

Public Debt and Economic Growth in Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Authors EOF and EOO designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors OSI and IAC managed the analyses of the study and the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/ARJASS/2017/36095

Editor(s):

(1) Imre Ersoy, Department of European Union Economics, European Union Institute, Marmara University, Turkey.

Reviewers:

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Complete Peer review History: <http://www.sciencedomain.org/review-history/21607>

Original Research Article

Received 12th August 2017
Accepted 19th September 2017
Published 28th October 2017

ABSTRACT

This study empirically analyzed the relationship between public debt and economic growth in Nigeria from 1980-2015. The study adopted Vector Error Correction Model (VECM) approach of econometric data analysis. The variables used in the study include real gross domestic product (RGDP), foreign debt, domestic debt and domestic private savings. The results of the study indicated that: (i) External debt have significant negative impact on economic growth within the period under study. (ii) Domestic debt (DMD) has significant negative relationship with economic growth within the period under consideration. (iii) External debt and domestic debt granger cause RGDP in Nigeria with causality running from external debt and domestic debt to RGDP. The implication of this result is that the negative correlation between debt stocks (external debt and domestic debt) and economic growth which is contrary to aprior expectation may be highlighting the misappropriation and wrong application (corrupt practices) of the borrowed funds. Based on findings, the study recommends therefore that (i) Government should reduce external debt and the ones obtained should be strictly used for purposes intended to ensure positive effect. (ii) Government should cut down on domestic borrowing and ensure that the already borrowed

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funds are applied for purposes intended to ensure positive effect and through growth. (iii) With the evidence of negative causality running from both external and domestic debt stock to economic growth (RGDP) suggests that government should cut down in both borrowings to ensure economic stability and sustainable growth.

Keywords: External debt; domestic debt; economic growth; causality; vector error correction; Nigeria.

1. INTRODUCTION

Public debt increase as experienced by many developing countries of the world had been come global concern, following the fall in oil prices, variation on exchange rate etc which has brought adverse effect to some developing nations of the world such as Nigeria. Also in reflecting on the economic implication of the country's growing debt record, it is a very important policy issue which needs broad public debate. The rate of country's indebtedness is problems that are facing many growing nation since the beginning of the 21st Century. Therefore increasing levels of public debt of a country can be harmful to the growth of the economy of any country if not well utilized. Therefore increasing levels of public debt of a country can be harmful to the growth of the economy of any country if not well utilized. Public debt therefore refers to amount of money that federal government, state government and local government owe at any time. Public debt accrues when the government is experiencing budget deficit. In other word, all the money that government owes at all levels is defined as public debts, it can be in the form of services like pension payment owing to his employee both domestically or externally, or any contract entered by government and could not pay. If government is having budget deficit difficulties and the government had gained the trust in the world and her economies are strong, such government can raise money through issuing their bonds for other nations, individuals and groups to come and buy. This is accompanied with government promises to pay them back at a certain time with fairly interest rate. Any government who lack trust in the world to issue bond for people to purchase will be left with no option than borrowing from either external institutions or domestic institution with unfavourable or favourable interest rate.

Government of all levels can default their debt, and in order to avoid default on public debt supranational like the International Monetary Fund are invested with great power by the international community to make sure that nations will not default and also to control

numerous financial issues if there is any signal to show that the nation want to default. In the other hands, if state or local government default their debts the country would pay the debt. If budget deficit of any government rises, it will lead to increase on public debt. Public debt can be classified into different types such as long-term debt when the debt is expected to last for a longer period of time and short-term debt if debt is designed to last for one or two years only. Again for the purpose of this study, public debt is also group into external debt and domestic debt and researcher will concentrate more on external debt and domestic debt as types of public debts to know which one contribute more to the economy and why it contribute more. External debt refer to any financial resources which government, organization are using that are borrowed from the foreign counties other than the country own resource. External debt is also known as any kind of business funding you acquire from sources outside the country. Whether it is borrowing from Bank, investments from private individuals or investment firms, it has merit and demerit, therefore anyone who wants to borrow from international institutions should consider the advantages and disadvantages associated with it before set out to secure the fund.

Domestic Debt is defined as debt that government borrowed within the country, it involves the same currency. Therefore all the amount of money that government owes internally such as Treasury Bills, Treasury Certificates, Federal Government Development Stock, Ways and Means Advances and Treasury Bonds is regard as domestic debt [1]. Economic growth according to many economist refer to when total value of all final output that a country can produce within a year valued at market prices as adjusted for price changes plus the imputed value of the economy's produced goods and services that do not pass through the market channel minus net income from abroad. This is observed as an increase in the country productive capacity, when measured up to one period of time to another. Therefore growth in an economy is seen when the total output of goods

and services increases when measured with the previous years. There are about three ways by which growth in an economy can be measured. They include output (product) method, income method and expenditure method. Economy can be said to be growing either upwardly or downwardly. An upward growth (positive growth) simply means an increase in the output of that particular economy which is called a boom while downward growth also called (negative growth) this means that the total output of goods and services produced in an economy in a particular year had falling when compare to its value the previous years. When a country want to ascertain the rate of her country's growth with other countries growth rate, gross national product (GNP) can be used as measurement of growth. This will make the comparison of many countries easy if the monetary values of those countries involved are stated in one particular currency to ensure uniformity in the measurement. As guided by the purchasing power as at that period.

Also GDP per capita is used to measure the population size of many countries. [2] stated that the composition of country's debt influences the citizens, government, private enterprise such as banks and subsequently the entire economy. Therefore all the sector of the economy is affected by public debt size and its means of repayment. So before borrowing money either externally or internally, the country in question should consider if what they want to borrow the money for will lead to the growth of the economy. He opined that country borrow for the following three reasons: when government expected revenue is less than their proposed expenditure (budget deficit) in a particular fiscal year and the country borrow to finance budget deficit; again that debt arise as a result of the execution productive investment and also that government borrow to finance an important capital projects like water dam, river basin development project and agricultural development projects. [3] opined that borrowing within the country is better than borrowing outside the country because it will help to stimulate the growth of the economy since the repayment of the principal and interest would lead to increase in the total output in the country when well utilized.

But when the country borrows outside the country she would need more money for repayment of the debt as result of exchange rate disparity. This can hinder the rate of growth that the debt, would have brought to the economy.

Therefore he advised that internal borrowing is better than external borrowing for any government in order to boost economic growth. In spite of how attractive foreign borrowing may look, governments may possibly still look toward domestic because of the following benefit of domestic borrowing. (i) The beneficiary country growth performance and budget can be evaluated by the aid agencies and the provision of oversea funding may be determined by the same body. (ii) International assistance comes frequently to enable the government fund projects both capital and recurrent according to the donors support. Therefore, domestic savings would help to bring low budget deficits of governments with large recurrent budget deficits in order to bridge the gap. Borrowing within the country is helpful in accomplishing the target of the monetary authority especially in the nation with surplus balance of payment [4]. While [5] in their study are of the opinion that judicious use of public debt resources whether external or domestic is what will determine its impact on economic growth of any nations. Hence borrowing within and outside the counties is very useful when employed into productive investment such as investment in agriculture, and other lucrative sector which will boast the economy.

When money borrowed is not well utilized, it will not bring about the necessary contribution to the economy. In case of Nigeria [6] discovered that the fall in the economy is as a result of mismanagement of increased public debt. Thus they suggested that the government should try to put money borrowed to the productive investment to enable it lead to increase in the national output. They argued that, if there is a possibility that nation's debt would grow bigger than her ability for repayment (debt overhang theories) that, this can increase the amount of money required to service the debt thereby hindering people's interest in investment both domestic and external and this leads to fall in national output of the country. Prospective businessmen would not like to increase cost to produce more goods and services in the future, as they of the opinion that the higher the country produces in this condition the greater the taxes so that the country may be able to service the foreign debt. Also, the policy reforms would have brought efficiency and growth like freedom in trade and fiscal change but was hindered by the incentive effects connected with debt stocks. If the government perceives that all they stand to gain in the future if the national output increases would go to external lenders, they refuse to

acquire cost. So many economists are of the view that if country borrows to a reasonable extends; it will increase national output while some economists are of the opinion that high debt reduces growth.

1.1 Statement of Problem

It has been established that Nigeria’s reliance on oil as the only source of income coupled with her steady negative trade balance as a result of the economy over reliance on import has contributed significantly to the volatile nature of the economy. The Nigeria economy benefited from the oil boom of the seventies in terms of cash flow to the economy but there seems to be little in terms of investment, and infrastructural development to support the productivity of the economy. Hence, the mono-cultural nature of the Nigeria economy, low per capita income, trade imbalances, persistent fiscal deficits, low productivity, unemployment and the attendant low savings level prompted the economy to seek other means to bridge the revenue gap especially due to the volatile nature of oil proceeds in the international oil market [7]. Public borrowing either domestic or international consequently emerged as an alternative funding option for all tiers of government.

As of December 31, 2015 the report by the Nigeria institution in charge of debt management office (DMO) stated that the total debt of the

country stood at N12.6 trillion (\$65.4 billion). The present debt record represents 11.5 percent of Nigeria's GDP of \$569 billion (2014). Nigeria's public debt rose by N1.3 trillion from N11.24 trillion recorded on December 31, 2014, to the latest figure. An investigation by Financial Nigeria news paper regarding the country's debt stock proved that between January and June 30 2015, the government raised its debt record by N825 billion. In addition during this period, the country's foreign reserves went down from \$34.5 billion reported on January 5 to \$29 billion at the end of June. Crude oil prices averaged \$53 per barrel in the 1st half of last year and in the 2nd half of year 2015, and as oil prices averaged \$42 per barrel, the government borrowed N484.9 (\$2.5 billion). Nigeria's foreign reserves as of December 31, 2015 were \$29.1 billion, according to data provided by the Nigeria apex Bank. DMO reported that Nigeria's foreign borrowing stood at N2.11 trillion (\$10.7 billion) as of December 31, 2015, while the domestic debt reserve of the state and federal government was N10.6 trillion (\$54.7 billion). The borrowing of the federal government within the country was N8.8 trillion (\$44.9 billion).

Precisely the available record from the debt management office as at 2015 showed that Nigeria borrows more domestically than external debt, this can be seen by the volume of external debt being 2,113,230.59 against domestic debt of 10,651,163.19.

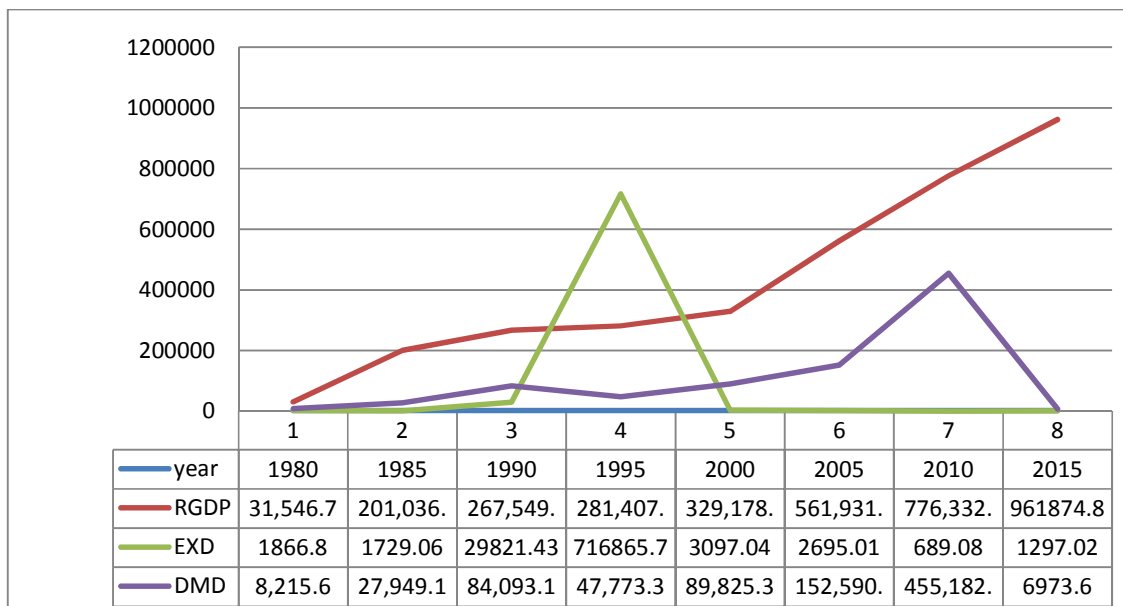


Fig. 1. The trend of RGDP, external debt and domestic debt in #billion

Source: Central bank of Nigeria statistical bulletin 2015

In the table, the trend analysis of real gross domestic product (RGDP), External debt and Domestic debt using five (5) years interval for the period under review 1980-2015, indicated an inconsistency in the above trend, as seen in the values presented. However, the traditional concern as seen in both Keynesian and classical theorist about the desirability or otherwise of rising public debt especially in developing economies like Nigeria is still with us.

This worry regarding the effective application of fund borrowed either domestically or internationally into productive purpose is a major motivation for this study in the face of unprecedented records of corruption among Nigeria public officers. This study, therefore evaluates the impact of both domestic and foreign debt on the national output; determining whether public debt indeed is necessary for the continued growth of the economy as postulated by [8] or harmful to the economy as canvassed by the classical and their followers.

1.2 Objective of the Study

The general objective of the study is to empirically analyze the impact of public debt on economic growth of Nigeria within the period under review. The specific objectives of the research work are to:

1. investigate extent to which foreign debt impact national output in Nigeria.
2. ascertain if domestic debt significantly impact national output in Nigeria.
3. determine the degree of causal relationship existing between the explanatory variables and national output in Nigeria.

2. REVIEW OF RELATED LITERATURE

2.1 Concept of Debt Overhang

According to [9] debt overhang is a concept that indicates that when debt burden is so large that an entity cannot secure an additional debt to finance future projects, even when the future projects are profitable enough to enable it to reduce its indebtedness over time. Debt overhang discourage current investment, since all earnings from new projects would only go to existing debt holders, leaving little incentive for the entity to attempt to free itself out of the burden. In the context of sovereign government,

the term refers to a situation where the debt stock of a nation exceeds its future capacity to repay it. Also debt overhang concept shows a condition in which a firm's debt is so huge that any income generated by new investment projects are completely appropriated by existing debt holders, and thus even projects with a positive net present value cannot reduce the firm's stock of debt or increase the value of the firm.

2.2 Classical Theory of Public Debt

The classical economists believed in "Laissez Faire" strategy, that the function of State ought to be minimal and the government had to sustain only internal law and order, defense from external antagonism and look after some public works. They are of the opinion that full employment exist in the economy and also that there is a perfect competition and mobility of factors for production in the market. Therefore, they advocate that government should not intervene in the smooth running of economic activities and if there is any disasters that befall the economy that it will automatically bring itself to equilibrium point. Once the government is playing the minimal functions then public resources can now be reserved for other developmental purposes. In additional government did not require increased funds in the form of public debt and also that the government expenditure should not be wasteful and unproductive. As money supply is unchanging any sum that is transferred to the government would be at the cost of the private expenditure, private employment and the money borrowed will be put into unproductive uses than the productive channels.

[10] in his theory stated that the problems of public debts are as a result of the following factors: a rise in the government expenses and also that the merchants have the ability to lend easily. So he opined that it is because of the understanding that there will be loans available in times when the state needed it that motivate the state not to have budgetary savings during peace time. As a result, in the war time, loans are raised to meet the additional expenditure. Smith disagreed with the notion that national debt is an additional capital in an economy; rather the fund represents the transfer of funds from the private into the public hands. This money are borrowed to meet war and other unproductive expenses, in regard to that public debt shift from putting capital into productive use to unproductive ones.

When the public expense is defrayed, it is settled by the annual destruction of some capital which had before existed in the country; by the perversion of some portion of the annual produce which had before been destined for the maintenance of productive labour, towards that of unproductive labour. Fortunately, during actual wars, the demerit in the form of reduction of capital on account of rising of public debts is to some extent compensated by additional savings of the people. But once peace is concluded, this merit disappears.

[11] in his own view saw state government role in relation with his analysis of public finance. Unlike [11] he detailed the more general aspects of the problem and gives reason for and highlights the benefits of public works, and communications. He stated that to comprehend public expenditure it is important to be familiar with the needs of society. Apart from the needs felt by individuals and families which result to private consumption, men in society have wants in common which can only be satisfied by the supportive effort of all the individuals making up society and this supportive effort can only be attained by an organization, who has the authority to ensure the obedience of all the people within the limits permitted by the form of State.

[11] in his famous Laws of Market stated that 'Supply creates its own Demand' and that the entire economy was self-regulating. Thus, lowest amount of state action and government interference was recommended. He opposed public debt, to him there exist a notable difference between an individual borrower and a borrowing government, the later borrows capital for the purpose of the unproductive consumption and expenditure. He also stressed that public borrowing is not only barren because the capital is consumed and lost, but because, the nation is burdened by the annual interest payment. It cannot be argued that the annual circulation of interest payment is a net addition to capital.

[12] saw public debt as one of the most dreadfully sources which was even invented to afflict a nation. [12] made important modifications in the arguments of [10] and [11]. He pointed out that important burden of national debt is found in the interest transferred annually, other than the lost of initial capital. He said that when the expenses of the years were twenty million and it is been raised through the means of loans, that it is twenty million which are withdrawn from the productive capital of the nation. This million per

annum which is raised by taxes to pay interest of this ban is simply moved from those who pay it to those who receive it, from the contributor of the tax to the natural creditors. He argued that the presence of a debt cannot affect the nation capacity to pay taxes, therefore no great economic benefit could be achieved by retiring the debt and Levying of taxes to pay, the interest obligation may lead to capital movements to other countries.

2.3 Keynesian Theory of Public Debt

The economic disaster shaped by the great depression of 1930's was in part responsible for the growth for modern theory of public debt. The conventional view that steady unbalanced budgets and fast increasing public debt impaired the financial stability of the nations, slowly gave way to Keynesian ideology. [8], states that a large public debt is a national asset rather than a liability and that steady deficit spending is necessary to the economic progress of the countries. [8] attacked the view of the classical that economy tends to equilibrium at full employment. Keynes argued that if there were unemployed resources, which the private sector could not employ, the resources can be put to use by the unbalancing budget. He is of the view that increase in public debt through the multiple effects would raise the national income. He associated public borrowing with deficit financing and agreed that government should borrow for all purposes so that efficient demand in the economy is increased which will result in increased employment and output. He did not differentiate between productive and unproductive expenditure as the classical. [8] stated that borrowing for consumption was as important as borrowing for investment in productive goods because consumption expenditure induced investment to go up.

2.4 Balanced Growth Theory

Balanced growth theory as propounded by [13] advocated that if production is increased, the increase should be distributed among all sectors of the economy according to the sector's demand. Extensive use of capital by an individual entrepreneur in a particular firm will be unprofitable as a result of the size of the market, and a wise use of capital to wide range of different industries may raise in the general level of economic efficiency and enlarge the size of market. He affirmed that investment in a wide range of industries leads to vertical and

horizontal integration of industries, a better division of labour, a common source of raw materials and technical skill, an expansion of the size of the market and better utilization of social and economic overhead capital and also that investment in productive equipment and in human capital should be simultaneous, for investment in the former would be, unless people are educated and are healthy to operate it. [13] pleads that social and economic overhead facilities should be created ahead of demand to stimulate and support the various sectors of the economy.

Private enterprise in an underdeveloped country is incapable of taking advantage of these external economies because of its incapability to start a wave of capital investments on a wide range of projects. He believed that private enterprise can achieve the desired effect under the stimulus of certain incentives. He pleaded that ordinary price incentives may bring about balanced growth in a small degree. However, a wave of new applications of capital over a wide range of different industries can be promoted by the monetary effects of the initial investment and other effects. [13] doctrine of balanced growth state that there should be balance growth between different sectors of the economy during the process of economic growth. This implies that there should be a proper balanced between investment in agriculture and industry since agriculture and industry are complementary and an increase in an industrial output requires an expansion of agricultural output and if employment increases in the industrial sectors it will lead to an increase in the demand for foodstuff. He also declared that there should be balanced growth between the domestic sector and the foreign sector.

3. EMPIRICAL REVIEWS

In [14] and Ben investigated the influence of public debt on the growth of Nigeria economy. The study tested for unit root to ascertain the stationarity of the variables in the study and co integration test to determine the long run relationship of the variables. The study adopted vector error correction mechanism (VECM) and find out that external debt stock and external debt servicing have insignificant inverse correction with national output in Nigeria, though, domestic debt stock has a positive and significant association national output while domestic debt service payment was significant

but inversely related with national output in Nigeria.

[15] examined the influence of public debt on the productivity of the economy of Ghana using the methodology of the simple Ordinary Least Squares (OLS) with the scope covering the period of 1990 to 2015. The variables used in the study are public debt (disaggregated into external and domestic) including the general growth of the Ghana economy. In constructing the dataset, we build on the study of many scholars including a substantial amount of new materials from both primary and secondary data sources being Ministry of Finance (MOF) or Treasury Latest actual data: Government Finance Statistics Manual (GFSM), Ghana and World Bank. The result of the study indicated that there is a negative relationship between debt (domestic and external) and national output of the Ghana economy and recommend among others that government debt borrowing should be discouraged while increasing the revenue base through tax reform programs.

[7] studied the impact of increasing government borrowing on unemployment in Nigeria for a period covering 1980 to 2015. The authors adopted ARDL approach and Wald test statistical procedure in their analysis. The research revealed stable long run equilibrium relationship between government borrowing and unemployment. According to the findings of the research, there is positive significant relationship between government borrowing and unemployment, also, a negative relationship between growth rate of GDP and unemployment. Furthermore, an inverse relationship was also established by the study between inflation and unemployment. The study concluded that public debt has no significant influence in Nigerian economy considering that rising public debt has not reduced unemployment. In the opinion of the study, rising debt repayment interest has become an issue in implementing new projects in the economy which has also contributed to a rise in unemployment. Finally, the authors made the following suggestions; government borrowing should be restricted and invested on the sectors that can help create new jobs. Secondly, project funded by money borrowed should have capacity to generate profit that will be higher than the rate of servicing the loan from which the project is being funded. However, unnecessary internal borrowing should be avoided since it is known that it affects rate of investment and employment negatively.

[16] observed the connection between economic growth and debt, they employed many advanced econometric tools to examine the issue in order to investigate the effect of government borrowing on national output in 48 economies all drawn from Sub Sahara Africa from 1995-2012. The findings showed prove of economic linkage among public debt and national output in eight economies from the forty eight countries investigated which agrees with the debt Lafer Curve theory. The study also examined whether an economic association exist between public debt and national productivity, the result indicated a negative relationship among the two variables. The research concluded that there is a correction existing between politics and physical policy and recommended the need to consider the impact of policy implementation on the growth of the economy. In the opinion of the study the ability of government to stimulate growth is highly limited in addition to the fact that if government borrowing becomes high it will affect the economy negatively.

[17] analyzed the influence of foreign borrowing on national output in Nigeria. The researchers adopted VAR econometric methodology to evaluate the relationship between foreign borrowing and national output, using variables like; foreign borrowing (REXPT), INF, REXR, PUBINV and GDP. The result of the findings indicated that causality runs from foreign borrowing to national output. Variations in national output were difficult to be understood within the context of the changes seen in foreign borrowing. This means that many Nigerians go into borrowing for unproductive reasons rather than stimulation of the economy. According to the study, for borrowing to benefit the economy, fiscal prudence and commitment in managing people's fund should be the guiding principle for Nigerian leaders.

[18] examined the impact of government borrowing on economic progress in Malaysia for a period spanning from 1991 – 2013. The research also examined other measures of government borrowing like, excess of expenditure over government revenue, government spending, servicing of foreign borrowing and public utilization of resources and their influence on economic progress. The findings of the research agree with other empirical works on the subject with results showing inverse relationship between public debt and economic growth. More so, the result also revealed a long term inverse relationship

between government borrowing and national output in the economy of Malaysia. The authors concluded that the variables of the study were decreasing function of national output.

[1] explored the influence of internal borrowing and its contribution to national output in eastern Africa over the period 1990 – 2010. The research was anchored on Solow growth model and tested for stationarity of the variables and also adopted a panel data approach. Panel fixed effects model specified by Hausman test was used for selection, which was also corrected for heteroscedasticity. The results showed that domestic borrowing has a positive major relationship on GDP per capita growth rate in the EAC. The essence is to promote sustainable levels of domestic borrowing to enhance growth.

[19] observed the direct effect of high debt burden on the growth of the economy of EU countries currently involved in global debt crisis. The research fundamentally involved a data set of 25 independent European Union economies, using statistics drawn from old member state and new member state spanning through 1980-2010 and 1995-2010 respectively. A debt to GDP ratio was adopted to enable the study understand the impact of the debt on real growth. The findings of the research indicated that debt has reasonable influence on GDP growth.

[20] investigated the correlation among internal borrowing and poverty in Nigeria for a period covering 1986 – 2012, adopting VAR technique, Co integration and Granger causality econometric methodology. The result of the co integration test indicated an affirmative link between poverty and domestic debt. The research further revealed that the coefficient of domestic debt were positive and highly significant as it relates to bank loans. The borrowing described above relates to rural development intended to change rural – urban migration, increase the rate of development of industry and create opportunities for the product of the country's manufacturing sector and by implication enhancing the life of rural dwellers. According to the study, there is need for the government to pay of all internal outstanding borrowing as this will enhance monetary policy management. The study concluded that uncontrolled domestic debt influences national output inversely. The study suggested further that the authorities should make available funds at lower interest rate to encourage investors.

[21] examined the influence of foreign borrowing on increase in national productivity of Tanzania spanning from 1990-2010. The research adopted time series statistics on foreign borrowing and economic progress. In the opinion of the research, foreign borrowing assists emerging economies to attain to their development aspirations. In the other hand, servicing of government borrowing encourages development by assuring that creditors have implied confidence on the borrowers. The statistics used for the study was from the Apex bank from Tanzania, financial statistics from the presidency, information from ministry of finance in Tanzania added to the statistics from World Bank and IMF. According to the study, a positive reasonable influence exists between foreign borrowing and repayment of debt and national output. The volume of debt maintained affirmative effect while repayment of debt has inverse relationship with national output. According to the result, there was evidence of non existence of long run relationship between foreign borrowing and national productivity. Finally, the authors suggested further research on this subject especially foreign borrowing and foreign direct investment and influence of foreign borrowing on internal revenues.

[22] examined the relationship between internal borrowing and national output in Kenya, using sophisticated statistical procedure with time series statistics from 2000-2010. The stationary property of the variables was examined using Augmented Dickey fuller, even conducted a test of long run relationship. The findings indicate that increase in the internal borrowing in Kenya has affirmative influence on national output. The study recommended increase in internal borrowing in as much as the money borrowed is committed into productive activities.

3.1 Gap in Empirical Literature

Gap in empirical literature entails critically evaluating empirical literature reviewed to know what have been done, but not properly done and also what the other studies had failed to do in terms of the following: (a) variables employed or used, (b) methodology employed in the studies, (c) geography (where the studies were conducted) and (d) Time (period covered by the studies) which will be considered to justify the need for the current study. Below is the summary of all the literature reviewed.

From the table of the summary of the major gap in literature it was discovered that the following gap exists:

Some of the reviewed studies were carried out in other countries as seen in [21,18,22,15] thereby creating a geographic gap. Also, some of the reviewed studies used OLS, ARDL, respectively as witnessed in [20,7,15,22] providing gap in the methodology used. The variables in the studies reviewed are different from the current research variables as seen in [7] leading to gap in the variable used. The current study updated the following [21,20] to 2015 providing time gap.

4. DATA AND METHOD OF ANALYSIS

4.1 Data

The data for this study covered the period of 1970 -2015 and were sourced from Central Bank of Nigeria Statistical Bulletin and online source from data.worldbank.org/indicators, all within the period under consideration.

4.2 Model Specification

This research work is anchored on Keynesian theory which states that a large public debt is a national asset rather than a liability and that steady deficit spending is necessary to the economic progress of the countries (of public debt assumed full employment). He attacked the view of the classical that economy tends to equilibrium at full employment. Keynes argued that if there were unemployed resources, which the private sector could not employ, the resources can be put to use by the budget deficits. He is of the view that increase in public debt through the multiple effects would raise the national income. He associated public borrowing with deficit financing and agreed that government should borrow for all purposes so that efficient demand in the economy is increased which will result in increased employment and output. He did not differentiate between productive and unproductive expenditure as the classical. Keynes stated that borrowing for consumption was as important as borrowing for investment in productive goods because consumption expenditure induced investment to go up. Therefore this study adopted and modifies the Keynesian national income model used by [7].

Table 1. Summary of the major gap in literature

Author	Topic	Methodology	Variables used	Findings	Gap
[15]	examined the influence of public debt on the productivity of the economy of Ghana	Ordinary least square (OLS)	The variables used in the study are public debt (disaggregated into external and domestic and GDP	The result of the study indicated that there is a negative relationship between debt (domestic and external) and national output of the Ghana economy.	The study was carried out in Ghana while the current study is carried in Nigeria, the study used OLS econometric method of analysis while the current study adopted vector error correction mechanism (VECM)
[20]	investigated the correlation among internal borrowing and poverty in Nigeria for a period covering 1986 – 2012,.	vector autor regressive econometrics model (VAR)	poverty and domestic debt.	The result of the cointegration test indicated an affirmative link between poverty and domestic debt. The research further revealed that the coefficient of domestic debt were positive and highly significant as it relates to bank loans	The study used vector autor regressive econometrics model (VAR) while the current study adopted vector error correction mechanism (VECM) and also that current study would update the work to 2015.
[21]	examined the influence of foreign borrowing on increase in national productivity of Tanzania spanning from 1990-2010		The variables used are foreign borrowing and repayment of debt and national output.	According to the study, a positive reasonable influence exists between foreign borrowing and repayment of debt and national output.	The study was carried out in Tanzania while the current study was in Nigerian the scope of the work was 1990-2010 while the current study scope was from 1980-2015 and the current study will update to 2015.
[22]	Examined the relationship between internal borrowing and national output in Kenya.	Autoregressive distributed lag model (ARDL)	internal borrowing and national progress (GDP)	The finding indicates that increase in the internal borrowing in Kenya has affirmative influence on national output.	The study was done in another country while the current study is carried out in Nigeria, also the study used ARDL econometric method of analysis and the current study used VECM econometric method of analysis
[7]	the impact of increasing government borrowing on unemployment in Nigeria.	Autoregressive distributed lag model (ARDL)	Government borrowing, growth rate of GDP, inflation and unemployment.	The research, there is positive significant relationship between government borrowing and unemployment, also, a negative relationship between growth rate of GDP and unemployment. Furthermore, an inverse relationship was also established by the study between inflation and unemployment.	This study used autoregressive distributed lag model (ARDL) while the current research will use VECM; the variables of the study is different from the variables that the current research will use such as domestic private savings.
[18]	the impact of government borrowing on economic progress made in Malaysia for a period spanning from 1991 – 2013.	Vector error correction mechanism(VECM) econometric method of analysis	excess expenditure, government revenue, government spending, servicing of foreign borrowing and public utilization of resources and economic progress (GDP).	Results showed inverse relationship between public debt and economic growth and also long term inverse relationship between government borrowing and national output in the economy of Malaysia.	This research work was carried out in Malaysia while the current research is in Nigeria.

Source: Researchers' computation from E-view 7

The model is stated as follow

$$Y = C + I + G + NX \quad (1)$$

Where Y stands for income (proxied with RGDP), C stands for private consumption, I stands for private investment, G stands for government expenditure and NX stands for net export.

Thus, in order to investigate the impact of public debt on the economic growth in Nigeria income is proxied with real gross domestic product (RGDP), and public debt (disaggregated into external debt and domestic debt), therefore equation (1) is transformed to obtain equation (2) which is stated functionally as

$$RGDP = f(EXD, DMD, DPS) \quad (2)$$

This will be linearly specified as:

$$RGDP_t = \beta_0 + \beta_1 EXD_{t-1} + \beta_2 DMD_{t-1} + \beta_3 DPS_{t-1} + \mu_t \quad (3)$$

Where RGDP = RGDP, a proxy for national output, EXD= external debt, DMD= domestic debt, DPS = domestic private savings, β_1, β_3 are Coefficients of the parameters, β_0 = Constant and μ_t = error correction term.

4.3 Data Discussion

The variables specified in this research work are discussed below;

RGDP which stands for real gross domestic product: This according to economists refer to the total worth of product produced in the economy in a particular year valued at market prices as adjusted for price changes plus the imputed value of the economy's produced goods and services that do not pass through the market channel minus net income from abroad. The Real GDP is calculated as follow the current price of value of final goods and service divided by the price of base year value of final goods and services multiply by hundred percent (100%).

External Debt (EXD): means any financial resources which government, are using that are borrowed from the foreign countries other than the country own resource. It is also known as any kind of business funding you acquire from sources outside the country whether it is

borrowing from Bank, investments from private individuals or investment firms.

Domestic Debt (DMD): is defined as debt that government borrowed within the country, it involves the same currency. Therefore all the borrowing of federal, state and local government internally is regard as domestic debt.

Domestic Private Savings: This is an accumulation of capital by household and private sector which provide output for consumption in the long-run. It is also that part of income that is not consumed. A rise in domestic private savings leads to increase in capital formation and productivity which will lead to economic growth.

4.4 Estimation Procedure

The study estimated the variables used in order to obtain the description/ summary statistics. The essence of this is to observe the characteristics of the data employed. The study tested for integration level of the data employed using unit root tests approach, to verify if the data are suitable for the purpose intended. It was discovered from the results of the unit root tests that the variables were all integrated of order one (1), meaning that all the variables were stationary at first difference. A co integration test to confirm the existence or otherwise of the stable long run relationship (co integration) between the dependent and the independents variables was conducted, the results confirmed the existence of co integrating vectors among the variables. With the existence of co integration established as indicated above, we employed the vector error correction mechanism (VECM) in the estimation of the research model to obtain the final results. The system equation of the VEC model was estimated to gauge for long run causality and establish the values of the coefficients of the independent variable to enable us interpret the results. Finally we conducted granger causality tests in the VEC environment to estimate the direction of the influence between the dependent and independent variables.

5. PRESENTATION OF RESULTS

5.1 Unit Root Test Results

After collecting data with the aid of important tools and method, the next essential step is to present the result, analyze and interpret the result with aim of getting the empirical solution

to the problem identified in the research work. So data analysis means operating on the data to get the pattern and trends in data sets. Data analysis is a very vital step and it is the heart of every research work. Therefore the results for the data analysis are presented here.

5.2 Unit Root Test

The Augmented Dickey-Fuller (ADF) statistic was employed to test for the existence of unit roots in the data using trend and intercept. The test results are presented below:

Table 2. Augmented dickey fuller unit root test forTrend and Intercept (Series at Level)

Series	ADF statistic test	5% critical values	10% critical value	Remarks
RGDP	-0.388518	-3.544284	-3.204699	Not Stationary
EXD	-3.082272	-3.544284	-3.204699	Not Stationary
DMD	-2.555948	-3.544284	-3.204699	Not Stationary
DPS	-1.770258	-3.544284	-3.204699	Not Stationary

Sources: Researcher's compilation from E-views 7

Table 3. Augmented dickey fuller unit root test for trend and intercept (Series at 1st difference)

Series	ADF statistic Test	5% critical values	10% critical value	Remarks
D(RGDP)	-9.467206	-3.548490	-3.207094	Stationary
D(EXD)	-6.580523	-3.548490	-3.207094	Stationary
D(DMD)	-7.133272	-3.548490	-3.207094	Stationary
D(DPS)	-9.734730	-3.548490	-3.207094	Stationary

Sources: Researcher's compilation from E-views 7

Table 4. Phillips Perron unit root test for trend and intercept (Series at level)

Series	PP Statistic	5% critical values	10% critical value	Remarks
RGDP	-0.388518	-3.544284	-3.204699	Not Stationary
EXD	-3.082272	-3.544284	-3.204699	Not Stationary
DMD	-2.714346	-3.544284	-3.204699	Not Stationary
DPS	-1.636948	-3.544284	-3.204699	Not Stationary

Sources: Researcher's compilation from E-views 7

Table 5. Phillips Perron unit root test for trend and intercept (Series at 1st difference)

Series	PP statistic	5% critical values	10% critical value	Remarks
D(RGDP)	-8.991068	-3.548490	-3.207094	Stationary
D(EXD)	-9.077179	-3.548490	-3.207094	Stationary
D(DMD)	-7.351574	-3.548490	-3.207094	Stationary
D(DPS)	-20.68910	-3.548490	-3.207094	Stationary

Sources: Researcher's compilation from E-views 7

Table 6. Unrestricted Cointegration Rank Test (Trace)

Hypothesized No.of CE(s)	Eigenvalue	Trace statistics	0.05 Critical value	Prob**
None *	0.680447	70.10833	47.85613	0.0001
At most 1 *	0.443293	31.32005	29.79707	0.0331
At most 2	0.272567	11.40568	15.49471	0.1877
At most 3	0.017081	0.585760	3.841466	0.4441

Source: Researchers' computation from E-view 7

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

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

5.3 Model Estimation, Data Analysis and Presentation of Results

5.3.1 Co-integration test

Johansen co-integration test was used to test for the presence of co-integration between the series of the same order of integration. Johansen co-integration test for the series; RGDP and the explanatory variables; EXD, DMD and DPS are summarized under Table 5. Based on the lag length criteria, the model with lag 1 was chosen with the linear deterministic test assumption.

5.3.2 Vector error correction model result

The essence of this estimation procedure is to ascertain the speed of adjustment since the

deviation from the long run equilibrium is corrected through the short run adjustments and also determine the signs and magnitude of variables tested. Having established that there is co-integration equation among the variables, the study validates the reason to estimate the vector error correction model (VECM). The result for the VECM is stated in Table 7.

With this approach, the short run dynamic relationship associated with variables under study is established.

From the Table 8, the result indicated causality flowing from both external and domestic debt to real gross domestic product as validated by the F-statistics probability which are less than 5% level of significance.

Table 7. System equation result

Dependent Variable: D(RGDP)				
Method: Least Squares				
Date: 08/04/16 Time: 09:36				
Sample (adjusted): 4 36				
Included observations: 33 after adjustments				
D(RGDP) = C(1)*(RGDP(-1) - 291.613393198*EXD(-1) - 0.441368941826				
*DMD(-1) - 2.41271892236E-08*DPS(-1) + 340223.500151) + C(2)				
*D(RGDP(-1)) + C(3)*D(RGDP(-2)) + C(4)*D(EXD(-1)) + C(5)*D(EXD(-2)) + C(6)*D(DMD(-1)) + C(7)*D(DMD(-2)) + C(8)*D(DPS(-1)) + C(9)				
*D(DPS(-2)) + C(10)				
	Coefficient	Std. Error	t-Statistic	Prob.
ECM (1)	-0.665964	0.007070	-3.672450	0.0013
RGDP=(-1)	0.319966	0.145671	2.196491	0.0384
RGDP=(-2)	-0.116213	0.075769	-1.533781	0.1387
EXD=(-1)	-0.808346	0.783501	-2.805225	0.0100
EXD=(-2)	-0.732557	0.583046	-0.670742	0.5091
DMD=(-1)	-0.012227	0.004514	-2.708624	0.0125
DMD=(-2)	-0.013767	0.003658	-3.763535	0.0010
DPS=(-1)	0.16E-09	0.20E-09	0.965975	0.3441
DPS=(-2)	-0.18E-10	0.34E-09	-0.311354	0.7583
C(10)	1.9709.52	4.598454	4.286119	0.0003

R-squared=0.777412, F-statistics= 8.925560, Prob(F-statistics) 0.000012, DW=1.86

Source: Researchers' computation from E-view 7

Table 8. Granger causality test

Pairwise Granger Causality Tests			
Date: 08/04/16 Time: 09:39			
Sample: 1 36			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
EXD does not Granger Cause RGDP	34	2.96518	0.0348
RGDP does not Granger Cause EXD		0.06793	0.9345
DMD does not Granger Cause RGDP	34	2.75291	0.0204
RGDP does not Granger Cause DMD		0.01865	0.9815

6. DISCUSSION OF RESULTS

6.1 Results

The findings of the result are discussed in order to bring out the basic information from the analysis of each variable in the model estimated and also to link the discussion of the findings with the existing theory on the particular research work.

6.2 Unit Root Test

The ADF and PP test conducted showed that the variables; DMD, EXD, DPS and RGDP, all series were not stationary at level. Though, the series became stationary at first difference, that is 1(1).

6.3 Co-integration Test

Based on result of co-integration test carried out, it indicated 2 co-integrating equations showing long term association existing among external debt, domestic debt and national output proxy with (RGDP). As observed from first and second result of t-statistics, its result became greater than 5% critical value (i.e. [70.10833 > 47.85613] and [31.32005 > 29.79707] while other trace statistics are less than the 5% critical values such as [11.40568 < 15.49471] and [0.585760 < 3.841466]. Since the first and second result of the t-statistics indicated significantly more than 0.05 critical values, the study reject null hypothesis that there is no long run relationship existing among the variables and conclude that there is a long run relationship since there is at least one co-integrating equation at 5% level of significant.

6.4 Vector Error Correction Mechanism

ECM which stands for error correction model met required conditions. Result of the ECM was significant indicating that inverse and statistical significant of ECM coefficients are essential conditions in order that any disequilibrium to be corrected. In light of this, the coefficient of ECM (-1) = -0.665964. The negative sign of ECM satisfied one condition and the P-value [0.0013] < 5% [0.05] critical value satisfied another condition of being statistical significance. Result of ECM with the coefficient of (-0.665964) indicated that the speed of adjustment amid the short run dynamics and the long run equilibrium is 66%, thus, adequately acting to correct any deviations of the short run dynamics to its long-run equilibrium by 66% annually.

Computed coefficient of multiple determination (R^2) value of 0.777412 showed that 77.7% of total change in economic growth is accounted for, by the explanatory variables: external debt (EXD), domestic debt (DMD) and domestic private savings (DPS) while 22.3% of the changes in economic growth (proxy with RGDP) can be attributed to other factors not included in the regression equation. F-Statistics = 8.925560, with p value of 0.000012 which is less than 0.05 shows that explanatory variables jointly influence dependent variable significantly. Result of DW which stands for Durbin Watson is used to determine if there is autocorrelation among residuals. Since the DW has the value of 1.86; it indicates the absence of auto correlation among the residuals.

6.5 Causality Test

As indicated above, the ECT (-1) is negative, fractional and significant revealing causality among external debt, domestic debt and national output proxy with (RGDP). To further explain the direction of the causal relationship, Granger causality test was conducted and result indicated a unidirectional causality from external debt to RGDP with Pvalue of 0.0348 and another unidirectional causal link from domestic debt to RGDP with the probability value of 0.0204.

7. IMPLICATION OF THE RESULTS

The result of Johanson co integrating equation indicated two co-integrating vectors proving existence of long run relationships among the variables. Normalized co-integrating coefficients and the upper chamber of the VECM as stated below showed nature of the long run association in the variables:

$$RGDP = 3.40 - 6.26EXD - 0.13DMD - 4.13DPS.$$

Where RGDP is the dependent variable, 3.40 is the constant term, -6.26 stands for EXD coefficient, -0.13 stand for DMD coefficient, while -4.13 stands for DPS coefficient.

Coefficient estimates of the variables, EXD, DMD and DPS bore negative signs showing negative long run relationship with RGDP. This result is in agreement with [23,24] which reported a long run association amid national output, external debt and internal debt. The variables; EXD and DMD did not meet the appriori expectation in the long run as it is expected based on Keynesian economic theory, which stated that as external debt, domestic debt and domestic private

savings increase, economic growth should also rise. In the short run external debt (EXD) and domestic debt (DMD) have significant negative relationship with economic growth (Proxy with RGDP). This result also did not meet apriori expectation of the Keynesian economic theory in the short run. The implication of this result is that the negative correlation between debt stocks (external and domestic debt) and economic growth which is contrary to aprior expectation may be revealing the misappropriation and wrong application (corrupt practices) of the borrowed funds. From the causality result, both external and domestic debt correlates with economic growth. The result implies that an increase in foreign debt and internal debt (external and domestic) leads to increase in economic growth. This means that if money borrowed are properly invested and utilized, it will surely spur the growth of the economy.

8. SUMMARY OF FINDING

This study empirically analyzed association amid public debt and national output in Nigeria 1980-2015. The study specified Real Gross Domestic Product which is proxy for national output as a function of foreign debt, Domestic debt and Domestic Private Savings. The following statistical and econometric tests were applied: stationarity test, co integration test, and VECM test. Results of this study indicated thus;

- (i) Foreign debt has significant negative impact on national output in both the long run and short run within period under study.
- (ii) Domestic debt (DMD) has significant negative relationship with national output in the long run and also in the short run within the period under consideration.
- (iii) There is causal relationship existing amid explanatory variables and national output in Nigeria.

9. RECOMMENDATIONS

Based on findings, the study recommends that (i) Government should reduce external debt and the ones obtained should be strictly use for purposes intended to ensure positive effect. (ii) Government should cut down on domestic borrowing and ensure that the existing ones are applied for purposes intended to ensure positive effect and growth. (iii) With the evidence of negative causality running from both external and domestic debt stock to

economic growth (RGDP), it is suggested that government should cut down in both borrowings to ensure economic stability and sustainable growth.

10. CONCLUSION

This study empirically analyzed the relationship between public debt and economic growth in Nigeria from 1980-2015. The study adopted Vector Error Correction Mechanism (VECM) of econometric data analysis. The variables used in the study include real gross domestic product (RGDP), foreign debt, domestic debt and domestic private savings. The results of the study indicate. (i) External debt has significant negative impact on economic growth within the period under study. (ii) Domestic debt (DMD) has significant negative relationship with economic growth within the period under consideration. (iii) External debt and domestic debt Granger cause RGDP in Nigeria with causality running from external debt and domestic debt to RGDP. The implication of this result is that the negative correlation between debt stocks (external debt and domestic debt) and economic growth which is contrary to aprior expectation may be revealing the misappropriation and wrong application (corrupt practices) of the borrowed funds. Based on findings, the study recommends therefore that (i) Government should reduce external debt and the ones obtained should be strictly use for purposes intended to ensure positive effect. (ii) Government should cut down on domestic borrowing and ensure that the existing ones are applied for purposes intended to ensure positive effect and growth. (iii) With the evidence of negative causality running from both external and domestic debt stock to economic growth (RGDP), it is suggested that government should cut down in both borrowings to ensure economic stability and sustainable growth.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
<http://sciencedomain.org/review-history/21607>