Implications of External Debt on the Nigerian Economy: Analysis of the Dual Gap Theory

Olanrewaju Makinde Hassan Ph.D[1], Abubakar Sule[2], John ABU[3]

1. Zenith Bank Plc, Anyigba Branch, Kogi State

2. MSc Student, Department of Economics, Benue State University (BSU), Makurdi

3. Recent Graduate, Department of Economics, BSU, Makurdi

Abstract

Government debt and its importance to revenue generation have generated a lot of debate over the years in Nigeria particularly with respect to economic growth. This paper examines the effect of government debt on economic growth in Nigeria between 1986 and 2013 – using the ordinary least square method. The study reveals that the impact of government debt on economic growth over the period under review is insignificant – with external debt which has been enormous over the years contributing minimally to real gross domestic product. The findings of the study reveal that, if the course of consistent borrowing is not curbed, the economy will slump further: resorting to surplus budgeting, and igniting; increases in unemployment, decreases in total investment, falling reserves, increased exchange rate, higher inflation and consequently increased poverty. It is therefore recommended among others that borrowing should be a last recourse by the government to revitalize the economy, and if necessary, the loans should be sourced within the economy so that when the principal and interest on the loans are paid back, it will serve as a crowd-in-effect which in turn further accelerates economic activities in the country. Also, other alternative sources of government revenue especially taxation hitherto neglected should be explored to minimize dependence on borrowed funds to revamp the economy. Finally, power should be made stable so that the cost on industries that depend on alternative power sources to thrive can be reduced. Thus, such monies can be utilized for remunerative alternative employments.

Key Words: Economic Growth, Internal Debt, External Debt, Dual Gap Analysis, Nigeria economy.

1.1 Introduction

Economic theory suggests that reasonable levels of borrowing by a developing country are likely to enhance its growth (Pattilo, Ricci and Poirson, 2002). When economic growth is enhanced (at least by more than 5% growth rate), the economy's situation is likely to be affected positively. In order to encourage growth, countries at early stages of development like Nigeria borrow to augment what they have because of dominance of small stocks of capital; hence they are likely to have investment opportunities with rates of return higher than that of their counterparts in developed economies. This becomes effective, as long as borrowed funds and the internally generated ploughed back funds are properly utilized for productive investment and do not suffer from macroeconomic instability; policies that distort economic incentives; or sizable adverse shocks. Growth therefore is likely to increase and allows for timely debt repayments. When this cycle is maintained for a period of time, growth will affect per capita income positively which is a prerequisite for economic growth. These predictions are known to hold even in theories – based on the more realistic assumption that countries may not be able to borrow freely because of the risk of debt denial.

Although the debt overhang models do not analyze the effects of debt on growth explicitly, the implication still remains that large debt stocks lowers growth by partly reducing investment with a resultant negative effect on poverty. But the incentive effects associated with debt stocks tend to reduce the benefits expected from policy reforms that would enhance efficiency and growth such as trade liberalization and fiscal adjustment. When this happens the government will be less willing to incur current costs if it perceives that the future benefit in terms of higher output will accrue partly to foreign lenders. Supporting the conception, Stiglitz (2000) posited that government borrowing can crowd out investment which will reduce future output and wages. When output and wages are affected the welfare of the citizens will be made vulnerable.

Soludo, (2003) opined that countries borrow for two broad categories: macroeconomic reasons [higher investment, higher consumption (education and health)] or to finance transitory balance of payments deficits [to lower nominal interest rates abroad, lack of domestic long-term credit, or to circumvent hard budget constraints]. This implies that an economy indulges in debt to boost economic growth and reduce poverty. He is also of the opinion that once an initial stock of debt grows to a certain threshold, servicing them becomes a burden and countries find themselves on the wrong side of the debt-laffer curve – with debt crowding out investment and growth. This seems to be the position of Nigeria today because investment, which will accordingly result to

high-speed growth with a positive effect on poverty, is moving sporadically in both positive and negative directions.

Historically, debt crisis could be traced as far back as 1973 and 1979 triggered by oil price shocks, which resulted to current account deficits in most non-oil producing less developed countries. Prior to this occurrence Nigeria had incurred some minor debts from World Bank in 1958 with a loan of US$28million dollars for railway construction and from the Italian government in 1964 with a loan of US$13.1 million for the construction of the Niger dam. The first major borrowing of US$1 billion known as the "Jumbo loan" was in 1978 from the International Capital Market (ICM) (Adesola, 2009). Iyoha (1999) agrees with the views shared by Adam Smith and further asserted that the external debt crisis of the Sub-Saharan Africa is best understood when considered as an integral part of the global debt crisis that emerged in 1982. The global debt crisis resulted from over-borrowing by the developing countries, reckless lending by international commercial banks in the 1970s, collapse of world commodity prices (especially petroleum) in the early 1980s, and the sharp increase in international interest (lending) rates in 1982. Ever since then, it has become a global phenomenon especially among the developing economy.

Hicks, Marshall, Chamberlin and Samuelson hold the view that the current crisis that has engulfed the African continent can be explained by the distortions in the internal operations of the African economies and their excessive dependence on the advanced countries (Bhatia, 2006). For the past two decades, Nigeria has borrowed large amounts, often at highly concessional interest rates with the hope to put them on a faster route to development through higher investment, faster growth and poverty improvement. But on the contrast; economic growth, employment and poverty situations are staggering at the back door amidst excess debt as if that was the initial intention of borrowing. It is then obvious that the Nigerian indebtedness has gone beyond such limits and it is conventional if such limits are curtailed to help the economy in their pursuit towards debt free or less debt burden that will enhance economic growth with a resultant improvement in poverty level.

It suffices to note that, available data on economic performance like per capita income, poverty rate, unemployment rate, portends that, most of the fund was not used for the purposes for which they were borrowed. It becomes worrisome, given the borrowing pattern by the government in recent years, as well as the anticipated increase in the nation's debt burden due to current realities of tough economic conditions following the dwindling global oil prices from June 2014 till date. For instance, Nigeria's external debt outstanding stood at US$28.35 million in 2001 – about 59.4% of GDP rising from US$8.5 million in 1980 – about 14.6% of GDP (WDI 2013).

The debt crisis reached its maximum in 2003 when US$2.3 billion was transferred to service Nigeria's external debt. In the year 2005 the Paris Club group of creditor nations forgave 60% (US$18 billion) of the US$30.85 billion debt owed by Nigeria. Despite the debt relief of US$18 billion received by Nigeria from the Paris club in 2005 the situation remains the same (Bakare, 2010). As at December 2014, Nigeria's total debt stood at ₦11.24 trillion, up 11.54% from 2013 (Meristem, 2015). It appears the rate at which government seek for loans is on the increase with little to show for it given the country's economic performance. The 2015 budget shows a continuance of this structure and trend, with deficit of ₦756 billion (based on US$65pb oil price benchmark), signifying government sourcing for alternative capital to finance the 2015 budget expenditure.

Given the scenario described above, the main objective of this paper is to investigate the impact of government debt on economic growth in Nigeria. The analysis specifically sought to: examine the effect of internal and external debt on economic growth in Nigeria and (ii) to evaluate the overall goodness of fit of the model in explaining variations in economic growth. The hypothesis to be tested in this study is: H_0: government debt has no significant effect on economic growth in Nigeria. The theoretical underpinning of this study is the dual gap analysis, and the Ordinary Least Square (OLS) is used as method of analysis. This paper is organized into five sections. Section one is the introduction while Section two covers the literature review. Sections three deals with research methodology while data analysis and discussion of findings is done in section four. Conclusion and recommendation are done in section five.

2.1   *Conceptual Framework*

The act of securing loans creates debts and this debt may be internal or external. The focus of this study is on both internal and external debt which refers to that part of a central government debt. Nigeria, being a federating state, "government debt" may refer to the debt of a state or local government. By contrast, the annual "government deficit" refers to the difference between government receipts and spending in a single year, that is, the increase of debt over a particular year.

According to Oyejide (1985), debt is the resource or money in use in an organization, which is not contributed by its owner and does not in any other way belong to them. Debt can also be referred to as liability represented by a financial instrument or other formal equivalents. When a government borrows, the debt is a public debt. Public debts can be either internal or external.

Internal or domestic debts are debts instrument issues by the federal government and denominated in local currency (Onyeiwu, 2012). Nigeria's domestic borrowing (debt) is aimed at escaping the dangers associated with external borrowings occasioned by rising government expenditures vis-à-vis falling government revenues to supplement the internal savings for productive activities through infrastructural development as well as management of other macroeconomic conditions of the country (Gbosi, 1998; Ajayi, 1989; Adofu and Abula, 2010).

Arnone, Bandiera and Presbiterio (2005) define external debt as that portion of a country's debt that is acquired from foreign sources such as foreign corporations, government or financial institutions. According to Ogbeifin (2007), external debt arises as a result of the gap between domestic savings and investment. As the gap widens, debt accumulates and this makes the country to continually borrow increasing amounts in order to stay afloat. He further defined Nigeria's external debt as the debt owed by the public and private sectors of the Nigerian economy to non-residents and citizens that is payable in foreign currency, goods and services.

The concept of growth is used in all fields of human endeavor. In Economics, the concept refers to economic growth. Solow (1956) in his growth model emphasized capital accumulation and exogenous rate of change in population and technological progress as the sources of growth. Similarly, Romer (1986) based his idea that long run growth is determined by economic incentives. Kuznets, cited in Todaro (1985), defined a country's economic growth as *"a long-term rise in capacity to supply increasingly diverse economic goods to its population; this growing capacity is based on advancing technology and the institutional and ideological adjustments that it demands."* The foregoing definition implies that economic growth is synonymous with sustained rise in national output, provision of wide range of economic goods, presence of advancing technology, and institutional, attitudinal, and ideological adjustments. Anyanwu and Oaikhenan (1995) stated that economic growth, simply defined, refers to the increase, over time, of a country's or an economic capacity to produce those goods and services needed to improve the well-being of the citizens in increasing numbers and diversity.

The International Monetary Fund (2009) and CBN (2010) agree that economic growth is the increase in the amount of goods and services produced in an economy over time. It is conventionally measured as the percent rate of increase in Real Gross Domestic Product (RGDP). Growth is usually calculated in real terms, that is, inflation-adjusted terms, in order to net out the effect of inflation on the price of the goods and services produced. The growth of the real Gross Domestic Product, RGDP, between 2004 and 2008 was driven mainly by the non-oil sector as reflected in the non-oil GDP. Industrial output however fell by 2.2 percent due mainly to the poor performance of the oil sector (CBN, 2008). The major theories on economic growth are hinged on growth being a function of the productivity of factors of production as their basic theme.

2.1.1   *Why Governments Borrow*

Generally the need for government borrowing arises from the recognized role of finance in the developmental process of any nation as capital accumulation improves productivity which in turn enhances economic growth. There is abundant proof in the existing body of literature to indicate that borrowing aids the growth and development of a nation. Soludo (2003) was of the opinion that countries borrow for two major reasons. The first is of macroeconomic intent that is to bring about increased investment and human capital development while the other is to reduce budget constraint by financing fiscal and balance of payment deficits. Furthermore Obadan and Uga (2007) stressed that countries especially the less developed countries borrow to raise capital formation and investment which has been previously hampered by low level of domestic savings.

Ultimately the reasons why countries borrow boils down to two major reasons which are to bridge the "savings-investment" gap and the "foreign exchange gap". Chenery (1966) pointed out that the main reason why countries borrow is to supplement the lack of savings and investment in that country. The dual-gap analysis justifies the need for external borrowing as an attempt in trying to bridge the savings-investment gap in a nation. For development to take place it requires a level of investment which is a function of domestic savings. Meanwhile, the level of domestic savings in Nigeria is not sufficient to ensure that development take place (Oloyede, 2002). The second reason for borrowing from overseas is also to fill the foreign exchange (imports-exports) gap. For many developing countries like Nigeria the constant balance of payment deficit has impaired capital inflow which could bring about growth and development. Since the foreign exchange earnings required to finance this

investment is insufficient, external borrowing may be the only means of gaining access to the resources needed to achieve rapid economic growth.

2.2   Theoretical Framework

Smith (1776) states that, economic growth depends on the amount of factors of production viz; land, labour and capital. He argued that economic growth (output) depends on the amount of these factors of production (inputs) that are determined by the population growth, increased investment, land, and total growth in labour productivity. While the Harrod-Domar model states that the rate of growth of GDP is equal to Savings ratio/Capital-Output ratio, the Kaldor model of distribution noted that the process of growth is a function of savings-income ratio. Other models like the Pasinetti model of profit and growth, the Meade"s Neo-classical model, the Solow model of long run growth all used the factors of production as their basic theme.

Several scholars have propounded various theories in an attempt to explain government debt vis-à-vis public debt and economic growth. The theoretical underpinning of this study centres on the Dual Gap Theory. The dual gap analysis explains that development is a function of investment and that such investment which requires domestic savings is not sufficient to ensure that development take place. There must be the possibility of obtaining from abroad the amount that can be invested in any country as identical with the amount that is saved. Furthermore, if the domestic resources are to be supplemented from abroad, such as excess of import over export (i.e. M > E), then;

$I > S$ and $M > E$

Hence, $I - S = M - E$

In national income accounting, an excess of investment over domestic saving is equivalent to excess surplus of import over export.

Income = consumption + import + savings

Output = consumption + export + investment

Since Income = output, then Investment – Saving = Import – Export

Omoruyi (2005) stated that most economies have experienced a shortfall in trying to bridge the gap between the level of savings and investment and have resorted to external borrowing in order to fill this gap. This gap provides the motive behind external debt as pointed out by Chenery (1966) which is to fulfill the lack of savings and investment in a nation as increase in savings and investment would vis-à-vis lead to a rise in economic growth (Hunt, 2007). The dual-gap analysis provides a framework that shows that the development of any nation is a function of investment and that such investment requires domestic savings which is not sufficient to ensure that development takes place (Oloyede, 2002).

Ajayi and Oke (2013) in their work asserted that, the basis of the dual gap theory, aserts that countries that requires saving and investment could import to achieve a particular rate of growth. If the available domestic saving falls short of the level necessary to achieve the target rate of growth, a savings investment gap is said to exist. On a similar note, if the maximum import requirement needed to achieve the growth target is greater than the maximum possible level of export, then this is an export-import of origin exchange gap. This study adopts a small macroeconomic model framework to highlight the dynamics of mounting government debt and its effect on economic growth in Nigeria.

2.3   Review of Empirical Studies

Adepoju, Salau & Obayelu (2007) studied the effects of external debt management on sustainable economic growth and development in Nigeria. Their study concluded that though debt is an important resource needed to support sustainable economic growth; a huge external debt without servicing as it is the case for Nigeria before year 2000 constituted a major impediment to the revitalization of her shattered economy as well as the alleviation of debilitating poverty. Their study concentrated only on the management aspect of the external debt. However, a study carried out by Ayadi (2008), revealed that external debt has more positive impact on the South African economy than Nigeria. His study concluded that external debt performs better in South Africa than Nigeria as it contributed positively to the growth of the South African economy. His study, however, did not bring out the impact on economic growth and neglected the long run impact on economic development.

Izedonmi and Ilaboya (2012), investigated the debt-growth dynamics in Nigeria using time series data from 1980 – 2010. Based on co-integration and error correction setting, the relationship between economic growth and a set of economic fundamentals were estimated. The results of the study were consistent with existing empirical literature on the debt-growth relationship. Specifically, there was evidence of a significant negative relationship between public debt burden and economic growth. Secondly, the ratio of debt service to export was found to have negative and significant effect on economic growth. They recommended that embargo should be placed on new loan acquisition by state government and parastatals unless where it is extremely important. Concerted effort should be made towards timely loan repayment and servicing to melt down the negative effect of public debt on economic growth.

Ezeabasili, Isu and Mojekwu (2011), in their study investigated the relationship between Nigeria's external debt and economic growth, between 1975 and 2006 using Johansen cointegration approach, error correction method and granger causality test. The result of error correction estimates revealed that external debt has negative relationship with economic growth in Nigeria. For example, a one per cent increase in external debt resulted in a decrease of 0.027 per cent in Gross Domestic Product, while a 1 per cent increase in total debt service resulted to 0.034 per cent (decrease) in Gross Domestic Product. These relationships were both found to be significant at the 10 per cent level. In addition, the pairwise Granger Causality test revealed that uni-directional causality exists between external debt service payment and economic growth at the 10 percent level of significance. Also, external debt was found to granger cause external debt service payment at the 1 percent level of significance. Statistical interdependence was however found between external debt and economic growth. Based on the findings, the researchers recommended that debt accumulation for projects must be matched with the timing of repayment while the portfolio of debt must be diversified in terms of sources and types to avoid harmful concentration and a reoccurrence to the past among others.

Obademi (2012), focused on the impact of public debt on economic growth in Nigeria. The study adopted augmented Cobb Douglas model and subsequently a dynamic version of the functional relationship was estimated using Co-integration technique to capture the long-run impact of debt variables on economic growth. The variables used include the external debt value, domestic debt value, total debt value and budget deficit figures. The proportional impact variables are ratios of the value impact to the gross domestic product (GDP). The result showed that the joint impact of debt on economic growth is negative and quite significant in the long-run though in the short-run the impact of borrowed funds and coefficient of budget deficit is positive. In the study, the speed at which the short-run equation converges to equilibrium in the long-run as shown by the Error Correction Mechanism coefficient was found to be slow. The conclusion from the study is that though in the short-run the impact of borrowed fund on the Nigerian economy was positive, the impact of debt in the long-run depressed economic growth as a result of incompetent debt management.

According to the World Bank (1987-1988), the external indebtedness of African countries is an obstacle to the restoration of the countries needed growth. Also the empirical enquiry of Green and Villaneva (1991) covered twenty developing countries between 1975 and 1987. The authors observed that the ratio of debt to GDP and debt service ratio significantly and negatively affects private investment. Similarly, Savvides, Kumar & McLambo (1996) found that, debt service had a negative but insignificant coefficient, indicating that the hypothesis of debt overhang effects could not be rejected. Deshpande (1997) also came out with similar result from his study of the experience of 13 severely indebted countries for the period 1971 – 1991, although during the first half of the period (1975 – 1983), there were some favourable time factors that showed a strong positive effect of external debt on investment

Qureshi and Ali (2006) investigated the relationship between public debt and economic growth in Pakistan over the period 1981 to 2008. They discovered that a robust negative relationship exists between public debt and economic growth in Pakistan. In the same vein, Checherita and Rother (2010) using a sample of 112 euro area countries over 1970 to 2008, found a non-linear impact of debt on per capita real GDP growth with a turning point at 90-100% of GDP, beyond which the relationship has a deleterious impact on long run growth.

Remhert and Rogolf (2010) in a sample of 20 developed countries between 1990 – 2009, using a simple correlation statistics, found a weak relationship between government debt and economic growth for debt to GDP ratio below a threshold of 90%; and above 90%, the median growth rate decreased by 1% and the average by considerably more. Ugo and Presbitero (2012) focused on OECD countries and used instrumental variable approach to investigate the relationship between public debt and economic growth. The result was consistent with the existing negative relationship in empirical literature.

Essien and Onwioduokit (1998) adopted the Zeller Reformulation Error (ZRE) in variable type model, with the conclusion that the high debt burden has been the root cause of Nigeria's sluggish growth. Alfredo and Francisco (2004) investigated the relationship between external debt and economic growth for some Latin American and Caribbean countries and found that lower total external debt levels were associated with higher growth rates.

Ajayi and Oke (2012) in their study investigated the effect of the external debt burden on economic growth and development of Nigeria. It adopted regression analysis of OLS on secondary data sourced from CBN Economic and Financial review, Business times, Financial Standard and relevant publication from Nigeria on variable like National Income, Debt Service Payment, External Reserves, Interest rate among others. The finding indicates that external debt burden had an adverse effect on the nation's per capita income. High level of external debt led to devaluation of the nation's currency, increase in retrenchment of workers, continuous industrial strike and poor educational system. They asserted that, the scenario above led to the economy of Nigeria getting depressed. Based on the findings of their study, the suggest that debt service obligation should not be allowed to rise than foreign exchange earnings and that the loan contracted should be invested in profitable venture, which will generate a reasonable amount of money for debt repayment

There are several empirical works on the effect of government debt on economic growth in developed and developing countries. However, the empirical studies above show some conflicting results in their conclusions on the effect of debt on economic growth. It is in this light that the issue of increasing government debt becomes worrisome especially that government responsibilities for provision of basic amenities are on the increase with little to show for it. Also, the choice of period is based on the continuous increase in Nigeria's external debt. Therefore, this paper seeks to bridge the identified gaps and contribute to knowledge by assessing the effect of government debt on economic growth in Nigeria with emphasis on external debt, internal debt, infrastructure proxied by index of energy consumption, corruption perception index and exchange rate covering a period of 28 years using Ordinary Least Square (OLS) regression analysis and cointegration test.

3.0   Methodology

The theoretical underpinning of this work anchors on the Dual Gap Theory which takes into cognizance savings-investment gap. This paper seeks to empirically examine the effect of government debt (internal and external) on economic growth in Nigeria. The Ordinary Least Square (OLS) is used to analyze data gotten from National Bureau of Statistics, World Bank Estimates, CBN statistical bulletin and Debt Management Office covering a time span of 1986 – 2013. This is due to its optimal properties that enhance efficiency of parameter estimates and validity of results. It is also applicable to long term analysis. The Unit root test and Cointegration test are also employed as augmenting analysis. We built a model based on the works of Schalarek (2004); and Izedonmi and Ilaboya (2012). The model is modified and expressed below;

$$RGDP = f(GOVD, INF, EXR, CPI) \qquad\qquad . \qquad . \qquad . \qquad (i)$$

Where: GOVD = Government Debt

Government debt can further be specified as:

$$GOVD = f(ID, ED) \qquad\qquad . \qquad . \qquad . \qquad (ii)$$

Thus, the stochastic equation becomes:

$$RGDP = \alpha_0 + \alpha_1 ID + \alpha_2 ED + \alpha_3 INF + \alpha_4 EXR + \alpha_5 CPI + \mu \qquad\qquad . \qquad (iii)$$

Where: RGDP = Real Gross Domestic Product; ID = Internal Debt; ED = External debt; INF = Infrastructure proxied as Index of Energy Consumption; EXR = Exchange Rate; CPI = Corruption Perception Index; $\alpha_0 - \alpha_4$ = Parameters to be Estimated; μ = Error Term

Note: *Index of Energy Consumption is an efficiency parameter captured in Solow neoclassical model; also used by Baghebo (2013) as proxy for infrastructure.*

On a priori basis, the signs of the coefficients of the parameter estimates of ID, ED, INF and CPI are expected to be positive while EXR is in the reserve order. Symbolically, it is expected that $\alpha_1 - \alpha_{3,}\ \alpha_5 > 0$ and $\alpha_4 < 0$. In general, it is expected that government debt (a source of revenue) should have a positive and significant effect on economic growth in Nigeria.

Corruption is negatively related to economic growth, however, the index of corruption is positive because, the higher the index, the lower the corruption. Thus, an increase in the index spurs economic growth and development – hence the positive expectation.

4.1 Analysis of Result

To give empirical content to the stated hypotheses and to obtain plausible numerical estimates of the parameters given, the data was subjected to unit root test. The result is shown in the table below:

Table 1: Stationarity Test

Variable	ADF Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	Prob.	Order Of Integration
RGDP	-7.77	-3.72	-2.99	-2.63	0.0000	I(2)
ED	-3.21	-3.71	-2.98	-2.63	0.0307	I(1)
ID	-4.55	-3.72	-2.99	-2.63	0.0014	I(2)
INF	-4.03	-3.71	-2.98	-2.63	0.0047	I(1)
CPI	-6.67	-3.71	-2.98	-2.63	0.0000	I(1)
EXR	-5.30	-3.66	-2.96	-2.62	0.0001	I(1)

Source: Authors' Computation, Eviews 7.0.

The result of the unit root test shows that all the variables were non stationary at levels. However, ED, INF, CPI and EXR attained stationarity at 1st difference while RGDP and ID attained stationarity at 2nd difference. This is buttressed by the low ADF test statistic which is further substantiated by the low probability values.

Since the variables did not attain stationarity at level series, a test for cointegration is conducted to determine if the linear combinations of the stochastic trends in the series are cointegrated. As Granger (1986) notes, "A test for cointegration can be thought of as a pre-test to avoid "spurious regression" situations (Granger, 1986). Thus, if the linear combinations of the stochastic trends are I(0), the linear combinations cancels out the stochastic trends in the series. The cointegration result is given below:

Table 2: Cointegration Test

Null Hypothesis	Trace Statistic	0.05 Critical Value	Null Hypothesis	Max-Eigen Statistic	0.05 Critical Value
r = 0*	125.21	95.75	r = 0*	40.08	51.71
r ≤ 1*	73.30	69.82	r ≤ 1*	33.88	29.46
r ≤ 2	44.05	47.86	r ≤ 2	27.58	22.90
r ≤ 3	21.14	29.80	r ≤ 3	21.13	14.03
r ≤ 4	7.11	15.49	r ≤ 4	14.26	6.80
r ≤ 5	0.31	3.84	r ≤ 5	3.84	0.31

Source: Authors' Computation, E-views 7.0.

Note: r represents number of cointegrating vectors. Trace statistic and Max-Eigen statistic indicates 2 cointegrating equations each. * denotes rejection of the hypothesis at the 0.05 level

The Trace test and Max-Eigen value test indicates 2 cointegrating equations each. The trace statistic and the Max-Eigen statistic are greater than their respective critical values for all the cointegrating equations. Thus, the null hypothesis of no cointegrating equation is rejected. This implies that even though the series of the variables were non stationary at levels, their linear combinations are cointegrated. This further means that there exists a long run relationship among the variables at 5% significance level. Thus, the application of the OLS technique will yield informative and dependable results.

4.1.2 Effect of Government Debt on Economic Growth in Nigeria

Given the model,

$$RGDP = \alpha_0 + \alpha_1 ID + \alpha_2 ED + \alpha_3 INF + \alpha_4 EXR + \alpha_5 CPI + \mu \qquad . \qquad . \qquad . \qquad (iv)$$

The mathematical coefficients of the stochastic model thus become:

Table 3: Regression Analysis

Variable	Coefficient	Standard Error	T Statistic
Regression Estimates			
C	4.34	0.04	0.10
ID	0.04	0.004	9.73
ED	-0.004	0.003	-1.37
INF	3.98	0.66	6.03
CPI	12.18	15.18	0.80
EXR	0.73	0.17	4.34
Diagnostic Statistic			
R^2	0.995	$F_{0.05}$	2.78
Adj. R^2	0.99	**DW**	1.30
F*	1051.11	D_L	1.028
Prob (F Stat)	0.0000	D_U	1.850

Source: Authors' Computation, E-views 7.0.

The regression result reveals that the coefficients of ID, INF, and EXR are statistically significant ($^1/_2 b_i$ > S.E.) while the coefficients of ED and CPI are not statistically significant ($^1/_2 b_i$ < S.E.). The estimates further reveal that the signs of the coefficients of ID, INF and CPI conform to a priori expectation while EXR and ED do not. In addition the contributions of ID and ED are minimal and almost insignificant. ID contributes positively to economic growth by 0.04 of each unit change while ED contributes negatively to economic growth by 0.004 of each unit change. The contributions of INF, CPI and EXR reveal that a unit change in either will cause RGDP to simultaneously increase by 3.98, 12.18 and 0.73 by that unit change.

The diagnostic statistic shows that the model has performed optimally in spite the minimal contributions by the variables. The adjusted R^2 shows that 99% of the total variation in RGDP can be accounted for by ID, ED, INF, CPI and EXR. Only 1% of such variations are unaccounted for – surrogated by the stochastic error term. The coefficient of determination portrays the strength of the variables collectively – showing a very strong, positive and significant relationship between the explanatory variables and the dependent variable.

The F statistic shows the overall significance of the regression model and validates the significance of the R^2. Testing the null hypothesis that: "the true population value of the slope of the regression coefficient is simultaneously zero," the F statistic thus becomes relevant. Therefore, the probability of obtaining an F value of 1051.11 or greater is 0.0000 which is practically zero. This implies that the overall estimation power of the regression equation is statistically significant and as such ID, ED, INF, CPI and EXR have joint influence in predicting the outcome of RGDP thus giving credence to the high R^2.

The Durbin Watson test of autocorrelation neither validates nor invalidates the null hypothesis of no autocorrelation. The result of the regression analysis shows the estimated *d* value to be 1.30 suggesting no decision can be made. From the Durbin Watson tables, we find that for 28 observations and 5 explanatory variables, $d_L = 1.028$ and $d_U = 1.850$ at the 5% level. Since the computed *d* value lies in the region ($d_L < d < d_U$), we cannot conclude that there is no autocorrelation in the data series either positive or negative.

4.2   *Findings of the Study*

The study reveals that ED and EXR are incorrectly signed – ED having a negative sign and EXR having a positive sign. This mismatch can partly be explained by contemporary happenings which show that as external debt increases there is need for surplus budgeting. Surplus budgeting is used in order to meet one of the conditions of world financial institutions for lending money, to enable the borrowing country revitalize its economy. By adopting surplus budgeting there is increased unemployment due to a decrease in total investment – which is the case in Nigeria. Nigeria's external reserve which is expected to increase since there is borrowing has also been declining. This also accounts for its negative impact on economic growth in Nigeria.

The country deliberately devalued the naira recently in order to make its products cheaper in the international market thereby increasing revenue. Thus, from the economy projections a high exchange rate would increase patronage of Nigerian products in the international market. This devaluation may account for the mismatch thus making a rise in exchange rate incremental for per capita income thus lifting the populace from the bare poverty level. However the effect of this consistent devaluation is yet to be felt.

The empirical result further revealed that both ID and ED have contributed minimally to economic growth within the study period. ID however has a positive contribution while ED has a negative contribution. This clearly portends that, although borrowing may be a viable source of government revenue, its impact is negligible

– arising from mismanagement of the funds borrowed. The coefficient of ID is positive suggesting that even if the government resorts to borrowing, it should be domestic as it shoulders no pressure unlike the stipulations of world financial institutions for external debts as discussed above. The immediate past administration accumulated a debt of 60 billion dollars under the guise of improved welfare and infrastructure, but still there is nothing to show for it. The CPI index however shows that there is hope for inclusive growth if corruption can be curbed to a minimum. INF has performed well within the study period revealing that a unit change in energy consumption will cause output in the economy to increase by 3.98 of that unit change.

The overall performance of the model is good. The adjusted R^2 shows a very strong relationship between the dependent and independent variables with only 1% of the variations unaccounted for. This implies that ID, ED, INF, CPI and EXR can explain 99% of the changes in RGDP in Nigeria. Thus, the prediction power of the regression model is statistically significant. The F statistic substantiates the adjusted R^2 and lays emphasis on the strength of the explanatory variables in predicting the outcome of RGDP. One can therefore say that from the F statistic, the additional explanatory variables namely INF, CPI and EXR have theoretical relevance to the data series.

5.0   *Conclusion and Recommendation*

The study concludes that the impact of government debt on economic growth is insignificant. This is consistent with the works of Ezeabasili et al (2011) and Obademi (2012) to mention a few. The findings reveal that mounting internal and external debt has adverse implications on the Nigerian economy. This implies that the ***dual gap theory*** is not relevant to the Nigerian economy due to its negative impact. Thus, government borrowing has not been able to influence growth significantly in Nigeria. In a country like Nigeria where savings culture is poor thus inhibiting investment, the necessity of borrowing cannot be overemphasized. Obtaining an insignificant impact of government debt on economic growth contradicts a priori expectation Corruption serves as one of the major factors for this insignificance as such monies are misappropriated, mismanaged or embezzled. Furthermore, if such inflows are not properly monitored and the course of consistent borrowing is not curbed, the economy will slump further: igniting; increases in unemployment, decreases in total investment, falling reserves, increased exchange rate, higher inflation and consequently ***increased poverty.*** Based on the findings, the following recommendations are hereby made:

Borrowing should be a last recourse by the government to revitalize the economy, and if necessary, the loans should be sourced within the economy so that when the principal and interest on the loans are paid back; it will serve as a crowd-in-effect which in turn further accelerates economic activities in the country. Also, other alternative sources of government revenue especially taxation hitherto underutilized should be explored to minimize dependence on borrowed funds to ratify the economy. In addition, power should be made stable so that output can be further increased. This will reduce cost for industries that depend on alternative power sources to thrive. Such monies can therefore be utilized for remunerative alternative employments. Furthermore, effective monitoring should be ensured by the government to prevent borrowed funds from being mismanaged. Finally, the policies of devaluing the country's currency are not favourable to the objective of price stability. The monetary authority (CBN) should adopt a contractionary stance of money supply so as to increase the value of the naira – since exchange rate is based on relative commodity prices in countries.

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APPENDIX I

DATA ON VARIABLES

YEAR	ID	ED	CPI	RGDP	INF	EXR
1986	28.4	41.5	1.1	257.8	62.15	2.02
1987	36.8	100.8	1.12	256.0	64.34	4.02
1988	47	134	1.1	275.4	66.22	4.54
1989	47	240.4	1.13	295.1	68.47	7.39
1990	84.1	298.6	1.15	328.6	70.58	8.04
1991	116.2	328.5	1.16	328.6	73.84	9.91
1992	178	544.3	1.18	337.3	76.68	17.3
1993	273.8	633.1	1.19	342.5	77.94	22.05
1994	407.6	648.8	1.21	345.2	76.2	21.89
1995	477.7	716.9	1.23	352.6	77.54	21.89
1996	420	617.3	1.25	367.2	80.78	21.89
1997	501.8	595.9	1	377.8	84.31	21.89
1998	560.8	633	1.9	388.5	84.44	21.89
1999	794.8	2577.4	1.6	393.1	87.47	92.69
2000	898.3	3097.4	1.2	412.3	90.6	102.11
2001	1017	3176.3	1	431.8	94.63	111.94
2002	1166	3932.9	1.6	451.8	97.39	120.97
2003	1329.7	4478.3	1.4	495.0	99.01	129.36
2004	1370.3	4890.3	1.6	527.6	101.75	133.5
2005	1525.9	2695.1	1.9	561.9	106.51	132.15
2006	1753.3	451.5	2.2	595.8	107	128.65
2007	2169.6	438.9	2.2	634.3	107.67	125.83
2008	2320.3	523.3	2.7	672.2	111.21	118.57
2009	3228	590.4	2.5	719.0	109.24	148.9
2010	4551.8	689.8	2.4	776.3	113.05	150.3
2011	5622.8	896.8	2.4	834.0	125.68	153.86
2012	6537.5	1026.9	2.7	888.9	129.36	157.50
2013	7119	1387.3	2.5	950.1	136.27	157.31

Source: CBN Statistical Bulletin, National Bureau of Statistics, World Bank Estimates and Debt Management Office

Note: *ID, ED, RGDP and INF are expressed in ₦'billion*

EXR is the average official exchange rate ($1/₦)

CPI is expressed as an Index

*the closer the CPI to zero, the more corrupt the nation is; and conversely, the closer it is to ten, the less corrupt.

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