern about the future. This is in view of its perpetual lifeline burden, consequently engendering severe economic implications both to immediate and future generations, leaving Nigerians with an acute decline in standard of living, high external dependence, gross social and economic overhead depreciation, currency depreciation, balance of payment disequilibrium, exchange rate depreciation and rising inflationary rate. It is in view of these damaging effects of public debt particularly, the external debt that the Obasanjo's administration embarked on debt forgiveness (relief) policy which yielded positive result through the cancellation of some of our external debts by the Paris and London club of creditor

Statement of Problem

As Checherita et al (2011) opined, debt like any other form of financing is one of the bed-rocks of modern economy and its growth. Be that as it may, debt if not well managed might result to catastrophe. As public debt rises, so also is the cost of servicing the debts as well as the repayment of principal which constitute a major drain on the economic resources of the debtor nation. Nigeria public debt profile has been on the increase and is of serious concern to the authorities in view of its attendant burden on the economy. It is believed that loans should accelerate economic growth and development, but where 30 -40% of the nation's annual budget is devoted for debt servicing and repayment of principal should be a major concern to every well meaning citizen of Nigeria. This is more worrisome when the return on investment is far less than the cost of borrowing. The argument is not on debt but the efficient management of debt to address the issue of its burden on the economy which may defeat the good intentions of indulging in borrowing to fast track the economy growth.

Since the Obasanjo administration succeeded in looping 30 billion dollars debt off the Nigeria external debt, the country became hopeful and relaxed about external borrowing and its attendant burdens of debt servicing and repayment of principal. However, the turn of events after then by

the successive governments in terms of internal and external borrowing gives cause for concern. This relief became a motivation that led the Yar'dua's, Jonathan and the present Buhari's administration to embark on a new external borrowing extravaganza, which seem to be a determined effort to return Nigeria to pre- Obasanjo era. Among the series of recent external loans are: Twenty three billion dollar (\$23b), sourced from Chinese bank; \$2.2billion dollar loan from AFDB in 2009; \$915m dollar credit from World Bank; \$5.5 billion dollar loan from Chinese NEXIM bank for railway development amongst others. Internally, the Nigeria government has increased her domestic debt profile in recent time through the instrumentality of domestic debt instruments such as treasury bills, treasury certificate, treasury bonds as well as development stocks. Through these instruments government have raised billions of naira as loan to facilitate infrastructure and socio-economic development of the nation.

These rising debt profile also mean a corresponding rise in debt burden as more resources are channeled towards debt servicing and repayment of capital. According to DMO in its report, the standard stress test of the external and internal debt of the federal government showed that the present value of the debt to GDP ratio rose at an average of 24.7 percent annually. It further reported that the weighted average interest rate of domestic debt was relatively high at 11.11 percent while the weighted average interest rate of government public debt portfolio was 9.19 percent as at December 2016. With a debt profile of ₦19.159 trillion, it thus means that Nigeria spends over ₦1.9 trillion naira on debt servicing annually. A causal look at some macro-economic indicators particularly indicators of external and internal debts ratio to nominal and Real Gross Domestic Products (RGDP) shows a galloping one.

Although it is argued that servicing domestic debt is re-investment or reploughing back into the economy, but the income redistribution from the poor to the rich has tremendous impact on the economy as the rich may decide to siphon their earnings abroad at the expense of the domestic economy. Therefore, the argument is not on debt, but the efficient management of debt to address the issue of its burden on the economy which may defeat the good intentions of indulging in borrowing to fast track the economy's growth. As at December, 2017 Nigeria public debt was put at about N21.743trillion naira (DMO: 2018). The issue is not on how much debt but the attendant burden this enormous debt exerts on the nation's economy. Therefore, it is the sacrifice made by the economy and how it affects her growth and development in her quest to become one of the largest 20 economies in the world that is the main trust of this study. Thus this work is aimed at examining the impact of public debt burden on the economic growth and development of Nigeria.

Objectives of the Study

The main objective of this paper is to determine the impact of public debt burden on Nigeria's economic growth for the period of 1999 – 2017.

Specifically the goals of this study are:

1. Examine if public debt has long-run relationship with Nigeria's economic development.
2. Ascertain if there is a significant causal relationship between debt burden and economic development in Nigeria.

Research Hypothesis

The following hypothesis has been formulated for empirical validation.

Ho: There is no significant relationship existing between GDPCAP and internal debt in Nigeria.

Ho₂: There is no significant relationship existing between GDPCAP and Nigeria external debt.

Conceptual Framework

This section examines some concepts as used in this work.

2.2.1 Meaning of Public debt

Public debt is the total amount of borrowing in a country that is owed to lenders within and outside the country. It is made up of monies borrowed within--individuals, institutions, banks and

non-bank financial institutions (NBFI) and outside the country from individuals, governments, institution – bilateral and multilateral. Nnamocha (2002) defined public debt as the debt of the public sector. According to the author, it is the indebtedness of the government and the obligations of government to other individuals and institutions in and outside the country. Today, public debt is more or less a fiscal policy instrument of government as government uses it to augment her income and expenditure framework and to balance deficit budgets. If the debt is internal, it means that the country owes itself. In that case, when interest and principal are paid, income is simply transferred from one citizen to another. The burden becomes pronounced when the poor are taxed to pay the rich who are the beneficiary of these treasury bills, stocks and bonds. If on the other hand, the debt is external, it means that the country is owing citizens and institutions of other countries, in which case, interest and principal paid constitute capital flight as it is paid to other countries in foreign denominations and through export.

Public debt could also mean the portion of total debt which has a direct charge on government revenues as well as the debt obtained from the IMF. This debt has two components viz; domestic debt (which is incurred principally to finance fiscal deficit) and external debt (which is raised primarily to finance development expenditure).

2.2.2 Nature of Public Debt

The nature of public debt in Nigeria comprises the total amount of money owed by the government internally and externally. This debt could be in form of government commercial paper, treasury bills, bonds, promissory notes, trade arrears, balance of payment deficits, tied loans etc.

2.2.3 Nigeria Debt Profile

Nigeria's debt profile could be traced to colonial days when the British administrators were in control. As at the time of independence in 1960, she had only incurred external debts of ₦82.4m (Okonjo-Iweala et al, 2003). The first external loan obtained by Nigeria after independence was US \$13m in 1964 from the Paris club of creditors and in 1978 through the International Capital Market (ICM) where Nigeria made her first major borrowing of US \$1 billion. From US \$1 billion in 1978, the figure progressed to \$17.37 billion in 1983 and rose to \$18.904 billion in 1985; \$33.730 billion in 1991 and \$32.58 billion in 1995. The debt stock declined marginally to \$28.733 billion in 1998, while the total debt of Nigeria in 2002 was put at \$31 billion and rose to \$36 billion in December 2004. However, following the vigorous campaign of the Obasanjo's administration on debt relief which finally paid off in June 2005, a whopping sum of \$18 billion was cancelled from our foreign debt while \$12.2 billion was repaid with a balance of \$3 billion as external debt.

Thereafter, the successive governments of Umaru Musa Yar'adua, Goodluck Jonathan and Mohammad Buhari returned back to the trench and obtained billions of Dollars in loan. In view of this development,

Nigeria's debt profile rose to ₦14.1 trillion and \$15.1 billion as at June 30, 2017 for domestic and foreign debt stock respectively, according to NBS. By the end of 2018, Nigeria foreign debt has hit \$22.08 billion, with internal debts at about ₦17 trillion respectively (DMO) from all time low of \$3 billion and ₦1 trillion Naira after the debt cancellation in 2006. This brings Nigeria's total debt profile to ₦24.3 trillion. What a burden!

This was foreseeable and avoidable, if only our leaders are conscious of what they are doing and bear true allegiance to the country.

2.2.4 Public Debt Burden

Burden of public debt is a misleading and highly confused concept. The 1930s and 1940s witnessed an array of debate over the issue of debt burden. The central focus of the debate was that incurring debt to finance deficit budget would bequeath burden on the future generation as against those who argued otherwise. This debate produced two extreme views – the classical and Keynesian views.

To the classist, Prof. Taylor had pointed out that “the nature and severity of the burden have however been frequently and improperly understood largely because of the temptation to think of public debt in terms of private debt and to apply identical standard to both”. To A. P. Lerner “the great miss-conception about debt burden lies in looking at only one side of debt-credit relationship”. According to this school, every debt has a corresponding credit and this fact is frequently over looked when considering the burden of public debt.

On the other hand, the Keynes disagreed with the classical burden thesis. The Keynesian approach advocated strongly that public borrowing for the purpose of generating effective demand will not generate any burden rather it will help in activating idle savings in private sector which will in turn generate income and employment and thus economic growth.

However, to appreciate the overall burden of public debt, the Dalton’s distinction between direct and indirect as well as money and real burden has been adopted.

Link Between Public Debt Burden and Economic Development

It is believed that the growing public debt against the backdrop of declining government revenue and unstable foreign exchange earning has serious implications for the economy.

However, to determine the extent of the nation’s debt burden and how the burden affects the capacity of the economy to achieve substantial growth is one crucial area of concern. To address these questions will be based on some principal indices, these include amongst others, the ratio of public debt stock to exports (external earnings) and to Gross Domestic Product (GDP) determined by investment growth. Debtor nations have too much burden on their shoulders. A situation where 60 – 80% of their export earnings are used up in servicing debts connotes that little or nothing is left for countries to perform their constitutional duties of providing for the citizenry. Worst still, is the choice-option of these developing economy to achieve economic breakthrough by seeking foreign loans. Studies have shown that public debt has no significant effect on the growth of investment in the Nigeria economy and that the growth of debt has affected negatively the growth of the economy in terms of real sector development (James 2006, Oshadami, 2006).

Another import of public debt burden is external control and manipulation of the domestic economy resulting in dependency, slow prospects of economic recovery and growth, political instability and wide spread of poverty across the land (Ake, 2000). Resources transferred abroad for debt servicing represents a reduction in what could be devoted to regional schemes and economic development; indeed, external debt imposes a burden on society because it represents a reduction in the consumption possibilities of a nation. It causes an inward shift of the society’s production possibilities curve.

Theoretical Literature

Theories of Public Debt Burden

The impact of public debt burden on economic growth can be analyzed in the context of two divergent views i.e. traditional and modern views.

Traditional Views

Government finances are generated through taxes and borrowing. However, in the traditional view, a tax cut financed by government borrowing would have many effects on the economy. Firstly, a tax cut will motivate consumer spending as the consumer has more disposable income at his disposal. This higher consumer spending affects the economy in both short run and long run. In the short run, higher consumer spending would raise the demand for goods and service, thus raise output and employment. As the marginal propensity to consume is higher than marginal propensity to save, the increase in private savings falls short of government dis-saving. This increases the real interest rate in the economy hence, encouraging capital inflow from abroad.

On the other hand, in the long run, the higher interest rate would discourage investment and thus crowd out private investment. This will translate to lower domestic savings thus smaller capital stock. The inflow from abroad would result in greater foreign debt. The higher aggregate demand

as a result of higher consumer spending results in a higher price level that adjusts over time. The lower investment eventually leads to a lower steady states capital stock and a lower level of output. Therefore, in the long run, the overall impact would be smaller total output and eventually lower consumption and reduced economic welfare. This is also referred to as the burden of public debt, as each generation burdens the next, by leaving behind a smaller aggregate stock of capital.

Ricardian View

In the Ricardian view, government debt is considered equivalent to future taxes. Bearing in mind that consumers are rational and forward looking, the discounted sum of future taxes is equivalent to the current deficit. So the shift between taxes and deficits does not produce aggregate wealth effects. The increase in government debt does not affect consumption. The national consumer facing current deficits saves for future rise in taxes and consequently total savings in the economy are not affected.

A decrease in government dis-saving is matched by increase in private savings. In view of unchanged total savings, investment and interest rate are also unaffected and so is the national income.

Debt Overhang Theory

The theory describes a situation where the debt of an organisation or country exceeds its future capacity to pay. Debt overhang is the condition of an organization (for example, a business, government or individual) that has existing debt so great that it cannot easily borrow more money, even where the new borrowing would yield greater returns. The result of having excessive debt is that any earnings generated by the new investment projects are partially appropriated by existing debt holders. Aria, Kunieda and Nishida (2012) argue that an increase in debt lowers economic growth. The slowdown of growth is driven by crowding out and the interest rate rises when growths slows down. Ajayi and Iyoha (1998) posited that the issues of debt and growth retardation are clearly interrelated. According to them, excessive stock of debt retards growth and slow the socio-economic development of the African States Sub-Sahara. The large debt stock and the staggering debt service burden have now introduced a vicious circle to the analysis of the development problem of these developing countries because debt servicing in the face of inadequate foreign earning leads to import strangulation. This eventually holds back export growth, thus perpetuating import shortages.

METHODOLOGY

This study is a survey design. The model is estimated using time series annual data for the period 1999-2017. The data for the study are secondary in nature and were obtained from published sources. The main source of these data is the Central Bank of Nigeria (CBN) Statistical Bulletin, various issues.

To analyze the data obtained, the study adopts an economic model in determining the effect of public debt burden on the economic development, using Nigeria as a case study. The study employed techniques of ordinary least square (OLS), co-integration and granger causality test after carrying out stationary test on the data collated to ascertain the direction of relationship between the series and the order of integration. The essence of co-integration and Granger causality (Pairwise) is to establish the long-run relationship between the dependent and independent variable.

Model Specification

In capturing the study, these variables were used as proxy. Thus the model is represented in functional form as shown below.

$$ED = f(DBTINT, DBTEXT, DBTSEV) \quad \text{--- (1)}$$

Where

ED= Economic Development (Dependent variable)

DBTINT = Internal Debt (Independent variable)

DBTEXT = External Debt

DBTSEV = Debt servicing

This means that economic development is the function of internal debt, external debt and debt servicing. In a linear function, it is presented thus

$$ED = (B_0 + B_1 DBTINT + B_2 DBTEXT + B_3 DBTSEV + U) \text{ ----(2)}$$

Where

B_0 = Constant parameter

B_1 - B_3 = Coefficients of estimates

U = Error term

Note: ED is aptly captured by the per capita GDP hence; ED will be substituted for GDPCAP.

Thus, the new equation will be

$$GDPCAP = B_0 + B_1 DBTINT + B_2 DBTEXT + B_3 DBTSEV + U \text{ (3)}$$

It is important to log-linearize the data on each variable to avoid spuriousity in estimation. Thus, the new equation will be

$$\text{Log GDPCAP} = B_0 + B_1 \text{LogDBTINT} + B_2 \text{log DBTEXT} + B_3 \text{log DBTSEV} + U \text{ .. (4)}$$

Estimated Procedures

The estimation procedures for analyzing the subject matter includes the:

- (a) Unit Root Test (URT): To determine the level of stationarity of the variables i.e. the time series data.
- (b) Johansen Co-integration Test (JCT): To determine the long-run equilibrium relationship existing amongst the explained and the explanatory variables.
- (c) Granger Causality Test
- (d) Ordinary Least Square (OLS)

Data Presentation

Table 4.1: Data on Gross Domestic Product per capita (GDPCAP), Internal Debt (INTDBT), External Debt (EXTDBT), Debt Servicing (DBTSEV) in Nigeria from 1999-2017.

YEAR	INTDBT (₦' billion)	EXTDBT (₦' billion)	DBTSEV (₦' billion)	GDPCAP
1999	794.81	2577.37	30.84	188133.3746
2000	898.25	3097.38	13105	193607.6239
2001	1016.97	3176.29	155.42	201393.7132
2002	1166	3932.88	163.81	225059.864
2003	1329.68	4478.33	363.51	240273.163
2004	1370.33	4890.27	383.5	258657.3516
2005	1525.91	2695.07	393.96	269718.4746
2006	1753.26	451.46	249.33	284803.7471
2007	2169.64	438.89	213.73	296502.8944
2008	2320.31	523.35	381.2	307335.8951
2009	3228.03	590.44	251.79	322522.9327
2010	4551.82	689.84	415.66	342164.5582
2011	5662.84	896.85	527.18	353094.7474
2012	6537.54	1026.9	679.3	358223.9267
2013	7118.98	1387.33	828.1	367915.8263
2014	7904.03	163152	941.7	380554.2274
2015	8837	2111.53	1060.38	380965.1485
2016	11058.2	3478.92	1584.11	3652420.6
2017	15937	5787	2662.1	358496.7389

4.3 ANALYSIS AND INTERPRETATION OF RESULTS/DISCUSSION OF FINDINGS

(a) **Presentation of ordinary least square result:** The study used econometric view (Eview) version 10 to analyze data which were extracted on the subject matter.

Table 4.2: Ordinary Least square (OLS) Results

Variables	Co-efficient estimates	of Std Error	t-statistics	Prob.
C	9.369357	1.207579	7.757965	0.000
DBTINT	0.415447	0.148550	2.796677	0.0136
DBTEXT	-0.012394	0.094420	-0.131269	0.8973
DBTSEV.	0.017755	0.113718	0.156136	0.8780

$R^2=0.407499$, Adjusted $R^2=0.288999$, F.Stat=3.438803, Dw-Stat= 2.594612

Source: Computed Result (See appendix)

The coefficient of estimates in the OLS result computed above can be expressed mathematically below.

$$GDPCAP = 9.368357 + 0.415447 \text{ DBTINT} - 0.012394 \text{ DBTEXT} + 0.017755 \text{ DBTSEV}.$$

(b) **Interpretation of ordinary least square result:** With respect to the coefficient of OLS estimation, internal debt (DBTINT) and debt servicing (DBTSEV) are both positive functions of Gross domestic product per capita (GDPCAP). Although, it is only internal debt that is

significant in explaining the variation in GDPCAP. Debt servicing (DBTSEV) is not significant in explaining the variation.

On the contrary, external debt shows a negative function of GDACAP and also not significant in explaining the variation in the explained variable.

With respect to the global statistics, Adjusted R² is 28%, meaning that the regressors explains 28% of the variable in the dependent variable.

The F-statistics which is 3.438803 with Prob of 0.04 shows that the overall fitness of the model is significant though marginally and therefore could be used for meaningful economic analysis. Durbin Watson is 2.594612 which is close to 2 indicating the elimination of serial co-relation.

(c) Test of stationarity of Variables (Unit Root Test)

Table 4.3: Summary of order of integration

Variable	ADF	Level of stationarity
GDPCAP	-	1(1)
DBTINT	-	1(2)
DBTEXT	-	1(1)
DBTSEV	-	1(1)

(See appendix for details)

The result of the Augmented Dickey –Fuller test shows that apart from internal debt (DBTINT) that achieved stationarity at 2nd differencing, others (GDPCAP, DBTEXT, DBTSEV) achieved stationarity at 1st differencing meaning they are 1(1) variables. None of the variables achieved stationarity at levels.

Recall that we employed data massaging exercise to smoothen the data by linearization method.

Table 4.4: Augmented Dickey Fuller Test Equation

Variables	Coefficients	Std. Error	T.Stat	Prob.	R ²
D(DBTINT(-1)2 C	-1.146274 0.016015	0.279167 0.027156	-4.106049 0.589736	0.0011 0.5648	0.546333
D(DBTEXT(-1) C	-1.435967 0.044460	0.233019 0.382369	-6.162449 0.116276	0.0000 0.9090	0.716852
D(DBTSEV(-1) C	-1.463157 0.013558	0.104881 0.194187	-13.95060 0.069817	0.0000 0.9453	0.928442
D(GDPCAP(-1) C	-2.147675 0.236475	0.251994 0.138704	-8.522737 1.704889	0.0000 0.1088	0.828840

Source: Authors compilation

Table 4.5a: Co-integration Test Result (Trace)

Hypothesized no of CEs	Eigenvalue	Trace statistic	0.05% Critical value	Prob.
None *	0.981037	116.1529	47.85613	0.0000
At most 1*	0.831093	48.74343	29.79707	0.0001
At most 2*	0.609659	18/51049	15.49471	0.0170
At most 3	0.137671	2.518022	3.841466	0.1126

Table 4.5b: Co-integration test (Maximum Eigenvalue)

Hypothesized no of CEs	Eigenvalue	Max-Eigen statistic	0.05% Critical value	Prob.
None *	0.981037	76.40942	27.58434	0.0000
At most 1*	0.831093	30.23294	21.13162	0.0020
At most 2*	0.609659	15.99247	14.26460	0.0264
At most 3	0.137671	2.518022	3.841466	0.1126

Source: Author’s Compilation (see details in appendix)

The con-integration test is used in the determination of the long-run relationship that exist between variables. It is in line with the proposition of the Johansen in 19991.

From table 4.5a, trace test indicates 3 co-integrating equation at the 5% level. Table 4.5b, Max Eigenvalues also corroborated trace test. It also indicated 3 co-integrating equation at 5% level. The decision rule states that if the trace statistics is greater than the 5% critical value at none ** we reject the Null hypothesis (H₀) which say that there is no long-run relationship and accept the alternate hypothesis (H₁) which says that there is long-run relationship between the variables.

The table above shows the result of the Johansen co-integration test obtained from the co-integration result as duly presented in the appendix. The above shows that long-run equilibrium relationship (co-integration) exist between Gross Domestic Product per capita (GDPCAP) and the explanatory variables of internal debt, debt servicing as well as the constant parameters.

Pairwise Granger Causality Test

The pairwise granger causality indicates 3 cases of uni-directional causality. The cases are

- (1) External debt (DBTEXT) Granger causes GDPCAP
- (2) GDPCAP Granger causes DBTSEV and
- (3) DBTINT Granger cases DBTSEV.

(see appendix)

What this simply means is that for every unit of dollar received as external debt, it has an impact on the nation's per capita GDP. Equally of note is the fact that GDP per capita also Granger cause debt servicing because an increase in per capita as a result of external or internal debt will mean servicing the debt. However, there were no cases of bi-directional causality.

CONCLUSION

Borrowing to meet up international obligations, correct balance of payment deficits as well as provisions of critical infrastructure at home has been the choice-option for the developing economy. From the analyses conducted in the study the following were some of my findings:

Firstly, there is a long-run relationship between public debt and gross domestic product per capita.

Secondly, it was observed that internal debt rather than external debt impacted more positive on the economy. Thirdly, it was also discovered that the return on investment on loans obtained are far less than the cost of borrowing.

Fourthly, Nigeria's public debt to GDP ratio is within the threshold, but precautionary measures need to be taken to checkmate the rate we are slipping into debt overhang.

Again, misappropriation and corruption appears to be a stumbling block to our public debt management.

The implication of these findings is that our nation need to rise and identify her priorities right and channel her resources optimally in order to promote excellence and the wellbeing of the people.

A critical evaluation of the result also shows that the variable with lowest of effect is the external debt. This finding is in line with Osuma et al (2018).

The F-statistics of 3.438803 with probability of 0.04 shows that the overall fitness of the model is significant, though marginally, and therefore can be used for economic analysis.

It can be concluded generally that, while Nigeria is in need of capital to bridge the domestic gap, there is the need to watch our nation so that we do not fall headlong into debt overhang.

The federal government should look inwards rather than outwards for loan facilities to minimize the burden of public debt.

The war against corruption needs to be reinvigorated to forestall the impending danger of debt overhang. That Nigeria moved up the ladder from \$3 billion and \$1 trillion external and internal debt respectively in 2006 after the debt cancellation to a whopping \$22 billion dollars and about

N16 trillion naira at the close of 2017 with nothing to show for it portends danger to the nation's economy.

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APPENDIX

YEAR	INTDBT	EXTDBT	DBTSEV	GDPCAP
1999	794.81	2577.37	30.84	188133.3746
2000	898.25	3097.38	13105	193607.6239
2001	1016.97	3176.29	155.42	201393.7132
2002	1166	3932.88	163.81	225059.864
2003	1329.68	4478.33	363.51	240273.163
2004	1370.33	4890.27	383.5	258657.3516
2005	1525.91	2695.07	393.96	269718.4746
2006	1753.26	451.46	249.33	284803.7471
2007	2169.64	438.89	213.73	296502.8944
2008	2320.31	523.35	381.2	307335.8951
2009	3228.03	590.44	251.79	322522.9327
2010	4551.82	689.84	415.66	342164.5582
2011	5662.84	896.85	527.18	353094.7474
2012	6537.54	1026.9	679.3	358223.9267
2013	7118.98	1387.33	828.1	367915.8263
2014	7904.03	163152	941.7	380554.2274
2015	8837	2111.53	1060.38	380965.1485
2016	11058.2	3478.92	1584.11	3652420.6
2017	15937	5787	2662.1	358496.7389

STATIONARY AT 2ND DIFF

Null Hypothesis: D(DBTINT,2) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.106049	0.0070
Test critical values:		
1% level	-3.920350	
5% level	-3.065585	
10% level	-2.673459	

*MacKinnon (1996) one-sided p-values.
 Warning: Probabilities and critical values calculated for 20 observations
 and may not be accurate for a sample size of 16

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(DBTINT,3)
 Method: Least Squares
 Date: 04/14/19 Time: 14:21
 Sample (adjusted): 2002 2017
 Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DBTINT(-1),2)	-1.146274	0.279167	-4.106049	0.0011
C	0.016015	0.027156	0.589736	0.5648
R-squared	0.546333	Mean dependent var		0.008716
Adjusted R-squared	0.513928	S.D. dependent var		0.155470
S.E. of regression	0.108392	Akaike info criterion		-1.489665
Sum squared resid	0.164482	Schwarz criterion		-1.393091
Log likelihood	13.91732	Hannan-Quinn criter.		-1.484719
F-statistic	16.85964	Durbin-Watson stat		1.907987
Prob(F-statistic)	0.001069			

STATIONARY AT FIRST DIFF

Null Hypothesis: D(DBTEXT) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.162449	0.0001
Test critical values:		
1% level	-3.886751	
5% level	-3.052169	
10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DBTEXT,2)

Method: Least Squares

Date: 04/14/19 Time: 14:24

Sample (adjusted): 2001 2017

Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DBTEXT(-1))	-1.435967	0.233019	-6.162449	0.0000
C	0.044460	0.382369	0.116276	0.9090
R-squared	0.716852	Mean dependent var		0.019124
Adjusted R-squared	0.697975	S.D. dependent var		2.868539
S.E. of regression	1.576457	Akaike info criterion		3.858367
Sum squared resid	37.27823	Schwarz criterion		3.956393
Log likelihood	-30.79612	Hannan-Quinn criter.		3.868111
F-statistic	37.97578	Durbin-Watson stat		2.212556
Prob(F-statistic)	0.000018			

STATIONARY AT FIRST DIFF

Null Hypothesis: D(DBTSEV) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-13.95060	0.0000
Test critical values:		
1% level	-3.886751	
5% level	-3.052169	
10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DBTSEV,2)

Method: Least Squares

Date: 04/14/19 Time: 14:25

Sample (adjusted): 2001 2017

Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DBTSEV(-1))	-1.463157	0.104881	-13.95060	0.0000
C	0.013558	0.194187	0.069817	0.9453
R-squared	0.928442	Mean dependent var		-0.325461
Adjusted R-squared	0.923671	S.D. dependent var		2.875225
S.E. of regression	0.794358	Akaike info criterion		2.487567
Sum squared resid	9.465076	Schwarz criterion		2.585592
Log likelihood	-19.14432	Hannan-Quinn criter.		2.497311
F-statistic	194.6191	Durbin-Watson stat		1.082081
Prob(F-statistic)	0.000000			

STATIONARY AT FIRST DIFF

Null Hypothesis: D(GDPCAP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.522737	0.0000
Test critical values:		
1% level	-3.886751	
5% level	-3.052169	
10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDPCAP,2)

Method: Least Squares

Date: 04/14/19 Time: 14:27

Sample (adjusted): 2001 2017

Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPCAP(-1))	-2.147675	0.251994	-8.522737	0.0000
C	0.236475	0.138704	1.704889	0.1088
R-squared	0.828840	Mean dependent var		-0.138230
Adjusted R-squared	0.817429	S.D. dependent var		1.269422
S.E. of regression	0.542403	Akaike info criterion		1.724516
Sum squared resid	4.413016	Schwarz criterion		1.822541
Log likelihood	-12.65839	Hannan-Quinn criter.		1.734260
F-statistic	72.63704	Durbin-Watson stat		2.018469
Prob(F-statistic)	0.000000			

Date: 04/14/19 Time: 14:30

Sample (adjusted): 2001 2017

Included observations: 17 after adjustments

Trend assumption: Linear deterministic trend

Series: GDPCAP DBTINT DBTEXT DBTSEV

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.981037	116.1529	47.85613	0.0000
At most 1 *	0.831093	48.74343	29.79707	0.0001
At most 2 *	0.609659	18.51049	15.49471	0.0170
At most 3	0.137671	2.518022	3.841466	0.1126

Trace test indicates 3 cointegratingeqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.981037	67.40942	27.58434	0.0000
At most 1 *	0.831093	30.23294	21.13162	0.0020
At most 2 *	0.609659	15.99247	14.26460	0.0264
At most 3	0.137671	2.518022	3.841466	0.1126

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'S11*b=I):

GDPCAP	DBTINT	DBTEXT	DBTSEV
-0.374884	1.300228	0.227397	-1.997742
-0.897552	0.689540	0.851917	0.237169
16.98715	-5.693401	0.883674	0.247639
14.10101	-3.624197	-0.192349	1.416402

Unrestricted Adjustment Coefficients (alpha):

D(GDPCAP)	D(DBTINT)	D(DBTEXT)	D(DBTSEV)
0.067574	0.002970	-0.044907	0.674169
0.318425	-0.009106	-0.514106	0.079215
-0.014737	0.008981	-1.057598	-0.079600
0.033963	0.027106	-0.021705	-0.027927

1 Cointegrating Equation(s): Log likelihood 0.181538

Normalized cointegrating coefficients (standard error in parentheses)

GDPCAP	DBTINT	DBTEXT	DBTSEV
1.000000	-3.468352	-0.606582	5.328966
	(0.16956)	(0.12881)	(0.24661)

Adjustment coefficients (standard error in parentheses)

D(GDPCAP)	-0.025332
	(0.04088)
D(DBTINT)	-0.001113
	(0.00844)
D(DBTEXT)	0.016835
	(0.16597)
D(DBTSEV)	-0.252735
	(0.02034)

2 Cointegrating Equation(s): Log likelihood 15.29801

Normalized cointegrating coefficients (standard error in parentheses)

GDPCAP	DBTINT	DBTEXT	DBTSEV
1.000000	0.000000	-1.046626	-1.855642
		(0.22700)	(0.39235)
0.000000	1.000000	-0.126874	-2.071476

		(0.08029)	(0.13878)
Adjustment coefficients (standard error in parentheses)			
D(GDPCAP)	-0.311136	0.307428	
	(0.05031)	(0.07613)	
D(DBTINT)	0.007060	-0.002417	
	(0.02172)	(0.03287)	
D(DBTEXT)	0.478272	-0.412886	
	(0.40339)	(0.61035)	
D(DBTSEV)	-0.323835	0.931195	
	(0.04740)	(0.07172)	

3 Cointegrating Equation(s): Log likelihood 23.29424

Normalized cointegrating coefficients (standard error in parentheses)

GDPCAP	DBTINT	DBTEXT	DBTSEV
1.000000	0.000000	0.000000	-0.690271
			(0.05253)
0.000000	1.000000	0.000000	-1.930207
			(0.09707)
0.000000	0.000000	1.000000	1.113455
			(0.30961)

Adjustment coefficients (standard error in parentheses)

D(GDPCAP)	-0.561482	0.391334	0.273615
	(0.87684)	(0.30305)	(0.06433)
D(DBTINT)	0.159627	-0.053552	0.000854
	(0.37719)	(0.13036)	(0.02767)
D(DBTEXT)	-17.48730	5.608444	-1.382759
	(4.51143)	(1.55920)	(0.33099)
D(DBTSEV)	-1.676007	1.384388	0.150449
	(0.72156)	(0.24938)	(0.05294)

Pairwise Granger Causality Tests

Date: 04/14/19 Time: 14:31

Sample: 1999 2017

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DBTINT does not Granger Cause GDPCAP	17	0.68204	0.5241
GDPCAP does not Granger Cause DBTINT		2.49437	0.1242
DBTEXT does not Granger Cause GDPCAP	17	36.2256	0.000008
GDPCAP does not Granger Cause DBTEXT		0.16976	0.8459
DBTSEV does not Granger Cause GDPCAP	17	0.54541	0.5933
GDPCAP does not Granger Cause DBTSEV		17.9483	0.0002
DBTEXT does not Granger Cause DBTINT	17	0.43609	0.6564
DBTINT does not Granger Cause DBTEXT		0.86848	0.4444
DBTSEV does not Granger Cause DBTINT	17	0.07068	0.9321
DBTINT does not Granger Cause DBTSEV		24.7197	0.00006
DBTSEV does not Granger Cause DBTEXT	17	0.75729	0.4901

DBTEXT does not Granger Cause DBTSEV 0.05762 0.9443

OLS RESULT

Dependent Variable: GDPCAP

Method: Least Squares

Date: 04/14/19 Time: 14:41

Sample: 1999 2017

Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.368357	1.207579	7.757965	0.0000
DBTINT	0.415447	0.148550	2.796677	0.0136
DBTEXT	-0.012394	0.094420	-0.131269	0.8973
DBTSEV	0.017755	0.113718	0.156136	0.8780
R-squared	0.407499	Mean dependent var		12.70605
Adjusted R-squared	0.288999	S.D. dependent var		0.627236
S.E. of regression	0.528891	Akaike info criterion		1.748596
Sum squared resid	4.195888	Schwarz criterion		1.947425
Log likelihood	-12.61166	Hannan-Quinn criter.		1.782245
F-statistic	3.438803	Durbin-Watson stat		2.594612
Prob(F-statistic)	0.044101			

Estimation Command:

=====
 LS GDPCAP C DBTINT DBTEXT DBTSEV

Estimation Equation:

=====
 GDPCAP = C(1) + C(2)*DBTINT + C(3)*DBTEXT + C(4)*DBTSEV

Substituted Coefficients:

=====
 GDPCAP = 9.36835688398 + 0.41544739364*DBTINT - 0.0123944501724*DBTEXT + 0.0177554602833*DBTSEV