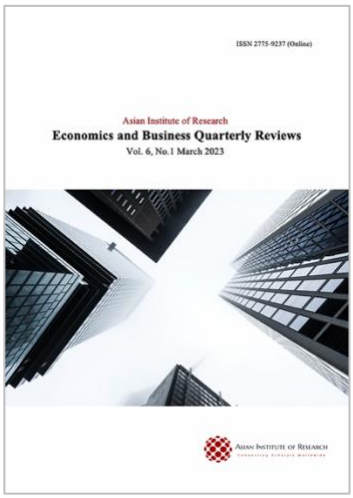


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# Empirical Analysis of the Effect of Public Debt on the Economic Growth of Nigeria

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**Abstract**
For adequate economic growth and development, a country's savings may not equate her desired investments in goods and services. When deficit exist, a country will always bring out means to finance the deficit. Such financing in most cases is through debts from both internal external sources. The objectives of the study are to determine the effect of public debts proxied as internal debts, external debts and interest rate on economic growth proxied as gross domestic product. The study applied ex-post facto design with secondary data as instrument for data collection. Multiple regression model, applying ordinary least square regression was used for analysis. Findings showed that external debts have significant negative impacts on GDP while internal debts showed significant positive impacts on GDP. There is also high cost of borrowed fund it is recommended that Government should make sure that all borrowed fund is judiciously used. They should exhaust internal means of borrowing before resorting to external debts. Also creating the enabling environment that will make public debt to achieve the purpose for which it was borrowed.

**Keywords:** External Debt, Internal Debt, GDP

## 1. Introduction

### *1.1 Background of The Study*

Every economic policy of a nation aims at sustainable economic growth and in order to achieve the growth in the economy a country must put in place policies that enhances capital formation through savings and investment. As Adepoyu, Salau and Obayelu (2007) opined, countries resort to debt in order to complement savings.

World over developing nations seem to be at the mercy of advanced economies due high public debt proliferation. The adverse effect of high debt burden is usually as a result of adverse volatility in oil prices, exchange rates, interest rate etc. This negatively affects the economic growth of the country involved. (Favour, Ideniyi, Oge and Charity,2017). This notwithstanding debt still remains veritable took to stimulate economic growth of a country mainly developing economies, (Muhammad, Ruhaini, Nathan and Arshad, 2017). In has been identified that deficit budgets are meant to grow the economy and, in most case, the only available option to finance the deficit is by

borrowing. (Mankiw, 2013). Deficit is said to occur in public budget when expected revenue falls short of expenditure and one of the ways of financing the short fall is debt (Rahman, 2012). Therefore, public debt is simply the borrowing of the governments of all levels both internally and externally, (Idenyi, Igberi & Anoke, 2016). It should also be noted that though the government has the powers to as the central bank to go into currency inflation of printing more money, such action may possibly reduce interest rate but it will give rise to hyperinflation (Idenyi, Igberi & Anoke (2016).

According to Soludo (2003), countries borrow to enhance consumption, investment, finance balance of payment deficit and budget deficit and all these are aimed at growing the economy. Most countries rely on debts in order to finance capital accumulation, (Adepoju et al 2007). Some of these debts are medium term facilities and used for economic projects geared towards enhanced standard of living of the people.

Hamed (2008), is of the view that external borrowing complements domestic financing so as to enhance economic growth. There is no doubt that debt will improve factor productivity through increased output which result to increase in total output.

Although external debt may be seen as a tool for economic growth and improved standard of living, at times it may maybe an impenitent to economic growth and stability, as there is exportation of resources when interest and principal are repaid.

Mustasa (2003), is of the view that one may say that Nigeria for instance has large debt that has resulted to huge trade arrears with high cost of funds in the form interest. Developing countries are always burdened with high debt service payments which comes with much problems to the such countries.

According to Adesola (2009), Nigeria had the first debt service burden after the fall in oil prices in 1978. Before then, Nigeria had debt of N28million for railway construction and $13.1million as Jumbo loan in 1958 and 1964 respectively. That is not well managed may result to high debt servicing which may affect the purpose for which the debt was contracted. At such level, the debt gives a poor economic growth and low standard of living, (Fosu, 2009).

In Nigeria some economic restricting policies like the Structural Adjustment Programme (SAP) of the mid 1980s led to high rate of public debts mainly from multilateral sources. The high debt services burden led to Nigeria being classified as one of the heavily indebted poor countries (HIPC), (Omottoye, Sharma and Ngassan, 2008).

Iwaela (2011), is of the view that, increase in the debt service payment has resulted to imbalance in fiscal deficit and budgetary problems resulting to low private investment and low growth in the country's Gross Domestic Product, (GDP).

*1.2 Statement of the Problem*

From 2008 until 2014, Nigeria's external debt stock was an average of $6920.43 with 16.98% of GDP. It showed a record low of $3627.5m with 12.52% of GDP (Iweala, 2011). Usually huge debt is as a result of accumulated debt service payment, due to the inability to meet the repayment obligations. This debt crises reflects in the fall in real GDP, investment rate. Cohen (2001) saw public debt as a constant factor in economic growth and development of the country.

With the development fund could have been used in economic development are channeled to debt payment servicing, thereby reducing the standard of living of people of the country.

Due to low level of internal resources and capital formation, countries mainly the emerging ones resort to borrowing so as to argument shortfalls in internal revenues. To meet up with economic growth and development countries borrow to finance shortfalls in capital expenditures which form bedrock for enhanced and sustained standard of living of the people (Adepoju, Salau and Obayelu, 2007). It is also important to note that borrowing

can be from internally (within the country) and/or externally (outside the country). In order words governments borrow when there is shortfall in internal savings, (Aluko & Arowolo, 2010; Safdari & Mehrizi, 2011). According to Soludo (2003), nations borrow basically so as to take care of macroeconomic issues like financing of high levels of consumption and investment; to finance balance of payment budget deficits. The frequent deficit budgets by governments and the need to finance the deficit has accelerated external borrowing options of governments at all levels. (Osinubi & Olaleru, 2006).

In this believe people have seen public borrowings as a good source of providing projects and infrastructures for economic growth so to enhance the standard of living of the people. In their words Hameed, Ashraf and Chaudary (2008) described external public debt as a tool to boost economic growth and supplement domestic finance. Public debt is meant to increase capital formation which will boost factor productivity and the Gross Domestic Product of the country. It is worthy to note every public debt mainly foreign debt should take with care because excessive and abuse of external debts has resulted to instability in the economies of mainly developing countries, which also has become a threat to their sovereignty, (Audu, 2004; Mutasa, 2003). In fact, government should only borrow for projects that are self-liquidating and such borrowing should just be adequate and significant the growth of the economy. Also, countries should not borrow such that the later servicing of the loan will create such a serious burden on the economy, (Nur, Shafinar & Abdul, 2019).

According to Gohar and Butt (2012), the high volume of debt servicing in the emerging economies has been a big problem in economic development. Most times the amount used to service the debts has grown more than the debt principal amount. Nigeria is not left out in this problem as her debt service obligations have cause serious economic burden the growth and development of the country (Audu, 2004). According to (Adesola, 2009), historically, the Nigeria's debt service burden started in the late 1970s when there was fall in world oil prices, although before this date Nigeria had already borrowed small loans from: World Bank in 1958, US$28m; Paris Club debtor nations in 1964, ItalyUS$13.1m; with the first big debt of US$1b in 1978 from International Capital Market.

As Pattilo, Poirson and Ricci (2002), put it borrowing has the effect of increasing the economic growth of a country with less burden but such positive effects erodes out when the debt grows beyond the desirable limit. According to Fosu (2009) such high debt service will also mean starving important sectors of the economy which resultant negative effect on economic growth and development.

In 1986, Nigeria came with the Structural Adjustment Programme (SAP) which led to the liberalization of the economy so as grow the GDP. The implementation SAP also led to increase government debt from multilateral external sources with also increased debt service burden. The magnitude of the foreign debt made Nigeria to be classified as one the heavily indebted poor countries by the World Bank in 1929. And Omotoye, Sharma, Ngassam and Eseonu (2008) put it, Nigeria has the biggest debt in Sub Sahara Africa. It is also more worrisome because the debt amount has shown an upward trend movement unlike other countries like South Africa, (Ayad and Ayadi, 2008). From records Nigeria external debt moved from US$28,454.8m in 1997 to US$31,041.6m and US$37,883.1m in 2001 and 2004 respectively. This no doubt has resulted to serious imbalances in fiscal deficits with negative effect on the growth of the economy. As (Okonjo-Iweala, 2011), put it, the resultant effect of the excess debt burden may cause a situation crowding out of private investment and low GDP growth.

This is not to say that large external debt always amounts to low economic growth rather what is important is the country's ability to channel the debt to the priority and productive sectors of the economy (Were, 2011). The big question is, how has Nigeria fared in this direction? Actually, Nigeria has not done well in its administration and that has exposed her to a high debt servicing threat. For instance, in 2003 only US$2.3m was used for servicing Nigeria's foreign loans and 2005 the Paris Club group of creditor nations wrote off 60% of US$30.85b debt owed by Nigeria and this amounted to US$18 billion.

According to Patio (2012), when government borrows, it agrees on the terms repayments and this come with conditions that may not be very favourable with the borrowing nation. More times lending conditions may result to rising inflation and crowding out of private investment and low economic.

There have been mixed reactions on role of public debts in reshaping the Nigerian economy for good. While some commend the use of debt to boost the economy, others share a different view as nation has over the years witnessed undesirable debt servicing and burden. This is what the research will try to resolve.

It is also worrisome that notwithstanding the debt relief of US$18 b enjoyed by Nigeria from the Paris Club in 2005, the country has not any major progress in its debt burden (Bakare, 2010).

*1.3 Objectives of the Study*

The broad objective of the study will be to determine the effect of public debt on the Nigeria economic growth proxied as GDP. The specific objectives will be

1. To ascertain the significant effect of external debt on the economic growth of Nigeria.
2. To determine the effect of internal debt on the economic growth of Nigeria.
3. To ascertain the significant effect interest rate on debts on economic growth

*1.4 Research Questions*

1. What significant effect has external debt on the economic growth of Nigeria?
2. What significant effect has internal debt on the economic growth of Nigeria?
3. To what extent has interest rate on debts significantly affected economic growth?

*1.4 Research Hypotheses*

From the above objectives the following hypotheses are derived:
**$H0_1$:** External debt has no significant effect on the economic growth of Nigeria
**$H1_1$:** External debt has significant effect on the economic growth of Nigeria.
**$H0_2$:** Internal debt has no effect on the economic growth of Nigeria
**$H1_2$:** Internal debt has effect on the economic growth of Nigeria proxied as GDP.
H03: Interest rate on borrowed funds has no significant effect on economic growth
H13: Interest rate on borrowed funds has significant effect on economic growth

## 2. Review of Related Literature

*2.1 Conceptual Framework*

2.1.1 Concept of Public Debt

It is obvious that you cannot talk about meaningful development of a country without the issue of acquisition of both external and internal debts by that country. In fact, government borrowing is often seen as a major indicator of global market macroeconomic of the image of such a country. Public debts of a country also point the magnitude and direction the inflow of foreign direct investment. In any case public debts can only boost the economic growth of a country when it is prudently managed to positively affect the GDP of the country. With this it means the country will experience economic stability through effective resources mobilization at concessional conditions, (Christabell, 2013).

Public debt has been explained to mean all the borrowings of the governments of country. The total revenue sources of every government will always be internally generated revenue in form of taxes and borrowings or debts. Public expenditures in excess of the internally generated revenue are usually financed by debts (Makau, 2008 in Christabell, 2013).

As Kibul (1997) put it, there is increase in public debt because of over-reliance on external debts needed to boost capital formation of a country. A major factor that worsens debt burden is high interest rate. According to Isaac and Rosa (2016), sub-national governments *borrow.*

so as finance public infrastructures and other investment projects in order to complement and create enabling environment for the private investments as these will reflect on the overall economic growth of the country. In their view, Nassir and Wani (2016) see public debt as all the borrowings of a country's governments at all levels. Obi (2014) opined that most literatures on the relationship between external debt and economic growth dealt more on the negative effect of debt overhang and Krugman (1998) described debt overhang as when the expected repayment on external debt falls below the value of debt.

In their opinion, Arnone, Bandiera and Presbitro (2018), defined external public debt as money borrowed by the country from other countries, which may be public or private institutions.

To Hameed and Ogbeifin (2017), public debt is as a result of the gap between savings and investment. To them as the gap widens, debt increases. While internal debt of a country is owed to the citizens of that country, her external debt is owed to the citizens of other countries.

Internal debt consists of money borrowed by the government within her domestic economy. Unlike external debt, internal debt does not increase the aggregate resources of the country. It is simply exchange of resources from one sector to another (Nurudeen & Usman, 2010). With his, internal debt is the transfer of purchasing power among the citizens of the country and there is no giving out of real output to another country. When the government wants to borrow internally, she uses such instruments as, treasury bills, treasury certificates, development loan stock and Federal Government bonds (Isibos, Babajide, Akinjare, Oladeji Osuma, 2018).

(b) Productive and Unproductive:

The debt that is expected to create assets which will yield income sufficient to pay the principal amount and the interest on it, is known as 'productive debt' bin other words, they are expected pay their way; they are self-liquidating. J.L. Hanson has referred such a debt as 'reproductive debt'.

On the other hand, unproductive debt is the debt that is raised for financing unproductive assets or heavy unproductive expenditures. Such as a debt is a deadweight debt. Debt invested on wars or prevention of war is a deadweight debt.

(C) Short-term and Long-term:

The loans that are repayable within a period of one year, they are termed as short-term loans' and if they are taken for more than one year, they are referred to as 'long-term loans' following are the reasons for raising short-term loans:

1. If, at any time, the expenditure of government exceeds the revenue, then she takes recourse to short-term borrowing.
2. If, at any time, the rate of interest in the market is very high and the government needs large fund to finance her various projects, then it raises loan for a short-period of time only and waits till the prevailing high rate of interest comes down.
3. The commercial banks find a very safe and profitable opportunity to invest their surplus funds in the government short-term loans.
4. If the government needs large funds and the short-term loans are not enough, then she takes recourse to long-term borrowing. Long-term loans entail following advantages:

5. Long-term loan provides an opportunity to the state in undertaking large projects like construction of canals, hydroelectric projects, buildings, highways, etc. as these loans are not to be repaid at a short productive project.
6. Long-term loans are also unavoidable for strengthening country's defense.
7. Long-term loans provide good opportunity for commercial banks and insurance companies to invest their surplus funds. As the rate of interest on long-term loans is higher than on the short-term loans.
8. Long-term loans can be repaid by the government by the time which is favorable or convenient to her. She can also convert these loans at a lower rate of interest later on.
9. If at any time, the rate of interest is low, the government can contract a long-term loam and with the amount thus raised some public work programmes at lower cost.

ROLE OF PUBLIC BORROWING AN A DEVELOPING ECONOMY

Sammuel (2005) stated the following roles of public borrowing:

1. Taxation should cover at least current expenditure on normal government services and borrowing should resort to finance government expenditure which results in creation of capital assets.
2. Public borrowing for financing productive investment generates additional productive capacity in the economy.
4. it is used as an instrument to mobilize resources which would otherwise hoard in real estate or jewelry.
5. It provides the people opportunities to hold their wealth in the form of safe and stable income-yielding asset, i.e., government bonds.
6. The management of public debt is used as a method to influence the structure of interest.
7. Public has become a powerful tool of development monetary policy.
8. there are two ways in which the governments of under-developed countries raise resourced through public loans.
   (a). Market borrowing, i.e., sales., to the public of government bonds (long-term) and treasury bills (short-term) in the capital market.
   (b). Non-market borrowing, i.e., issue to the public of debt which is not negotiable and it not exchanged in the capital market.
9. These are two forms of loans, i.e., voluntary and forced loans. Forced loans or compulsory borrowing. Like a tax it is a compulsory contribution to the government but like a loan, it is to be repaid with interest

**Effects of Public Debt on Production, Consumption, Distribution and Level of Income and Employment**.

1. Effects on Production: Public debts are raised to finance productive enterprises of various kinds, e.g., steel works, cement, multipurpose products, construction of ships, railway lines and highways, heavy electrical and engineering works, mining, oil refining, etc.
2. Effects on Consumption: When people subscribe to government loans, they generally have to curtail consumption. Since investment of funds raised by borrowing raises the level of employment and as a result raises the level of consumption.
3. Effects on Distribution: Public loans transfer money from rich to government. The fiscal operations of the government are to benefit the poor primary. The incomes of the poor increase directly through increased employment or it benefit them in directly through the enlargement of social service.
4. Effect on the Level of Income and Employment: In modern times, public borrowing is resorted to in order to raise funds for financing agriculture, industry, mining, transportation, communication, etc. it increases employment opportunities, the level of income and standard of living.

*2.2. Theoretical Review*

Though a lot of theoretical contributions have been made the article is focused on the DUAL GAP THEORY. Most times shortfall exits between the level of savings and investment and borrowed funds is used to close this gap (Omonuyi, 2015). This means that the motive behind public debt is to close the lack of savings so as to have increased investment and economic growth. The Gap theory is of the view that the development of a nation is a function of investment and savings may not always be enough to take care of the interest. In his own view Akpoko (2005), the dual-gap analysis provides the framework which shows that the development of a nation is a function of investment and that such investment which requires domestic savings is not sufficient to ensure that development takes place. According to (Oloyde, 2002), the importance of external debt on the growth process of a nation cannot be overemphasized. Hameed, Ashraf, and Chaudhary (2008) stated that external borrowing is ought to accelerate economic growth especially when domestic financial resources are inadequate and need to be supplemented with funds abroad.

Since external debt is a source of public receipts, its accumulation should not signify slow economic growth. It is a country's inability to meet its debt obligation compounded by the lack of information on the nature, structure and magnitude of external debt that result to slow growth, (Were, 2001). In his view, Soludo (2003) opined that countries borrow for two broad categories: macroeconomic reasons to either finance higher investment or higher consumption and to circumvent hard budget constraint. This implies that an economy borrows to boost economic growth and alleviate poverty. He argued that when debt reaches a certain level it begins to have adverse effect, debt servicing becomes a huge burden and countries find themselves on the wrong side of the debt-ladder curve, with debt crowding out investment and growth. The debt service burden has militated against Nigeria's rapid economic development and worsened the social problems (Audu, 2004).

*2.3 Empirical Review*

There have been several researches to analyze the effect of public debt on the economy. For instance, Faraji and Makame (2013) researched on the impact of external debt on the economic growth of Tanzainia. The study adopted a time service approach, using ordinary least square for analysis finding established an impact between external debt and GDP growth.

Ejiayehu (2018), Studied on the effect of external debt on the economic growth of eight indebted nations of Benin, Ethiopia, Mali, Madagasear, Mozambique, Senegal, Tanzania and Uganda. The study used a panel data concerning 1991 -2010. The Gross – Sectional regression model was used. Finding showed that external debt has effect on the economies of these countries the study recommended that there should be political and economic stability for effective management of the debts.

In his study, Ogunuyiwa (2017) studied whether external debts promote economic growth in Nigeria. The study adopted the regression analysis with Error correction model. The finding showed that there is no causality between external debt and economic growth in Nigeria. In his study, Panagiotis (2018) examined the 'Nexus between Public Debt and the Determinants of Economic Growth' using such proxies as private and government consumptions, investment etc in Greece. To determine whether the variables are stationary or not, the study adopted unit root tests and Auto-regressive Distributed Lag (ARDL) model to determine the long run relationship among the variables. While the unit root tests showed both order zero and order one among the variables, the ARDL model showed that there is long-run relationship; trade openness indicated positive effects on economic growth and public debt and population growth indicated negative effect on the dependent variable (economic growth). The findings also showed that there is break effects between public debt and economic growth, which means that there is nexus between debt and economic growth is a function of debt breaks.

In their study, Alenjandro and Ifeana (2017) investigated 'The Impact of Government Debt on Gross Domestic Product in 16 Latin American Economies' for the period 1960-2015. The study adopted a Two-Stage Least Squares

(2-SLS) in the analysis. From the findings, debt has a positive effect on GDP growth and showed a declining effect to zero beyond public debt-to-GDP and stimulating impact on growth after a given level.

Nassir and Wani (2016) in their research studied the 'Relationship between Public Debt and Economic Growth in Afghanistan for the Period 2008-2012' adopting Analysis of Variance (ANOVA) in the test of hypotheses. From the result, government stock, Advances from commercial banks and external debt showed negative and insignificant impact on the Gross Domestic Product (GDP) in Afghanistan. The study recommended for the government to develop a policy for recording, monitoring and management of contingent liabilities.

In their research, Isaac and Rosa (2016), investigated 'The Effect of Public Debt and Public Investments on Economic Growth in Mexico' and this covers the period of 1993-2012. The analysis adopted panel data model and the generalized method of moments. The empirical results showed a positive impact of public debt a on public investment and economic growth in the economy.

In his study, Naeem (2015) investigated 'The Consequences of Public Debt for Economic Growth in the Philippines for the period of 1975-2010 and the study used the Autoregressive Distributed Lag analytical tool in data analysis. The findings reveal that public external debt negatively and significantly impact on the economic growth and investment of the country. The study also did not state if there is existence of crowding out hypothesis since debt servicing revealed significant relationships with investment and economic growth in the economy. The study also indicated that domestic debt had a negative influence on the investment and positive effect on economic growth. The study recommended the developing countries should formulate policies that will reduce their debt burdens.

## 3. Methodology

### *3.1 Research Design*

This study employs the multiple linear regression design to form the main procedure in this work. The data used were secondary ones and no attempt was made to control or manipulate them. The aim was to determine and measure the effect of the independent variables on the dependent variable. The Ordinary Least Square (OLS) technique is chosen because of its computational simplicity and possession of some desirable statistical properties such as linearity, unbiasedness, minimum variance, etc (Koutsoyiannis, 2003 and Gujarati, 2005).

### *3.2 Method of data collection*

Secondary data of the variables will be used and they include, economic growth proxied as gross domestic product and public debts proxied as external debts and internal debts. These data will be collected from the Central Bank of Nigeria and the Bureau of Statistics for the period under study, 1992-2019. The unit of measurement for external debts, internal debts and GDP will be the naira, while the unit of measurement for interest rate will be percentage.

### *3.3 Method of data analysis*

The study adopted a quantitative technique based on established studies and methodologies. In order to test for the hypotheses, the following were adopted: A multiple regression model applying Ordinary Least Square (OLS) regression analysis, unit root test, to test for the stationarity of the variables; the co-integration and Granger causality test. The need for these tests was to overcome some challenges in econometric application like the issue of subjectivity and bias of response as it is not easy incorporating these challenges into econometric model.

### *3.4. Model Specification*

The aim of this study is to know whether public debts has contributed positively or negatively to the economic growth of Nigeria, so the researcher will use econometric model (multiple regression) and followed Eigbiremolen and Anaduaka (2014); Jegede, Kehinde and Babtunde (2011); Khandker (1998) models, with modifications. The

study will use one multiple regression model, with external debts, internal debts and interest rate as the independent variables while Gross Domestic Product will form the dependent variable in the model.

The model captured the impact of public debts financing on economic growth in Nigeria as stated below:
$GDP = a_o + a_1ERD + a_2\ 1PD + a3INT + ...Ui$
Where GDP = Gross Domestic Product
EPD = External Public Debt
IPD = Internal Public Debt
INT= Interest Rate
$a_o, a_1, a_2$ = Coefficient
u = Arising error term.

*3.5 Description of the variables*

The dependent variable was economic growth, proxied as Gross Domestic Product (GDP), while the independent variables are external debts, internal debts and interest rate on debts between 1992-2019.

*3.6 Justification of the Variables*

The dependent variable is Gross domestic product and it is used as a proxy for economic growth. GDP will be used because it measures the value of goods and services in a particular country for a period. This is to establish the extent public debts have contributed to the economic growth of Nigeria. GDP can serve as a measure of prosperity and a measure of income earned by a country in a certain area (Wikipedia, 2014).

The independent variables, public debts proxied as: external debts, internal debts and interest rate. The external debts will help to measure the extent borrowings from outside Nigeria have contributed to economic growth while internal debts will help to establish the extent borrowings within the Nigeria have contributed to the GDP of Nigeria. Cost of credit or interest rate no doubt affects borrowed funds. High interest rate will likely reduce the demand for micro credit thereby negatively affecting economic growth, while low interest will likely help the growth of businesses. These variables will help to explain the objectives of the government economic policies.

*3.7 Test of Validity and Reliability*

To adudge the regression model efficient, the following tests will be conducted so as to ascertain the linearity or otherwise and the independence of the arising error term of the model: the F-test described the significance of the explanation provided by the model as a whole. The T-test will test the significance of the contributions made by each explanatory variable in the model.

The time series properties of the variables will be determined so as to establish the stationarity or otherwise of the variables. The unit root test will be conducted, using the Augmented Dickey-Fuller (ADF) test. Cointegration will be used to ascertain the long-term relationship between the variables. The Durbin - Waton test will be used to establish whether there is presence of auto correlation in the model. Statistical descriptive test will establish the characteristics of the research variables such as the regression coefficient, T-statistic, probability, R-squared, Adjusted R-squared, F-statistic and Granger Causality test, using Akaike Information Criterion (AIC).

To test for the validity of each of the three hypotheses, the research will consider the size of each of the selected independent variables. Essentially, the decision rule will be to conclude the existence of significant relationship between the dependent and independent variables if the probability of the t-values is less than 0.05 at 5% level of significance.

DECISION RULE

If Calculated T-Statistic > Tabulated T-Statistic, reject the null hypothesis and conclude that the regression coefficient is statistically significant. Otherwise accept the null hypothesis.

## 4. Data Presentation and Analysis

### *4.1. Results and Discussion of Effect of Public Debt on Economic Growth*

Table 4.1: Regression Coefficients of GDP and Public debts, $n = 29$ (1992-2020)

| Variables | Unstandardized Coefficients | | Test Statistic $t$ | P-value |
|---|---|---|---|---|
| | B | Std. Error | | |
| (Constant) | 17914.095 | 4234.616 | 4.230 | 0.000 |
| External Debt | -0.830 | 0.530 | -1.566 | 0.130 |
| Internal Debt | 9.968 | 0.333 | 29.935 | 0.000 |
| Interest Rate | -938.132 | 289.093 | -3.245 | 0.003 |

The results of Table 4.1 show that the effect of external debt on economic growth (GDP) is -0.830 indicating that 1 Billion Naira borrowed causes a N830 Million reduction in the GDP economic growth of Nigeria. The test statistic for the external debt is -1.566, which is not significant at 5% significance level as its p-value is 0.130. Thus, we say that the reduction effect that external debt has on Nigeria GDP is not significantly at 5% significance level. The effect of internal debt of Nigerian GDP is 9.968 with the test statistic value of29.935, which is statistically significant at above 0.01% level against a two-sided alternative. This indicates that 1 Billion Naira borrowed internally causes a N9.968 Billion increase in the GDP economic growth of Nigeria for the period under review. The effect of interest rate on the GDP is found to be significant and negative. A 938% reduction in the interest rate is needed to give 1 Billion Naira reduction in the GDP economic growth of Nigeria. The associated test statistic value is -3.245 with a p-value of 0.003, that is, the effect of interest rate is negatively significant at 0.3%.

Table 4.2: Coefficient of Determination and Durbin-Watson statistic

| R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|
| 0.994 | 0.989 | 0.988 | 5341.8802 | 1.168 |

The results of Table 4.2 show that the multiple correlation coefficient, R is 0.994, the multiple coefficient of determination, $R^2$ is 0.989 and adjusted R Square is 0.988 indicating that the combined effect of External debt, internal debt and interest rate explain 98.8% of the variation in GDP. And this highly statistically significant at 0.02%. The Durbin-Watson statistic shows that there is no serial correlation in the residual as DW =1.168 <$d_L$ = 1.198 and does not lie between the $d_L$ of 1.198 and $d_U$ of 1.650 for $n = 29$ and $k' = 3$ (number of explanatory variables).

### *4.2. Residual Diagnostics*

The standardized residual is used to conduct key diagnostics tests which include stationary test and normality test. The time series plot of the standardized residual is given in Figure 4.1andAutocorrelation Function for Standardized Residual given in Figure 4.2 show that the standardized residual is stationary, indicating that the regression model used in this study modeled the economic growth very well because the left over in the residual is a white noise.


Figure 4.1: Time series plot of the standardized residual

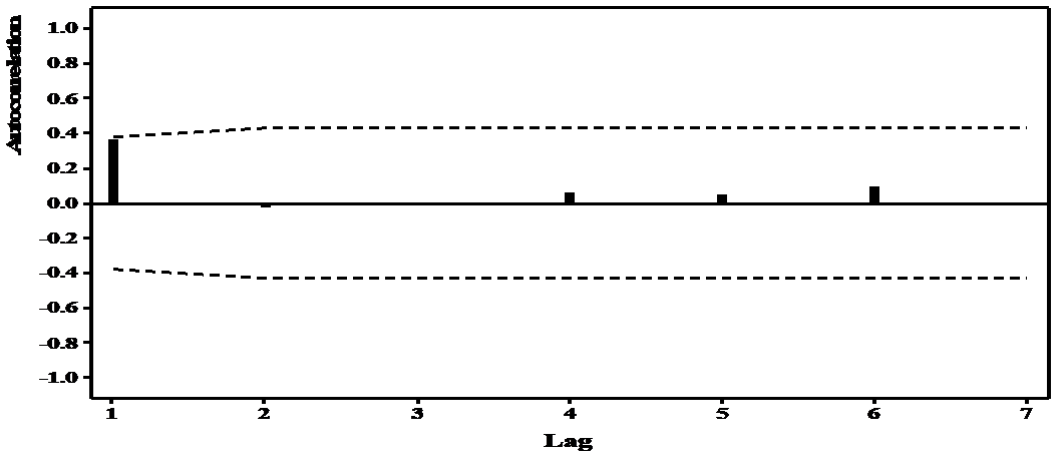


Figure 4.2: Autocorrelation Function for Standardized Residual with 5% significance limits.

Table 3: Unit toot and Stationarity test and Normality of Standardized Residual (SRED)

| Model Selection Criteria | $H_0$: SRED has a unit root | | $H_0$: SRED is Stationary | $H_0$: SRED is Normal |
|---|---|---|---|---|
| | ADF Tests | PP Tests | KPSS | Jarque-Bera |
| Test statistic | -3.494 | -3.366 | 0.206 | 1.263 |
| P-value | 0.016 | 0.021 | 5% critical value = 0.453 | 0.532 |

Note: ADF, PP and KPSS tests are performed for the model with the intercept only as the time series plot indicates.

The 3 tests of unit toot and stationarity (ADF, PP and KPSS) shown in Table 3confirm that the standardized residual (SRED)of the predicted model is stationary and has no unit root and the test for normality done using Jarque-Bera confirms that the standardized residual is normality distributed.

**Johansen cointegration**

H0: There is no cointegration equation between GDP, External debt, internal debt and interest rate
(There is no long-run relation between GDP, External debt, internal debt and interest rate)
H1: There are cointegrating equations between GDP, External debt, internal debt and interest rate
(There is a long-run relation between GDP, External debt, internal debt and interest rate)

The stationary test is presented in Table 4 below:

Table 4: ADF Unit root test for trend and intercept $H_0$: Series has unit root

| Series | Exogenous terms included in the model (None, Intercept only, Trend and Intercept) | | | | | Order | Remark |
|---|---|---|---|---|---|---|---|
| | Terms included in the model | Test statistic | 1% crit value | 5% crit value | 10% crit value | | |
| Lngdp | Trend&Intercept | -5.727 | -4.374 | -3.603 | -3.238 | I(1) | Stationary |
| Inextdebt | Intercept only | -3.587 | -3.700 | -2.976 | -2.627 | I(1) | Stationary |
| Inintdebt | Intercept only | -4.273 | -4.339 | -3.588 | -3.229 | I(1) | Stationary |
| Inintrate | Trend&Intercept | -7.068 | -4.339 | -3.588 | -3.229 | I(1) | Stationary |

*Source: Author's computation using EViews 10 Edition*

The unit root test of the variables was done using the Augmented Dickey-Fuller (ADF) test to determine the stationary of the series and the results as given in Table 4. The results reveal that Ingdp, Inextdebt, Inintdebtand Inintrate are stationary at first difference i.e., I(1).

Table 5a: Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigen Value | Trace Statistic | 0.05 critical value | Prob.** |
|---|---|---|---|---|
| None * | 0.857033 | 100.1841 | 47.85613 | 0.0000 |
| At most 1 * | 0.770461 | 51.55557 | 29.79707 | 0.0000 |
| At most 2 | 0.436395 | 14.76354 | 15.49471 | 0.0642 |
| At most 3 | 0.016994 | 0.428498 | 3.841466 | 0.5127 |

Table 5b: Unrestricted Cointegration Rank Tests (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigen Value | Max-Eigen Statistic | 0.05 critical value | Prob.** |
|---|---|---|---|---|
| None * | 0.857033 | 48.62856 | 27.58434 | 0 |
| At most 1 * | 0.770461 | 36.79203 | 21.13162 | 0.0002 |
| At most 2 * | 0.436395 | 14.33505 | 14.2646 | 0.0487 |
| At most 3 | 0.016994 | 0.428498 | 3.841466 | 0.5127 |

The results of the Trace test indicate that there are two cointegrating equations at the 0.05 level, indicating that we reject the hypothesis at the 0.05 level. Therefore, there are cointegrating equations between Ingdp, Inextdebt, Inintdebt and Inintrate, that is there is a long-run relation between gdp, external debt, internal debt and interest rate. The results of the Max-Eigen

Statistic test indicate that there are three cointegrating equations at the 0.05 level, confirming that we reject the hypothesis at the 0.05 level. Therefore, there are 3 cointegrating equations between Ingdp, Inextdebt, Inintdebt and Inintrate, that is there is a long-run relation between gdp, external debt, internal debt and interest rate. Also, even if there are shocks in the short run which may affect movement in the individual series, they would converge with time in the long run.

Table 6: Normalized cointegrating coefficients

| Variable | lngdp | lnextdebt | lnintdebt | lnintrate |
|---|---|---|---|---|
| Coefficient | 1 | -0.337954 | 3.8411 | 14.3009 |
| Standard error | - | 0.62498 | 0.48533 | 2.56774 |
| Test statistic | - | -0.54074 | 7.914405 | 5.569466 |

The result of table 6 shows that in the long run lnextdebt has a negative impact on lngdp, though the impact is not significant at 5% significance level as its test statistic of -0.54074is significantly less than one. Lnintdebt has a positive impact on lngdp and the impact is highly significant at 5% significance level as its test statistic of 7.914405 is significantly greater thanunity. Lnintrate has a positive impact on lngdp and the impact is highly significant at 5% significance level as its test statistic of 5.569466is significantly greater than unity. All these results are in the long run ceteris paribus.

Hence, we proceed to estimate the VECM.

Table 7: vector error correction model

| Error Correction: | D(LNGDP) | D(LNEXTDEBT) | D(LNINTDEBT) | D(LNINRATE) |
|---|---|---|---|---|
| CointEq1 | 0.065100 | 0.004624 | -0.07076 | -0.10663 |
| | (0.02304) | (0.15423) | (0.02642) | (0.06565) |
| | [ 2.82533] | [ 0.02998] | [-2.67822] | [-1.62413] |
| D(LNGDP(-1)) | 0.037894 | -2.62945 | -0.35046 | -0.52474 |
| | (0.21429) | (1.43434) | (0.24570) | (0.61057) |
| | [ 0.17684] | [-1.83322] | [-1.42638] | [-0.85942] |
| D(LNGDP(-2)) | 0.507098 | -0.89828 | -0.18814 | -0.28911 |
| | (0.16851) | (1.12794) | (0.19321) | (0.48015) |
| | [ 3.00926] | [-0.79638] | [-0.97375] | [-0.60213] |
| D(LNEXTDEBT(-1)) | 0.013162 | 0.164987 | -0.05335 | -0.04299 |
| | (0.03786) | (0.25340) | (0.04341) | (0.10787) |
| | [ 0.34768] | [ 0.65110] | [-1.22900] | [-0.39857] |
| D(LNEXTDEBT(-2)) | 0.040076 | -0.20562 | 0.002278 | 0.082518 |
| | (0.03649) | (0.24427) | (0.04184) | (0.10398) |
| | [ 1.09817] | [-0.84177] | [ 0.05445] | [ 0.79359] |
| D(LNINTDEBT(-1)) | 0.760794 | -0.63347 | -0.18596 | -0.18281 |
| | (0.17686) | (1.18379) | (0.20278) | (0.50392) |
| | [ 4.30178] | [-0.53512] | [-0.91707] | [-0.36278] |
| D(LNINTDEBT(-2)) | 0.181888 | 2.067632 | -0.02925 | 0.655103 |
| | (0.17252) | (1.15478) | (0.19781) | (0.49157) |
| | [ 1.05429] | [ 1.79049] | [-0.14788] | [ 1.33267] |
| D(LNINRATE(-1)) | -0.24518 | -0.28686 | 0.082941 | 0.003663 |
| | (0.09565) | (0.64023) | (0.10967) | (0.27253) |
| | [-2.56335] | [-0.44806] | [ 0.75628] | [ 0.01344] |
| D(LNINRATE(-2)) | -0.11024 | -0.18237 | 0.107401 | -0.10129 |
| | (0.07879) | (0.52741) | (0.09034) | (0.22451) |
| | [-1.39909] | [-0.34578] | [ 1.18880] | [-0.45114] |
| C | -0.08994 | 0.518179 | 0.282474 | 0.060189 |
| | (0.04751) | (0.31802) | (0.05448) | (0.13538) |
| | [-1.89305] | [ 1.62939] | [ 5.18530] | [ 0.44461] |
| R-squared | 0.724770 | 0.392701 | 0.553252 | 0.423886 |
| Adj. R-squared | 0.569953 | 0.051096 | 0.301957 | 0.099821 |
| Sum sq. resids | 0.086688 | 3.883907 | 0.113964 | 0.703787 |
| S.E. equation | 0.073607 | 0.492691 | 0.084396 | 0.209730 |
| F-statistic | 4.681466 | 1.149575 | 2.201599 | 1.308029 |
| Log likelihood | 37.25358 | -12.1761 | 33.69725 | 10.02949 |
| Akaike AIC | -2.09643 | 1.705853 | -1.82287 | -0.00227 |
| Schwarz SC | -1.61255 | 2.189736 | -1.33898 | 0.481615 |

| | | | | |
|---|---|---|---|---|
| Mean dependent | 0.171857 | 0.114410 | 0.141215 | -0.00617 |
| S.D. dependent | 0.112244 | 0.505782 | 0.101014 | 0.221053 |
| Determinant resid covariance (dof adj.) | | 1.71E-07 | | |
| Determinant resid covariance | | 2.45E-08 | | |
| Log likelihood | | 80.25000 | | |
| Akaike information criterion | | -2.78846 | | |
| Schwarz criterion | | -0.65938 | | |
| Number of coefficients | | 44 | | |

Table 8: vector error correction model system equation

| Vecm model parameter | | Coefficient | Std error | t-statistic | Prob |
|---|---|---|---|---|---|
| C(1) | CointEq1 | 0.065100 | 0.02304 | 2.82533 | 0.0045 |
| C(2) | D(LNGDP(-1)) | 0.037894 | 0.21429 | 0.17684 | 0.4305 |
| C(3) | D(LNGDP(-2)) | 0.507098 | 0.16851 | 3.00926 | 0.0029 |
| C(4) | D(LNEXTDEBT(-1)) | 0.013162 | 0.03786 | 0.34768 | 0.3654 |
| C(5) | D(LNEXTDEBT(-2)) | 0.040076 | 0.03649 | 1.09817 | 0.1411 |
| C(6) | D(LNINTDEBT(-1)) | 0.760794 | 0.17686 | 4.30178 | 0.0001 |
| C(7) | D(LNINTDEBT(-2)) | 0.181888 | 0.17252 | 1.05429 | 0.1507 |
| C(8) | D(LNINRATE(-1)) | -0.24518 | 0.09565 | -2.56335 | 0.0082 |
| C(9) | D(LNINRATE(-2)) | -0.11024 | 0.07879 | -1.39909 | 0.0868 |

The results of tables 7 and 8 show the vector error correction model and system. The coefficient C(1) is the error correction term which is the short run correction of the model, indicating that the model can correct any short run shock to the system by 6.5%, that is The previous year's deviation from long run equilibrium is corrected at a speed of 6.5% in the short run. The coefficient C(2) is the effect of the differenced GDP at lag 1, indicating that the impact of the difference of present GDP and its one last period gives about 3.8% effect in the short run, that is, a percentage change in GDP is associated with a 3.8 % increase in difference of GDP in the first lag on average ceteris paribus in the short run.

| Year | GDP | External Debt | Internal Debt | Interest Rate |
|---|---|---|---|---|
| 1992 | 906.03 | 544.26 | 177.96 | 17.50 |
| 1993 | 1257.17 | 633.14 | 273.84 | 26.00 |
| 1994 | 1768.79 | 648.81 | 407.58 | 13.50 |
| 1995 | 3100.24 | 716.87 | 477.73 | 13.50 |
| 1996 | 4086.07 | 617.32 | 419.98 | 13.50 |
| 1997 | 4418.71 | 595.93 | 501.75 | 13.50 |
| 1998 | 4805.16 | 633.02 | 560.83 | 13.50 |
| 1999 | 5482.35 | 2577.37 | 794.81 | 18.00 |
| 2000 | 7062.75 | 3097.38 | 898.25 | 14.00 |
| 2001 | 8234.49 | 3176.29 | 1016.97 | 20.50 |
| 2002 | 11501.45 | 3932.88 | 1166.00 | 16.50 |
| 2003 | 13556.97 | 4478.33 | 1329.68 | 15.00 |
| 2004 | 18124.06 | 4890.27 | 1370.33 | 15.00 |

| | | | | |
|---|---|---|---|---|
| 2005 | 23121.88 | 2695.07 | 1525.91 | 13.00 |
| 2006 | 30375.18 | 451.46 | 1753.26 | 10.00 |
| 2007 | 34675.94 | 438.89 | 2169.64 | 9.50 |
| 2008 | 39954.21 | 523.25 | 2320.31 | 9.75 |
| 2009 | 43461.46 | 590.44 | 3228.03 | 6.00 |
| 2010 | 55469.35 | 689.84 | 4551.82 | 6.25 |
| 2011 | 63713.36 | 896.85 | 5622.84 | 12.00 |
| 2012 | 72599.63 | 1026.90 | 6537.54 | 12.00 |
| 2013 | 81009.96 | 1387.33 | 7118.98 | 12.00 |
| 2014 | 90136.98 | 1631.50 | 7904.03 | 13.00 |
| 2015 | 95177.74 | 2111.51 | 8837.00 | 11.00 |
| 2016 | 102575.42 | 3478.91 | 11058.20 | 14.00 |
| 2017 | 114899.25 | 5787.51 | 12589.49 | 14.00 |
| 2018 | 129086.91 | 7759.20 | 12774.40 | 14.00 |
| 2019 | 145639.14 | 9022.42 | 14272.64 | 13.50 |
| 2020 | 154252.32 | 12705.62 | 16023.89 | 11.50 |

## 5. Summary of Findings, Conclusion and Recommendations

### *5.1. Summary of Research Findings*

Findings emanating from this study are as follows:

i. From the test of hypothesis one, external debt had significant negative impact on economic growth of Nigeria. This was confirmed through the use of P-value (0.1300) which is less than 5% level of significance;

ii. From hypothesis two, the internal debt in Nigeria coefficient stands at 0.333. with a t-statistics of 29.935 while probability value is 0.0000. This shows that the internal debt is significant. This means there is significant effect of liquidity ratio on economic growth of Nigeria.

iii. The equation in the third model regressed GDP on interest rate. The regression coefficient carries negative sign and its t-value (-3.245) is statistical and per value 0.003 significant at 5% level. This implies that interest rate affects the GDP significantly.

iv. There is high cost of borrowing banks. The high interest rate usually arises from the fact that banks source their funds from market which is not cheap.

v. That decrease in external debt results to economic growth reflect by the level of economic activities. As more credits are made available to investor, there is increased economic growth.

vi. Economic growth remains the major targets of the government and monetary authorities. The level of internal debt remains one of the determinant factors of economic growth. Again, the attainment of high level of accessibility, loan repayment and banking habit depend on the strength and stability of the monetary policy, evidenced by capital adequacy, assets quality technological customer-oriented products.

### *5.2. Policy Implication of the findings*

This study has examined the effects of public debts on economic growth of Nigeria. Results from study confirmed previous evidence obtained by number researchers on public debt in the economy. The findings of this study signify that the variables used for this are the major variables used for economic growth and public debt in Nigeria compared with other emerging economies in the world. Despite the achievement of public debt in transforming the economy there have been difficulties like interest rates policy inconsistency, abuses and fraudulent practices government officials, global economic crisis and inept regulatory abilities among others. Consequently, since

public debt have made significant contributions to economic growth of Nigeria, government need to been strengthened in terms of better capital base, skilled manpower, increase of size of loan, effective management, enabling polices and operational guidelines. This means that public debt will contribute immensely to the economic growth of Nigeria if public debts are well managed and channeled to areas of needs.

## 6. Conclusion

The growth of the economy affects the economic development of the Nigerian population. In the work 0f Orji (2017) who reported that 40 percent of the budgets are financed through debts while the remaining 60% come through other source like tax. John (2003) opines that a new method of providing credit is through effective fiscal policy operation. This study examined the effect of fiscal policy on economic growth of Nigeria. The multiple regression results reveal that about 55% of the systematic variation in the economic growth is explained by the three independent variables i.e. external debt, internal debt, interest rate, The P value is significant at the 5% level showing that there is a positive relationship between the economic growth and the independent variables. On the basis of apriori expectation, the coefficients of all the variables except internal debt have negative signs. In fact, a unit decrease in the external debt will increase the level of economic growth. The implication is that the economic growth responds favorably to measures taken to decrease external debt.

Based on the findings of this study, we have come to the conclusion that there is a significant positive effect of public debts on the economic growth in Nigeria. This means that if the public debt can help in to grow the economic growth if well managed.

## 7. Recommendations

In order to improve on the effectiveness of public debt in Nigeria, the following recommendations are made:

1. In order to increase public debt for economic growth, the government should make such policies that encourage vicious use of the loans. The economy should be classified into tiers, which are “first tier”, and “second tier”, while the first tier is used to describe the local government area, the second tire should describe the states. while the first-tier for the federal government. This will help to spend out how the borrowed money is spent.
2. Central Bank of Nigeria (CBN) should lower interest rate for local borrowings to make loan more attractive and productive to the economy.
3. In order to increase the availability of loans the government should give incentives to banks soft loans to reduce cost of obtaining fund that will be used by governments. This will result to reducing high level of risk associated with loans repayment delinquency.
4. It is obvious that public debt administration relies on data gathered from the market as such effort should be made to ensure that the data are never manipulated. Money authorities should be discouraged from manufacturing data in homes and offices.
5. Government should be serious by providing good infrastructure like electricity, road, water etc. They should be able to create the enabling environment for the public debt to flourish. The poor states of these facilities make the cost of business very high. Economic growth will continue to be a mirage until government starts living up to her responsibilities.
6. The size of internal loans should be increased for income to increase and in turn reduce poverty level in the country.
7. Regulatory authorities should involve other economic operators in the fiscal policy formulation and put up measures to increase the awareness of monetary policy among the people.
8. There should be the involvement of traditional rulers, town criers, age grade leaders. to bring out the needs of the rural areas. This will help to source for reliable data.
9. There should be a more serious regulatory framework. The frequent review of the fiscal policy framework of the government and the poor infrastructure enough sign that there are still loopholes in the regulatory framework. The regulatory authorities should be able to conduct effective supervisions (both on -site and off-site) so as to identify early symptoms of economic decay.

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